

Buildings and Cities: Real Estate

Sustainable Development Sector Analysis Framework

November 2019



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.

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Since most human activity occurs inside buildings, companies in the real estate sector are exposed to many environmental and social issues. Therefore, they can support the achievement of sustainable development goals by investing in buildings that are energy-efficient or that meet people's basic needs in terms of access to decent and affordable housing, health and education services. In addition to new buildings, these companies have a major lever for achieving a 2 °C scenario while helping to reduce energy insecurity – which affects more and more households – by improving the energy efficiency of existing buildings. They must also implement adequate policies to limit the environmental impact of their assets on climate change and biodiversity; as well as guarantee the health and safety of building users, whether they are occupants, company employees or service providers.

Sectors: Real estate asset owners and managers. Issues specific to the real estate development business are addressed in the document “Infrastructure & Construction”.

Table of contents

Sustainability Opportunities	4
Optimizing the Energy Efficiency of Buildings	4
Social Purpose of Buildings	6
<i>Exposure to Opportunities</i>	7
Environmental and Social Risk	8
Environmental Impact of the Building During the Use Phase	8
Biodiversity Conservation	8
Exposure to Climate Change Risk.....	8
Health and Safety	9
Protection of Privacy & Cybersecurity	9
Human Resources.....	10
Business Ethics	10
Sustainable Development Governance	11
<i>Risk Assessment</i>	11
Conclusion	12
Our Approach to sustainability assessment	13
Sources	17



Sustainability Opportunities

Optimizing the Energy Efficiency of Buildings

According to the International Energy Agency, in 2017, the building sector accounted for 36% of global energy consumption and 19% of greenhouse gas emissions, followed by emissions related to the production of building materials (estimated by the IPCC at around 6% of global emissions). Improving the energy efficiency of buildings is therefore a major lever in favor of achieving a 2 °C scenario. While this depends to a large extent on the design of the building (layout, choice of materials, optimization of space according to use) carried out beforehand, a certain number of levers remain at the discretion of the operational managers of real estate assets.

New buildings

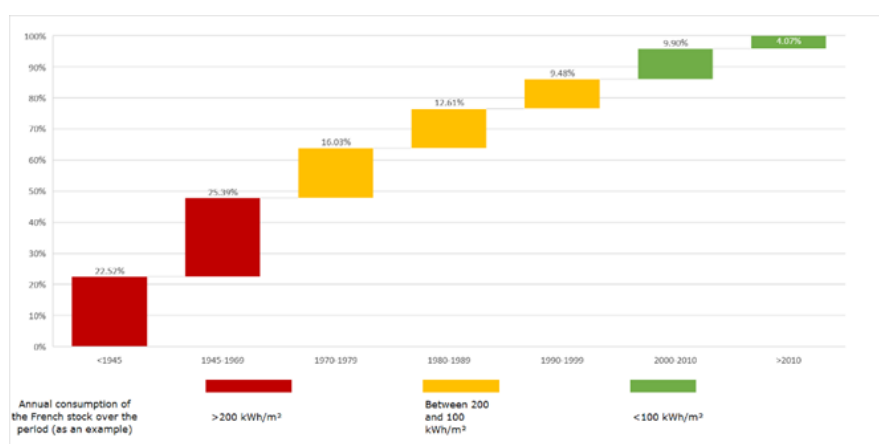
Real estate asset owners have a role to play in directing their real estate investment strategy towards energy-efficient assets. Beyond the intrinsic quality of the building at the time of delivery – which now meets a regulatory obligation in many developed countries –, property managers can initiate a dialogue between owner, manager and tenants in order to make each of the stakeholders responsible for the actions to be implemented and to optimize the energy performance of the building as a whole. This sustained dialogue can be supplemented by the implementation of an environmental performance management system for the building, including management of occupants' consumption in order to monitor their evolution and define an action plan to achieve an ambitious level of energy performance with regard to the specific characteristics of the building's location.

Existing buildings

Nevertheless, investment in new, energy-efficient buildings alone will not significantly reduce the impact of the real estate sector on climate change. Indeed, according to the sustainable development scenario developed by the International Energy Agency in order to stay in line with a 2 °C trajectory, the average energy intensity per square meter – which defines the level of energy efficiency of buildings – must be reduced by around 30% compared to the current world average (IEA, 2018). However, the rate of renewal of the housing stock in OECD countries does not exceed 2.5% per year (OECD, 2019). Most of the efforts to reduce consumption and the associated emissions must therefore focus on the existing building stock, specifically through ambitious thermal renovation operations supplemented by the installation of high-performance equipment. Such measures also make it possible to fight against “energy sieves” and to reduce heating and lighting costs, which contribute to the precariousness of the most modest households – mostly tenants. Therefore, such operations offer a double benefit: environmental and social.



