Green buildings: a site from today for tomorrow

Suzanne Senellart
Head of Environment Strategy

Camille Barré
ESG analyst

At a glance

- **1.** Rethinking buildings, both new and existing, is essential to achieving carbon neutrality, as greenhouse gas emissions from buildings **account for 36% of emissions in the European Union*.**
- **2.** The building sector is not only confronted with the challenges of energy restraint and the reduction of greenhouse gas emissions, **but also with issues related to recycled and recyclable materials, and the preservation of biodiversity.**
- **3.** The Mirova Europe Environmental Equity Strategy aims to invest in companies developing innovative technologies and solutions to address these issues. **The green building sector represents 14% of the portfolio as at 30/11/2021.**

**https://ec.europa.eu/info/news/focus-energy-efficiency-buildings-2020-feb-17_fr*

According to the United Nations, 55% of the world's population now lives in cities, a rate that is expected to rise to 68% by 2050.[1]

Given this outlook, with nearly two billion people still without adequate housing[2], and with greenhouse gas emissions from buildings accounting for about 20% of global emissions and 36% of European Union emissions[3], building and renovating differently is a necessity. Buildings are a massive source of emission reductions: this has been well embedded in public policy, as demonstrated by Fit for 55[4], which raises the annual renovation target for buildings to 3%[5], and provides for the creation of a sector-specific emissions trading scheme and an increase in the percentage of renewable energy used in buildings.

Suzanne Senellart and Camille Barré explain how the Mirova Europe Environmental Equity Strategy[6] contributes to the achievement of the Fit for 55 objectives, by investing in innovative solutions capable of meeting the challenges of the building sector, whether in terms of energy restraint, greenhouse gas emission reductions, materials used and their recycling, or preservation of biodiversity.

AN ARRAY OF CHALLENGES TO MEET

Collectively, buildings in the European Union account for 40% of our energy consumption and 36% of greenhouse gas emissions[7], mainly from construction, renovation and demolition activities, but also from the use of buildings.

The first issue raised by the construction of buildings is that of CO_2 emissions, which are high, primarily because a lot of **new buildings are being built, and they are getting taller and taller**. Since the beginning of the 2000s, living area in square metres has increased by 65%[8], while at the same time the energy consumption of these buildings has been reduced by only 15%[9].

1. Source United Nations
2. Source United Nations
3. Source: IPCC, IEA, Mirova
4. Fit for 55 the most ambitious European legislative package dealing with the environmental transition, both from a time horizon perspective and for its sectoral implications. The Fit for 55 measures aim to reduce Member States' greenhouse gas emissions by 55% by 2030 compared to 1990.
5. https://ec.europa.eu/commission/presscorner/detail/fr/ip_21_3541
6. All investments carry risks, including the risk of sustainability and capital loss
7. https://ec.europa.eu/info/news/focus-energy-efficiency-buildings-2020-feb-17_fr
8. https://www.iea.org/reports/tracking-buildings-2020
9. https://www.iea.org/reports/tracking-buildings-2020

Buildings are mainly made of concrete, a material whose key ingredient - **cement - alone generates 7%[10] of the world's carbon dioxide emissions**, three times more than air transport. Cement is still the most consumed material in the world today, at around 150 tonnes per second[11].

In addition to the materials used, it is important to emphasise that **buildings are rarely regulated by standards in less developed countries, and are often not very energy efficient. The issue here is both environmental and social**, as non-compliant buildings expose users to significant health and safety risks.

The preservation of biodiversity is another major challenge: poorly controlled construction sites can generate waste, which can cause air, water and soil pollution. **Moreover, urban sprawl and soil artificialisation[12] are one of the main causes of biodiversity erosion[13]** (the transformation of a natural area into artificial land modifies or even destroys the habitat of animal or plant species), **but also of global warming.**

Indeed, artificialized land no longer absorbs CO_2 and therefore contributes to the rise in temperature. It also loses its capacity to absorb rainwater, thus increasing the risk of flooding. Finally, from an agricultural point of view, soil artificialisation limits food production.

