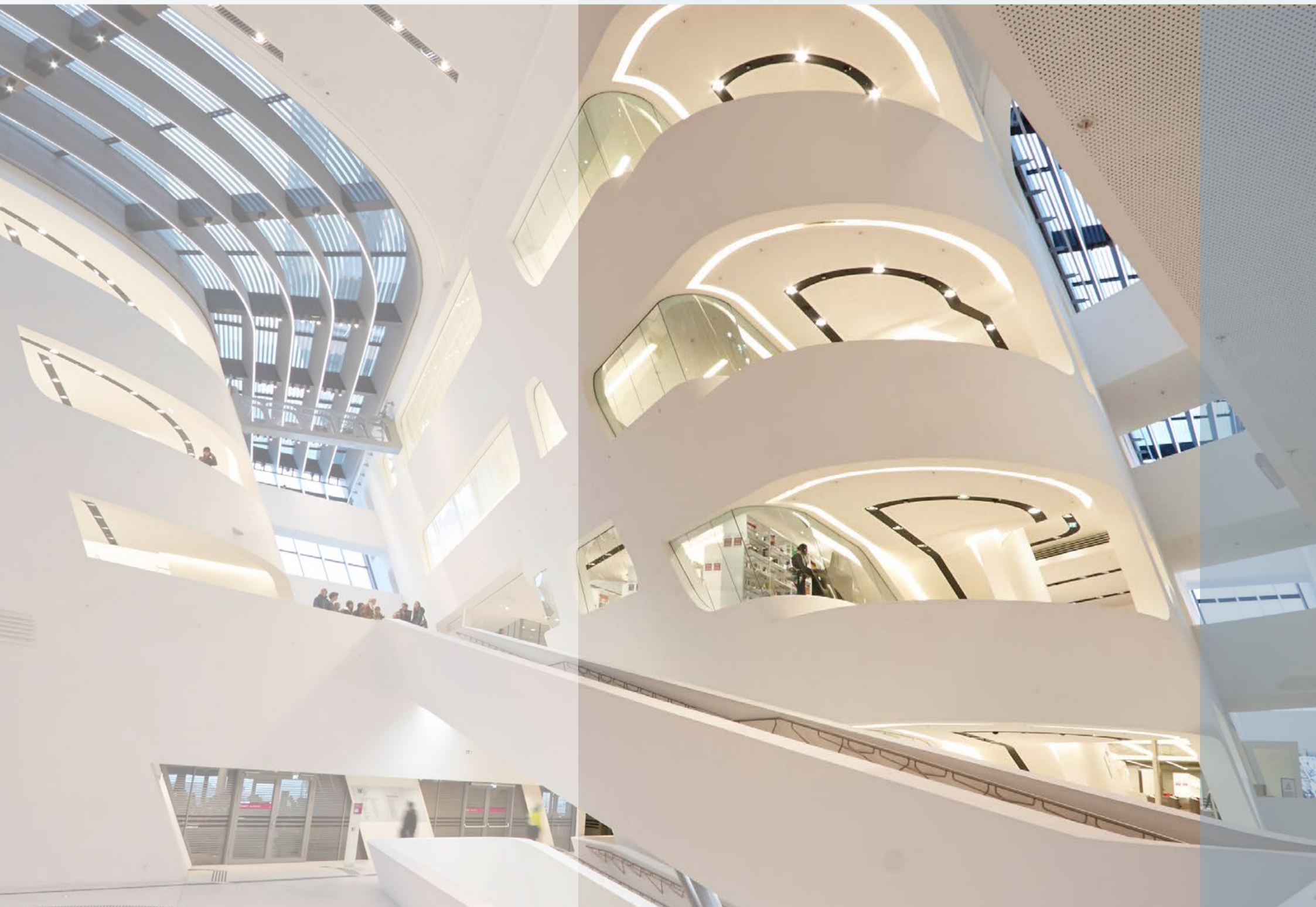


# Towards Climate Neutrality with Gypsum

The European  
gypsum industry's  
journey to Net-Zero





The gypsum industry is an enabling sector and is actively contributing to achieving Europe's carbon neutrality objectives through:

**Reducing resource and energy use through manufacturing transformation.**

**A switch to renewable energy sources.**

**A higher share of recycled, alternative and/or low CO<sub>2</sub> raw materials.**

**Innovative solutions for the built environment.**

**Engagement & collaboration with the full value chain.**

A stable and forward-looking economic and policy framework is needed to maximise the industry contributions to a net-zero building sector.

Photo credit cover: © Peter Kubelka, Wiener Wirtschaftsuniversität

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# Gypsum: An essential mineral for lightweight construction

**Eurogypsum** is the European association representing the construction industries, with large and small companies who source and manufacture gypsum products, such as plaster, plasterboard or gypsum blocks.

**Gypsum** is a mineral sourced domestically, with a history and tradition anchored in Europe's landscapes and architectural heritage.

Thanks to domestic production and the global leadership of European countries such as Spain, Germany and France, the European gypsum manufacturers are actively contributing to the **EU's open strategic autonomy**.

**Gypsum** is a mineral used for sustainable construction, mainly to produce building boards, such as plasterboard or gypsum fibreboards, as well as building and decorative plasters. Gypsum-based products are essential elements of lightweight systems used for interior partitioning, lining and ceilings in new construction and renovation. They provide affordable solutions for safe and comfortable buildings, with outstanding acoustic and air quality performance.



The most significant part of Europe's gypsum is used to produce plasterboard, which is essential for lightweight construction. Lightweight construction is based on systems, including metal or wood framing with lightweight building boards. These systems will play a major role in decarbonising our building stock. The production of lightweight construction solutions is significantly less CO<sub>2</sub>-intensive than conventional construction systems, which are more heavyweight and can involve products with higher embodied CO<sub>2</sub><sup>1</sup>.

Lightweight construction solutions are also more recyclable and can be built in half the time, with respect to standard building methods. Additionally, lightweight constructions are more flexible, adaptable and extend the building's lifespan. As they are built with non-combustible materials, they also offer improved fire safety.

Therefore, lightweight sustainable construction makes a critical contribution to new build and renovation of our buildings, delivering lower embodied CO<sub>2</sub> and thus contributing to meeting the EU's net-zero ambitions.

## The European gypsum industry



**1.7 billion m<sup>2</sup>**  
boards



**8.2 million tonnes**  
of plaster &  
other gypsum  
products



**€7.7 billion**  
Annual  
turnover



**160**  
Quarries



**101**  
Factories



**16,000**  
People  
directly  
employed

1. More on lightweight and sustainable construction at: <https://eurogypsum.org/sustainable-construction/>



# 2.

## Providing value to society, while decreasing our environmental footprint



### Energy efficiency

Gypsum products are a major component of energy efficiency systems for buildings. Due to their performance and their ability to redesign buildings' interiors in the most flexible way, gypsum solutions are an integral part of insulation systems, providing comfortable rooms in winter and summer and also enhancing the well-being of occupants.



### Reducing emissions

Gypsum products are one of the least CO<sub>2</sub>- and energy-intensive construction products, thanks to a low-energy production process.

Over the last decades, our industry has made significant progress by improving the energy efficiency of its production processes. The energy needed for the manufacturing of gypsum products has been substantially reduced thanks to ongoing innovation (refer to sections 3 and 4). The industry continues to apply constant process improvements and is now active in expanding the use of low-carbon energy sources and fuels throughout the value chain.



### Protecting ecosystems and restoring nature

Gypsum sourcing is an extractive activity, which entails the temporary use of land. It is carried out in full alignment with the biodiversity conservation and restoration goals set by the European Union in its Biodiversity Strategy for 2030. Our commitment is visible in the application of the Extractive Sector Species Protection Code of Conduct, as well as our best practices of biodiversity management<sup>2</sup>.