Figure 1: Breakdown of the European building stock by year of construction



Source: Mirova according to the European Building Stock Observatory, 2016

In addition to the building envelope, since 2010 there has been a significant improvement in the energy intensity of heating and lighting equipment due to the installation of less energy-intensive equipment, such as heat pumps to replace oil-fired boilers or, to a lesser extent, LEDs (which consume three times less than a traditional light bulb [ADEME, 2017]). The evolution of thermal regulations is now moving towards positive energy buildings: in other words, the buildings of tomorrow will have to produce on-site the equivalent of their energy consumption needs. Therefore, it seems relevant to anticipate these developments by starting to deploy local renewable energy production solutions, through the installation of rooftop solar panels for example.

Access to soft mobility solutions

Finally, the attention paid by companies in the real estate sector to sustainable transport solutions is an important element, both in the acquisition phase – when we encourage players to select assets by integrating vicinity to public transport criteria – and during the use phase – when a number of solutions can be deployed to reduce the impact of transport. In the case of commercial assets, particularly shopping malls often located on the outskirts of cities, user transport accounts for 90% of the asset's overall emissions. Therefore, we strongly encourage players in this segment to develop solutions to facilitate the use green mobility solutions, by installing charging stations for electric vehicles or bicycle parking facilities for example.

We encourage real estate companies to systematically take into account buildings' energy performance and accessibility to sustainable transport solutions in their acquisition strategies; and to invest massively in the thermal renovation of existing buildings in order to achieve a significant improvement of the sector's energy efficiency. We also promote the systematic installation of less energy-intensive heating and lighting equipment. Finally, the on-site installation of energy production equipment based on renewable resources is also valued. These elements must be accompanied by the definition of monitoring indicators and a sustained dialogue between owner, manager and tenants in order to encourage responsible environmental practices.

KEY INDICATORS

- Energy performance in kWh/m² by type of asset vs. Regional average
- Percentage of Capex dedicated to thermal renovation work and the installation of energy-efficient equipment
- Percentage of energy consumption from renewable resources
- Percentage of the building stock located near public transit
- Percentage of the building stock equipped with charging stations for electric vehicles and bicycle parking

The environmental certification of buildings: a guarantee of energy performance?

There has been a significant increase in the number of certified buildings. While certification facilitates comparisons, it has become an essential part of the real estate development business and almost all new buildings are now subject to certification, most often issued by the following bodies: LEED, BREEAM, HQE, BEAM Plus, CASBEE, Green Star, NABERS.



Firstly, not all certifications are equal, and the energy profile of the building is not systematically correlated to the overall rating. For example, energy performance accounts for only 19% of the overall assessment of the BREEAM certification aimed at obtaining the “Very Good” rating. Thus, it is possible to get a good rating level of building certification without being necessarily exemplary in terms of energy performance. In addition, obtaining an environmental certification at the time of construction is based on the modelling of consumption and theoretical uses, which often differ from the actual use of the building once occupied. Besides, the energy performances displayed at the time of construction are often below the real performances related to the use.

In light of this, we favor certification procedures which take the use phase into account – and include tenants’ consumption – and which target an ambitious level of energy performance with regard to the specific characteristics of the building’s location.

Social Purpose of Buildings

Access to decent housing is a fundamental right (Article 25.1 of the Universal Declaration of Human Rights); but according to the United Nations, more than 800 million people around the world currently live in slums. According to the *Fondation Abbé Pierre*, in 2017, more than 15% of the European population lived in overcrowded housing (*Fondation Abbé Pierre* - FEANTSA, 2019). Therefore, we favor real estate players with a strong focus on affordable housing and/or housing for vulnerable populations. However, these are still few in number, since social housing is often owned and managed by non-listed organizations on behalf of the State.

In addition, the real estate sector also has a role to play in access to healthcare by investing in dedicated infrastructure to meet the growing need for short- or long-term hospital care, or even permanent care facilities dedicated to dependent people.

Finally, insofar as access to student residences facilitates access to higher education, we also value players positioned on a significant supply of affordable student housing.

We encourage real estate companies strongly positioned on social housing and/or which specifically focus on vulnerable people. We will also favor real estate asset portfolios focusing on infrastructure adapted to situations of dependency (ageing, disability). Finally, insofar as they contribute to access to higher education, affordable student residences will also be valued. These asset types must represent a significant share of revenue and be fully integrated into the Group's strategy.