Considering the building sector from the sole perspective of construction will not be enough to achieve carbon neutrality and preserve biodiversity. It is also necessary to reassess the renovation of existing buildings: today, around 75% of buildings in the European Union are not energy efficient, while 95% of current buildings will still be in use in 2050[14]. Despite this alarming fact, only 1%[15] of buildings in Europe are renovated to be energy efficient. One of the targets of Fit for 55 is the renovation of 3% of buildings by the public sector each year[16].

Renovating buildings not only has a positive impact on our carbon emissions, but also helps to reduce fuel poverty, which is not to be underestimated considering that almost 34 million Europeans cannot heat their homes properly[17].

"At Mirova, we believe that a sustainable economy must be built with sustainable cities. With the Mirova Europe Environmental Equity strategy, we support companies deploying best practices and solutions to design energy-efficient and low-carbon infrastructure and buildings that respect the environment and meet the needs of users."

THE TRANSITION TO SUSTAINABLE CITIES IN MOTION

Solutions and technologies that contribute to the construction of sustainable cities already exist and represent investment opportunities. Green building is one of the themes of the Mirova Europe Environmental Equity strategy, which has been investing for nearly 15 years in companies developing solutions for the environmental and energy transition.

To meet the Fit for 55 targets, it is necessary to have a comprehensive view of the issues facing the building industry, including construction, renovation and demolition, as well as the use of buildings. This is the approach of the Mirova Europe Environmental Equity strategy, which invests in several types of solutions, including:

- **Reducing emissions from the manufacture of concrete,** by replacing cement with industrial waste or organic residues (e.g. volcanic rock); or by reducing heating consumption (currently 1,450°C) by "heating-free" processes.
- **Building positive energy or at least non-emitting buildings** by using low-carbon building materials such as wood, by deploying innovative materials and new insulation methods to reduce the energy consumption of infrastructure, or by installing energy production equipment such as solar panels on roofs.

10. Global Cement and Concrete Association (GCCA)

11. Global Cement and Concrete Association (GCCA)

12. This phenomenon consists of transforming natural, agricultural or forest soils through development operations that can lead to partial or total sealing, in order to allocate them to urban or transport functions (housing, activities, shops, infrastructure, public facilities, etc.)

13. Source: French Ministry for the Ecological Transition

14. https://ec.europa.eu/energy/topics/energy-efficiency/energy-efficient-buildings/renovation-wave_en

15. https://ec.europa.eu/energy/topics/energy-efficiency/energy-efficient-buildings/renovation-wave_en

16. https://ec.europa.eu/commission/presscorner/detail/fr/ip_21_3541

17. https://ec.europa.eu/energy/topics/energy-efficiency/energy-efficient-buildings/renovation-wave_en

- **Erecting buildings that are fully integrated into their environment, taking into account their environmental and social impacts. The building is thus conceived** as a whole that must be integrated in symbiosis with its neighbourhood and with the local urban biodiversity by exploiting, for example, the "5th façade": the roof. This approach is regulated by labels such as Biodivercity®, WiredScore® or Well®, which - in addition to already well-established labels such as HQE (High Environmental Quality[18] in French), LEED[19] (US) or BREEAM[20] (UK) - aim to certify that criteria such as the diversity of ecosystems and species, as well as the quality of life inside buildings, have been taken into account.

18. The High Environmental Quality (HQE) label was created in 2004 to recognise the qualities and performance of buildings in accordance with a demanding reference framework

19. The LEED (Leadership in Energy and Environmental Design) label is a standardisation programme for buildings that meet high environmental quality criteria.

20. BREEAM (Building Research Establishment Environmental Assessment Method) is a benchmark in terms of sustainable construction.

AT THE HEART OF THE MIROVA EUROPE ENVIRONMENTAL EQUITY STRATEGY

Focus on SAINT-GOBAIN: *Make the World a better home*

Aiming to respond to the challenges of climate change and resource scarcity - but also to promote the health and well-being of occupants - **sustainable construction considers the structure as a whole**, from the manufacture to the deconstruction of the building at the end of its life. It draws on new practices involving the entire construction chain, starting with safe and efficient building **materials that are recycled, recyclable or reusable, with a low carbon footprint over the entire life cycle.**

Created by Louis XIV in 1665 as the "Manufacture des Glaces de miroirs", Saint-Gobain today operates in 72 countries and employs over 167,000 people. The Group and its dozens of specialist brands design, produce and sell materials and solutions that can be found everywhere in the home and in everyday life: in buildings, transport, infrastructure, as well as in numerous industrial applications. They aim to provide comfort, performance and safety while meeting the challenges of sustainable construction, efficient resource management and climate change.