### Promoting a circular economy

Gypsum is a unique mineral, which in principle is eternally recyclable. The gypsum industry has been championing and actively deploying closed-loop recycling models for plasterboard in Europe. This is a perfect example of a circular economy model contributing to optimising resources and reducing waste<sup>3</sup>.



### Minimising transport

The gypsum processed by our industry is almost entirely supplied from European countries. 101 plaster and plasterboard plants are established in Europe, as close as possible to the customers and the national markets, minimising transport-related emissions.

## DID YOU KNOW?

The industry has also been contributing to cleaner air through technologies for the flue gas desulphurisation (FGD) in coal power plants. This produces a synthetic form of gypsum which, in turn, is used as a substitute to gypsum rock in our manufacturing activities.

As this source of recycled raw material diminishes, Eurogypsum members have continued their proactive approach to closed-loop waste and resource recycling and are now focussed on replacing some of this material with construction and demolition waste.

4 2. More on our biodiversity actions at: <https://eurogypsum.org/biodiversity/>  
3. More on circularity in the gypsum industry at: <https://eurogypsum.org/circularity/>

# 3-

## Best practices: Industry actions & commitments



### Decarbonisation is an “all-in” effort – Etex, Auneuil plant (France)

As of 2023, the plant has replaced its old dryer, installing a new generation dryer that reduces CO<sub>2</sub> emissions by 5,900 tonnes (20% of site emissions) and improves energy efficiency by 10%. Etex also uses 15% of recycled gypsum in the Auneuil plant. The company partners with a specialised company to increase the use of recycled material up to 30% and further save on the transport of the recycled gypsum to the plant.



### Electrifying plasterboard production with renewable energy - Saint-Gobain Gyproc, Fredrikstad plant (Norway)

In 2023, Saint-Gobain Gyproc started decarbonised<sup>4</sup> production at its Fredrikstad facility. The innovative and pioneering project involved plant modernisation, enhanced heat recovery and process efficiency improvements to reduce energy consumption by 30%, whilst increasing production capacity by 40%. The plant was also electrified and now utilises hydroelectric power. The cumulative impact of these efforts is a reduction of CO<sub>2</sub> emissions by 23kt annually. The initiative involved an investment of more than €25 million, including a €7 million subsidy from the Norwegian State enterprise – Enova.



### Partnerships for energy optimisation – Knauf, Hobro plant (Denmark)

The Knauf plant in Hobro, Denmark, has been collaborating since 2020 with the local heating plant Hobro Varmeværk to supply 80% of the surplus heat from the plaster production to the local district heating network. The potential for external heat supply is calculated at 18,000 MWh, equivalent to the annual heat consumption of 1,000 households. Hobro Varmeværk will soon be supplied with about a third of its energy from the Knauf plasterboard factory. Knauf's share of the project amounts to DKK 10 million.