KEY INDICATORS

- Share of the portfolio dedicated to social housing beyond regulatory requirements and/or student residences
- Share of the portfolio offering dependency-dedicated infrastructure (health care institutions, retirement homes)
- Share of portfolio offering affordable student housing

Exposure to Opportunities

Indicators considered:		
% of the stock (in revenue or m ²) with a class A energy performance certificate		
% of Capex dedicated to thermal renovation work and the installation of energy-efficient equipment		
% of the stock (in revenue or m ²) dedicated to social housing, infrastructure to manage dependency and affordable student residences		
High exposure	>50%	An analysis of the Capex dedicated to thermal renovation and the energy performance of the stock expressed in kWh/m ² for each type of asset and compared to the regional average will allow us to highlight the most virtuous players.
Significant exposure	Between 10 and 50%	
Low or no exposure	<10%	
Negative exposure	No activity in the Real Estate sector is currently evaluated at this level	

Environmental and Social Risk

Environmental Impact of the Building During the Use Phase

In a life cycle analysis of a building, the use phase accounts for most of the environmental impacts. Therefore, setting up a strategy to reduce environmental impacts (water, energy, electricity, waste treatment) combined with quantified targets makes sense for a property owner. This will be all the more relevant if it includes data from the tenants, since the common areas account for only a tiny proportion of the building's total consumption. Thus, beyond the signature of an "environmental appendix" along with the lease – which is often non-binding and imposed by the regulations of certain countries, – the players in this sector must develop an ambitious approach to dialogue with tenants in order to encourage a responsible use of the building.

We value companies that have adopted an ambitious strategy to reduce environmental impacts, associated with quantified targets. To enable its implementation, we encourage stakeholders to develop a consistent environmental management system. In addition, the reporting scope must cover a significant portion of the portfolio.

KEY INDICATORS

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

Biodiversity Conservation

Companies in the real estate sector have a role to play in preserving biodiversity. In particular, special attention to urban sprawl at the construction phase makes it possible to limit soil artificialization. Building owners can also reintroduce biodiversity areas into existing buildings: the installation of vegetated surfaces (murals or on roofs or terraces) is an effective way of combating urban heat islands phenomenon and air pollution. Finally, the use of pesticides in the maintenance of green spaces should be ruled out.

We encourage companies of the real estate sector to limit urban sprawl through their investment strategy and to set up a biodiversity action plan for each asset.

KEY INDICATORS

- Presence of criteria to limit urban sprawl in investment policies
- Percentage of the building stock subject to a biodiversity action plan

Exposure to Climate Change Risk

One of the consequences of climate change is an increase in the risk of natural disasters both in terms of intensity and frequency. If we do not manage to hold the increase in the global average temperature rise to below 2 °C, the IPCC report warns of the risk of such disasters (heat waves, floods, drought, storms) occurring more often and with greater intensity.

Real estate companies are particularly exposed since the buildings they own are likely to be heavily affected as a result of an increase in natural disasters. In order to limit this risk, the first step is to measure the level of exposure of each asset to natural disaster risk (for each



type of risk) and map the entire portfolio. For example, rising sea levels, which is one of the expected effects of climate change, could lastingly affect assets located in coastal areas or in cities close to sea level.

We expect real estate players to initiate a mapping of the level of exposure to climate change risk in order to identify the assets most at risk and to deploy an action plan dedicated to mitigation and adaptation.

KEY INDICATORS

- Presence of a mapping of the level of exposure of the building stock to the risk of climate change
- Coverage rate of such mapping
- Presence of an action plan dedicated to mitigation and adaptation to the risk of climate change

Health and Safety

The real estate sector is often blamed for putting building users' health and safety at risk. Indeed, non-compliance with health and safety standards potentially exposes building users to significant risks. In recent years, the sector has been marked by numerous controversies: in Bangladesh, the Rana Plaza building collapsed, killing nearly 1,130 textile workers. In London, the use of unsuitable insulation, favored for economic reasons, worsened the fire in the Grenfell Tower leading to the death of 71 people. Therefore, we expect real estate asset owners and managers to develop the best practices in terms of users' health and safety, including a regular review of their portfolio with regard to these aspects. We are also attentive to possible controversies and company responses, when applicable.

In addition, the upgrading of real estate assets often includes construction work. While recourse to external service providers is almost systematic, the selection of the latter must include environmental and social criteria considering the sector's exposure to the risk of concealed employment and its high level of arduousness. Thus, the adoption of a responsible worksite charter that includes health and safety considerations for subcontractors stands out as a good practice. As contractors, building owners have a role to play in the overall improvement of industry practices in this area, even after the construction phase has been completed.

We favor companies that place the health and safety of users at the heart of their concerns and have a health and safety policy in place supported by monitoring indicators covering their subcontractors and suppliers during construction work.

KEY INDICATORS

- Scope and frequency of health and safety audits carried out for the stock
- Presence of a responsible worksite policy integrated into contracts with service providers
- Frequency of accidents at work, fatality rate for the last 3 and 5 years
- User Health and Safety controversies and company response

Protection of Privacy & Cybersecurity

The advent of the smart city has brought with it 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 building users.