Saint-Gobain is committed to reducing its energy consumption and GHG emissions from its industrial, infrastructure and transportation activities, including setting an internal carbon price to stimulate low-carbon R&D projects.

High-performance products:

Eglas® is a heated glazing system which, under the action of an electric current, diffuses a gentle and uniform heat. It can be used in double-glazed windows, French windows and conservatories as an auxiliary or main source of heating.

Sageglass LightZone®, a dynamic electrochromic glazing solution with variable tinting that tints according to the degree of sunlight. It replaces interior blinds while offering optimal solar and thermal protection.

Magnetic plaster, a construction and insulation material that is revolutionising interior design. No more adhesive residue on walls thanks to magnetic particles that adhere directly to the walls without additional material.

Novelio® CleanAir, a wall covering that - in addition to covering cracks and irregularities - absorbs and permanently captures 50% of formaldehyde, an aerosol pollutant emanating from glues, paints and other laminated products used in renovation/construction work.

Isover® fibreglass, which contains up to 90% recycled glass and whose new formaldehyde-free binder is produced from bio-based materials.

Other innovations and technological trends:

- **Building Information Modelling (BIM):** digital modelling used to anticipate the final performance of the building or to correct design errors;
- **prefabrication and 3D printing:** agile, flexible techniques that facilitate architectural creativity;
- **the gypsum and ceiling business:** develops products with specific technical features such as fire protection, moisture resistance and thermal insulation.

"Together with and for its customers, Saint-Gobain designs, manufactures and distributes materials and solutions that have a positive impact on everyone's life and provide well-being, quality of life and performance, while caring for the planet. This is the profound ambition of its purpose: Making the World a Better Home."

Key figures

- 2020 turnover: **38 billion euros**
- Organic growth over 5 years: **2 %**
- 2020 Ebitda margin*: **11,6 %**

Source: Saint-Gobain

Focus on KINGSPAN: *Better Buildings for a Better World*

The building of the future is about maximum performance. It must **combat climate change** by maximising its energy efficiency through superior heat quality while incorporating less carbon-intensive products throughout its life cycle. **It produces its own renewable energy**, it is healthy, it is inspiring, it maximises the benefits of daylight, fresh and clean air, **it is designed, built and operated to protect natural resources** and to save water wherever possible. And of course, it protects people and property from fire and other natural hazards.

With 14,000 employees working at 130 manufacturing sites in more than 60 countries around the world, Kingspan Group is a global leader in insulation and building envelope solutions for energy-efficient, low-carbon buildings.

In 2018 alone, its insulation products saved 192.7 million MWh of energy and avoided 38.15 million tonnes of CO2 emissions.

The company has adopted a new global sustainability strategy for the next 10 years, 'Planet Passionate', which aims to address three key global concerns: climate change, circularity and protection of the natural environment.

Key figures

- 2020 turnover: **4.5 billion euros**
- Organic growth over 5 years: **3 %**
- 2020 Ebitda margin*: **13 %**

Source: Kingspan Group

High-performance products:

Kingspan QuadCoreTM, a technology of insulating sandwich panels with organic cores that provides multiple benefits, including the best thermal efficiency on the market (Lambda 0.020 W/m.K - ACERMI certified).

UltraTech Versatile, innovative and versatile technical solutions (CLEANsafe ultra watertight system, HYGIENEsafe antibacterial coating, etc.) adapted to many industries, from aeronautics to nanotechnology, which need to work in high-performance cleanrooms.

BioFicient+®, a new generation of complete domestic wastewater treatment plants, developed to treat domestic wastewater in a simple and compact system. The treatment is carried out in three stages, in a single, autonomous, robust and light tank, easy to install and low in electricity consumption.