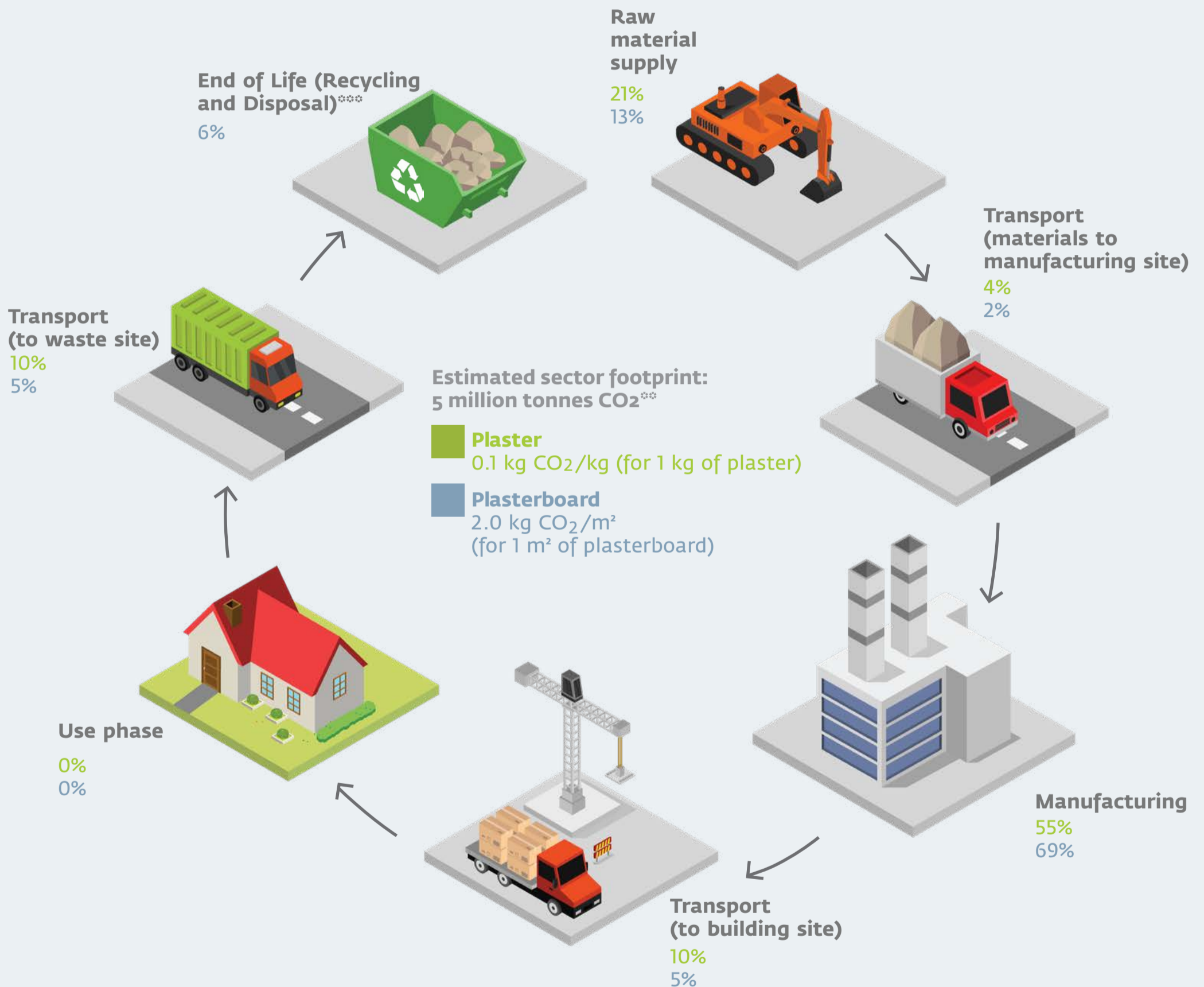
# 4.

## Our life cycle carbon footprint today

The emissions from the production of plaster and plasterboard are estimated to represent around 1-3% of the total annual emissions from the production of construction products in the EU\*.

By greening the fleet via the adoption of carbon-neutral or net-zero transport modes, it will be possible to entirely decarbonise emissions from transportation throughout the value chain.

Gypsum, being eternally recyclable, represents a great example of the potential for the quantity of secondary raw material to increase. A policy framework that favours recycled raw material over landfilling and establishes high-quality, clear rules on recycling can help boost the availability of recycled gypsum to manufacturers and help decrease emissions from raw material extraction.



Energy represents a major share of the emissions in manufacturing. The shift to green electricity and alternative energy sources, such as biofuels and hydrogen, is the objective of our industry, in line with the goals outlined in the EU Hydrogen Strategy and the REPowerEU plan. By switching to renewable electricity, for example, our industry can decarbonise its scope 1 and 2 CO<sub>2</sub> emissions (see section 3). In this context, a stable policy framework encouraging affordable access to renewable energy sources is necessary to accelerate this shift.