Real estate companies who use these solutions must first protect themselves against any attempt to steal this data – which is sometimes sensitive – by implementing a robust cybersecurity policy and detailing the way in which it is deployed to protect data collected. In addition, we expect increased transparency on the nature of the data collected, the methods of storage and the way they are used, as well as their relevance to the optimization of the building's operation.

KEY INDICATORS

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

Human Resources

Although human resource management is a common issue for all sectors, it is less discriminating for a sector with a low level of human capital intensity. Nevertheless, the sector relies on qualified employees with a good level of technical knowledge to provide relevant responses to the many environmental and social challenges it faces. Therefore, the goal is to attract and retain talent in a competitive environment. Consequently, a good forward-looking management of jobs and skills; a competitive offer in terms of training – particularly in addressing environmental issues – and remuneration; as well as a good management of the age pyramid will be determining factors. Moreover, insofar as the signing of green leases remains non-binding to date, their effectiveness resides essentially in the establishment of a strategy to enhance the awareness of users, with whom a constructive dialogue must be maintained. Property managers must therefore be trained to meet these objectives effectively.

We favor real estate companies who have proactive HR practices that allow them to adequately anticipate changes in their human capital (strategic workforce planning and management of the age pyramid). In addition, we pay particular attention to employee training with regard to health and safety and environmental issues.

KEY INDICATORS

- Presence of a talent attraction and retention policy
- Number of hours of training on environmental issues

Business Ethics

In regard of its close relations with public authorities – particularly in the context of access to land – the real estate sector is significantly exposed to risks related to business ethics. Although few controversies have arisen in this area, the sector remains highly exposed, which is why it is imperative to ensure that corporate governance mechanisms are in line with the sector's key issues.

We value companies with a clear strategy and an impeccable track record on business ethics. Thereby, we sanction companies with significant controversies in terms of seriousness and recurrence. Post-dispute governance changes will be analyzed – but these changes must be confirmed over time.

KEY INDICATORS

- 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 - Ambitious strategy to reduce environmental impacts combined with quantified targets and a consistent environmental management system - AND transparency on the reporting scope
Neutral	Insufficient reporting scope and/or low level of environmental certification
Risk	Company response to a user health/safety controversy deemed insufficient or inappropriate or repeated business ethics controversies

Conclusion

As the real estate sector represents 36% of the world's energy consumption and nearly 20% of greenhouse gas emissions, a 2 °C scenario cannot be achieved without a significant improvement of its environmental impact. In view of population growth and urbanization dynamics (by 2050, the United Nations estimates that 68% of the world's population will be living in cities), it is imperative to intensify the efforts to improve energy efficiency – concentrating these efforts mainly on the existing stock. Fortunately, a large number of mature solutions are available to property owners to achieve this objective. We therefore encourage companies to make the energy efficiency optimization of building existing stock one of their strategic priorities and to improve their level of reporting on this subject.

Beyond the climate prism alone, which is already well integrated into the practices of the most advanced companies in terms of sustainable development – notably through the reduction of energy consumption –, the real estate sector must demonstrate greater transparency on its level of exposure to the risk of climate change and establish a systematic adaptation plan. Similarly, biodiversity conservation as well as the access to soft mobility solutions must be systematically integrated into the investment strategies of real estate companies in order to meet the expectations of their stakeholders, both future tenants and investors.

Finally, in addition to the fight against energy insecurity made possible by green buildings, we encourage real estate companies to diversify their portfolios by including buildings with a social purpose in their investment strategies; thus promoting access to health and education for all – which both constitute sustainable development goals of their own.



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 SDGs 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 2: 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

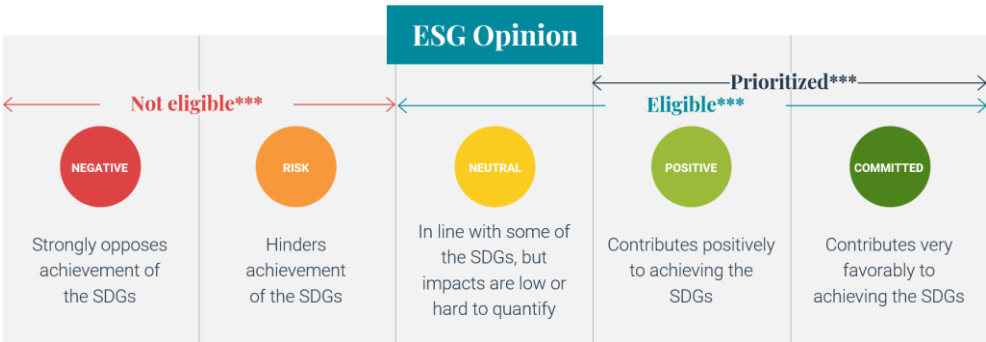
Our risk/opportunity analysis focuses on the elements most likely to have a real impact on the assets studied and on society in general. Additionally, the issues that economic players face

are very different depending on the sector, and can even vary within the same sector¹. 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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