"We believe that in order to achieve truly future-proofed, sustainable built environments, all buildings must be designed, constructed and operated to deliver 10 key benefits: energy efficiency, embodied carbon, circularity, fire performance, occupant wellbeing, water conservation, healthy materials, digitalization, property value and construction efficiency. This is all embodied in the Kingspan approach."

*A measure of a company's operating profit as a percentage of its turnover. The acronym EBITDA stands for earnings before interest, taxes, depreciation and amortisation.

Focus on HOFFMANN GREEN CEMENT TECHNOLOGIES:
A pioneer in 0% clinker low-carbon cement

With 4.6 billion tonnes produced per year worldwide (i.e., 150 tonnes per second!), cement is the **second highest CO2 emitting industry.** Carbon dioxide is mainly emitted during the process of decarbonating limestone by firing it in a rotary kiln at 1,450°C for 18 hours, to obtain clinker, one of the main constituents of cement, itself an ingredient of concrete. **As the most consumed manufactured material in the world, it was imperative that cement begin its revolution.**

Hoffmann Green Cement Technologies, a true industrial adventure, invents and offers high-performance 0% clinker low-carbon cements that are a complete break with existing technologies and capable of meeting the challenges of climate change.

- **March 2014:** David Hoffmann, a scientist, and Julien Blanchard, an entrepreneur, decided to develop and mass-produce new generation cements with a significantly reduced carbon footprint compared to traditional Portland cement.
- **August 2016:** The future French president, Emmanuel Macron, visited the laboratory.
- **September 2018:** Already awarded the Horizon 2020 label for research and innovation in Europe, the company joined the very ambitious French Future Investment Programme 3 (PIA3).
- **22 November 2018:** Inauguration of a first 4.0 production site respecting the environment and the principles of the circular economy.
- **October 2019:** Record equity raising operation of nearly €75 million on the Euronext Growth Paris market.
- **2022 and 2023:** Planned opening of two new production sites, in the Vendée and in the Paris region, to reach a production capacity of 550,000 tonnes per year by 2024.

Hoffmann Green Cement Technologies operates exclusively in France and has 13 employees.

With a focus on innovation, the company intends to double its human resources dedicated to R&D by 2024 and has begun formalising its EHS policy.

Key figures

- 2020 turnover: **504.000 euros**
- Order book growth in 2020: **18%**
- 2026 turnover target: **130 million euros**
- Ebitda margin* target: **breakeven in 2024 and a target of 40% in 2026**

Source: Hoffmann Green Cement Technologies

Thanks to the new H-IONA cement, Hoffmann Green Cement Technologies is able to **reduce the carbon footprint of cement by a factor of 6**, with identical or better performance.

In 2020, its use avoided the emission of 710.6 tonnes of CO2 and the extraction of 1,435 tonnes of limestone.**

A unique, clean and revolutionary heating-free manufacturing process:

The manufacturing process for Hoffmann Green cements is based on the **systematic use of abundant co-products** - from industry and construction -as a substitute for natural resources:

- blast furnace slag comes from the metallurgical and steel industry;
- flash clay is a co-product of clay sludge;
- gypsum and desulphogypsum are produced from construction site excavcated material

This innovation makes it possible to produce a carbon-free cement with 0% clinker while preserving natural resources, particularly without the use of quarries.

*A measure of a company's operating profit as a percentage of its turnover. The acronym EBITDA stands for earnings before interest, taxes, depreciation and amortisation.

**https://www.ciments-hoffmann.com/our-commitments/a-csr-strategy-organized-around-3-pillars/

With the absence of a firing process, the carbon impact is significantly reduced compared to the traditional cement manufacturing process.

Without kilns or chimneys, **Hoffmann plants are located as closely as possible to urban areas with major works**, thus serving the three main cement markets:

- precast concrete: assembly/delivery of products on site.
- Ready-mix concrete (RMC): transportation of plant-prepared concrete to place of use.
- bags of cement bags: marketed for professionals and the general public.