Our industry aims to decarbonise emissions of raw materials as far as possible by collaborating, engaging and working with our suppliers and stakeholders in the value chain, to achieve our net-zero goals.

\* Estimation based on the total CO<sub>2</sub> emissions from the production of construction products (250 million tonnes of CO<sub>2</sub>) quoted in: European Commission: *Staff working document SWD(2022) 88*, 2022.

\*\*The carbon footprint of the sector, representing all products, is estimated to be in the region of 5 million tonnes of CO<sub>2</sub>, with plaster representing up to around a quarter of this total. Nevertheless, the carbon footprint and the relative impacts per life cycle stage will vary, depending on the various product ranges being produced.

\*\*\*The CO<sub>2</sub> emissions from plaster, at the end of life, are considered negligible for the following reasons: (1) no significant greenhouse gases should be emitted from the plaster itself; and (2) no significant processing impacts are expected because the recycling of plaster waste is currently very rare, due to technological, logistical and economic challenges.

# 5.

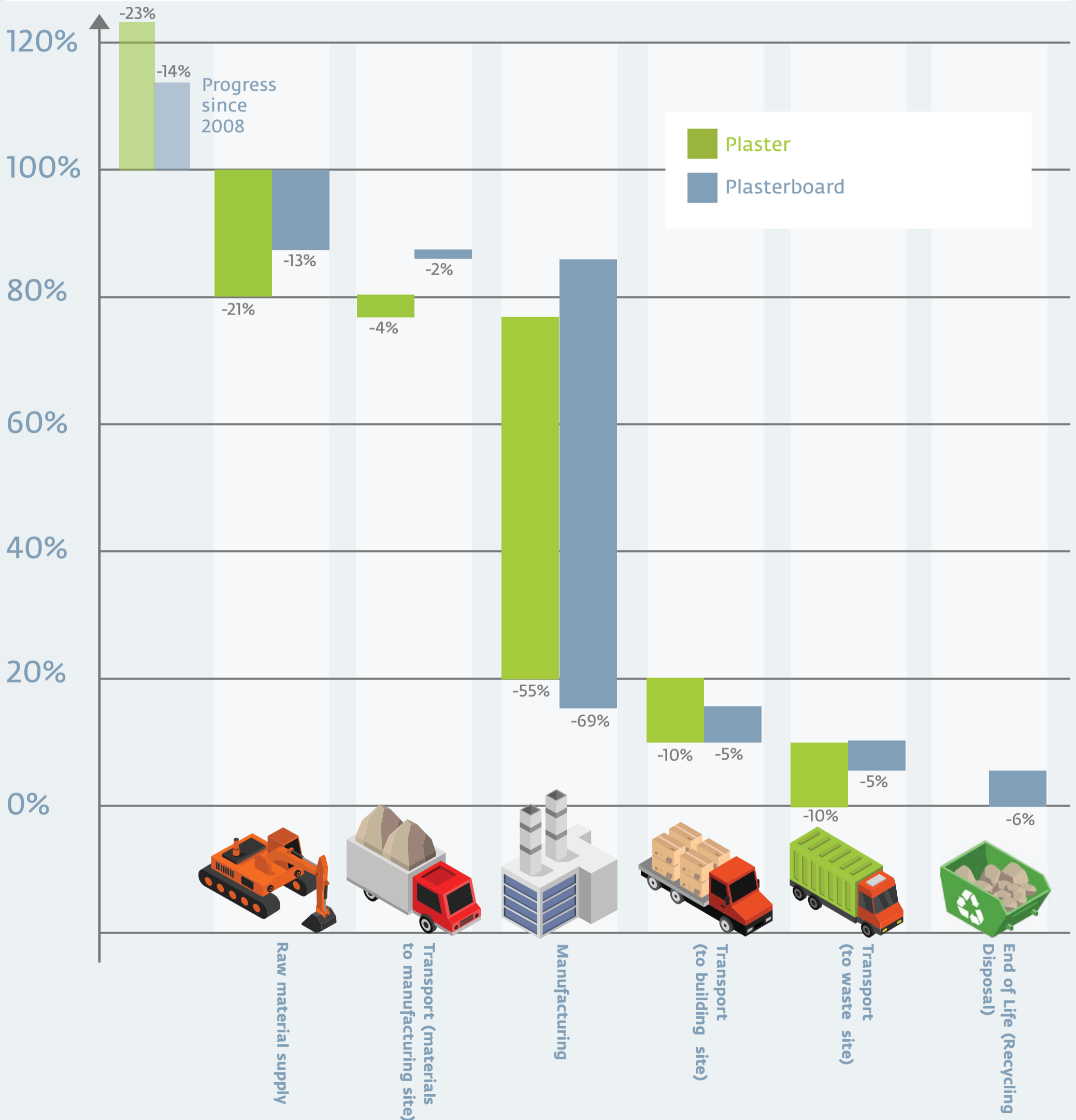
## Our journey towards net-zero

Gypsum-based solutions have a crucial role to play in decarbonising the building stock, due to their low embodied carbon and integration into energy efficiency systems.

Furthermore, we are committed to drastically reducing our emissions and helping the European Union to meet its climate neutrality objectives by 2050. Efforts are needed, and our ability to achieve net-zero emissions requires a contribution from all actors along the gypsum value chain.

The energy needed for the manufacturing of gypsum products/solutions has already been reduced substantially - estimated to have decreased by over 60% since the 1950s.

These two graphs represent the industry emission reduction plans by 2050 compared to today's baseline and considering two illustrative products: plaster and a standard plasterboard<sup>5,6</sup>.