"Hoffmann Green's purpose is to act on the climate and the environment in a different way and right now, by designing and producing low carbon cements with 0% clinker. Thanks to our innovative technological solutions, construction players will be able to significantly reduce their carbon footprint with eco-friendly concrete to create the sustainable cities of tomorrow."

*A measure of a company's operating profit as a percentage of its turnover. The acronym EBITDA stands for earnings before interest, taxes, depreciation and amortisation.

Legal information

About Mirova

Mirova is an asset-management company dedicated to sustainable investment and an affiliate of Natixis Investment Managers. Thanks to its conviction-led management style, Mirova's objective is to combine a quest for long-term value creation with sustainable development. Pioneers in many areas of sustainable finance, Mirova's talents are committed to innovation in order to provide their clients with high environmental and social impact solutions. Mirova and its affiliates manage €25,9 billion as of 30 September 2021. Mirova has been awarded the B Corp* label and the status of "Entreprise à Mission" (mission led company). *References to a ranking, award or label do not prejudge the future performance of the fund/fund or the manager.

This document is a non-contractual document for information purposes only This document is intended solely for professional and non professional clients as defined by MiFID. If it is not the case and you receive this document by mistake, please destroy it and inform Mirova immediately.

The Mirova Europe Environmental Equity Strategy is exposed to the following risks: The specific risks of investing in the Sub-Fund are linked to: Capital Loss, Equity securities, Small, Mid and Large Capitalization Companies, Exchange rates, ESG Driven Investments, Geographic concentration, Portfolio concentration, sustainability risk. This document is a non-contractual document for information purposes only.

This document does not constitute or form part of any offer, or solicitation, or recommendation to subscribe for, or buy, or concede any shares issued or to be issued by the funds managed by Mirova investment management company. The presented services do not take into account any investment objective, financial situation or specific need of a particular recipient. Mirova shall not be held liable for any financial loss or for any decision taken on the basis of the information contained in this document, and shall not provide any consulting service, notably in the area of investment services.

The information contained in this document is based on present circumstances, intentions and guidelines, and may require subsequent modifications. Although Mirova has taken all reasonable precautions to verify that the information contained in this document comes from reliable sources, a significant amount of this information comes from publicly available sources and/or has been provided or prepared by third parties. Mirova bears no responsibility for the descriptions and summaries contained in this document. No reliance may be placed for any purpose whatsoever on the validity, accuracy, durability or completeness of the information or opinion contained in this document, or any other information provided in relation to the strategy. Recipients should also note that this document contains forward-looking information, issued on the date of this presentation. Mirova makes no commitment to update or revise any forward-looking information, whether due to new information, future events or any other reason. All financial information, notably on prices, margins or profitability, shall be indicative and shall be subject to change at any time, in particular depending on market conditions. Mirova reserves the right to modify or remove this information at any time without notice. The information contained in this document is the property of Mirova. It may not be communicated to third parties without the prior written consent of Mirova. It may not be copied, in part or in whole, without the prior written consent of Mirova. The distribution, possession or delivery of this document in some jurisdictions may be limited or prohibited by law. Persons receiving this document are asked to learn about the existence of such limitations or prohibitions and to comply with them.

Mirova voting and engagement policy as well as transparency code are available on its website: www.mirova.com.

Non-contractual document, issued in December 2021.

MIROVA

French Public Limited liability company with board of Directors
Regulated by AMF under n°GP 02-014
RCS Paris n°394 648 216
Registered Office: 59, Avenue Pierre Mendes France – 75013 – Paris
Mirova is an affiliate of Natixis Investment Managers.

NATIXIS INVESTMENT MANAGERS

French Public Limited liability company
RCS Paris n°453 952 681
Registered Office: 43, Avenue Pierre Mendes France – 75013 – Paris
Natixis Investment Managers is a subsidiary of Natixis.

NATIXIS INVESTMENT MANAGERS INTERNATIONAL

French Public Limited liability company
Regulated by AMF under n° GP 90-009
RCS Paris n°329 450 738
Registered Office: 43, Avenue Pierre Mendes France – 75013 – Paris
Natixis Investment Managers International is an affiliate of Natixis Investment Managers.