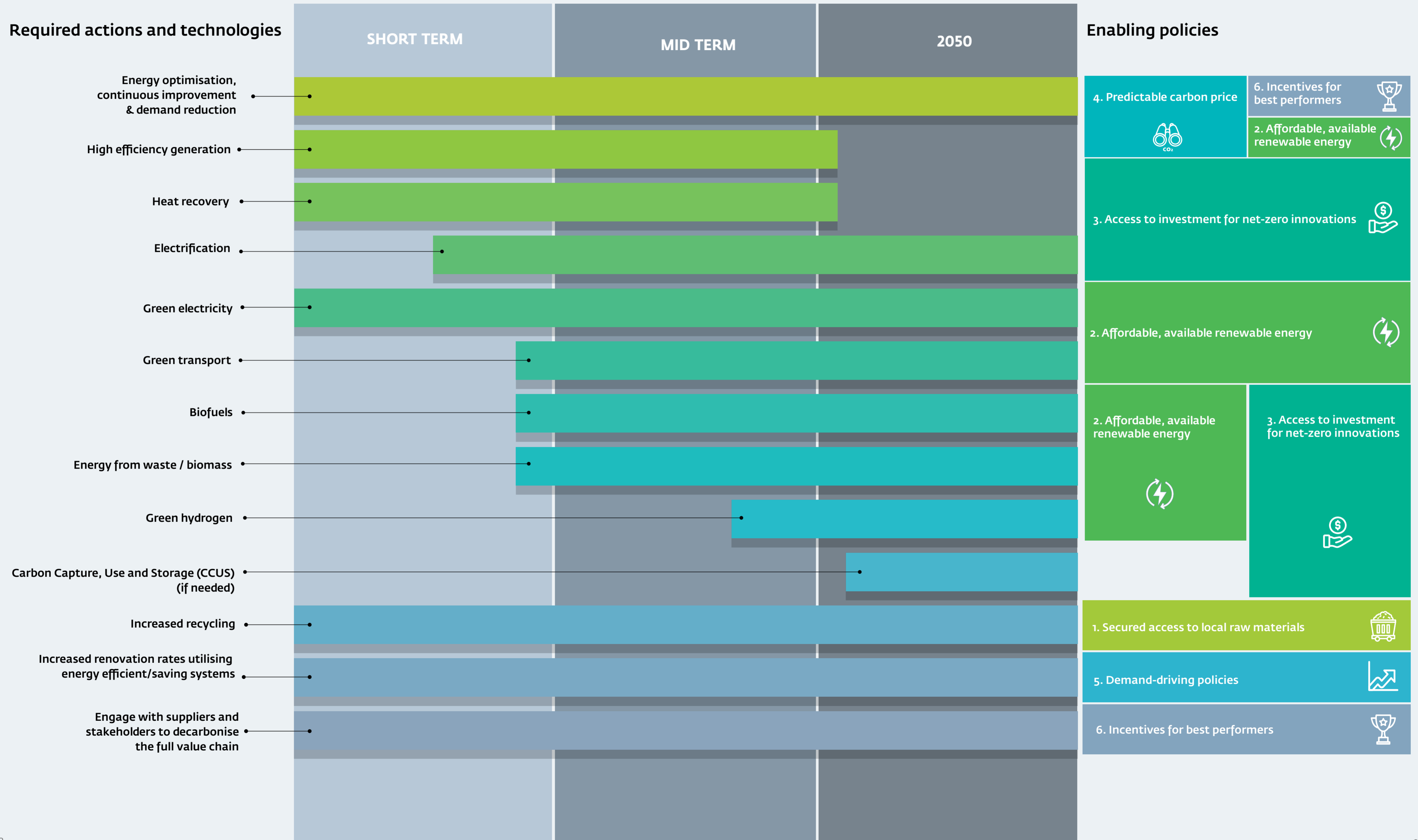


5. Illustrative examples, based on a simplified life cycle assessment of two general plaster and plasterboard products. The modelling assumptions and results were cross-checked against existing third party verified Environmental Product Declarations (EPDs) from the respective companies and other industry data to try to ensure representativeness. For more information, see section 8.

6. Estimates based on comparison of median EU Emissions Trading System (ETS) benchmarking data 2007/2008 – 2016/2017.

# 6.

## Connecting solutions and enablers across timelines





## 7.

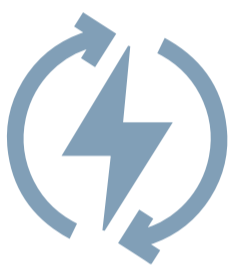
## How to make it happen?

A stable and forward-looking economic and policy framework is needed to unleash the industry's full potential and continue minimising its carbon footprint, providing solutions necessary for the green transition of the EU's building stock.

As demonstrated by our case studies, with the right support frameworks in place, it is possible to decouple growth from environmental impact.



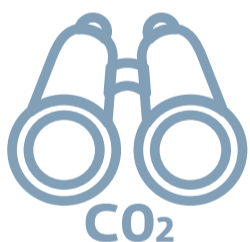
**Ask 1: Secured access to local raw materials** to maintain domestic production, short supply distances and keep contributing to the **EU open strategic autonomy**, through streamlined **permitting procedures** for extraction projects and removing barriers to **gypsum recycling**.



**Ask 2: Affordable and available renewable energy** in sufficient volumes, to bring about emissions reductions through greener energy supply and electrification of the processes, including through industrial symbiosis and cross-sectoral partnerships such as hydrogen valleys or green tech hubs.



**Ask 3: Access to investment, including EU funding programmes, for net-zero innovation**, with a stable policy landscape to foster market confidence and allow the gypsum industry to develop new innovative solutions and perform the necessary transformation of our processes and supply chains.



**Ask 4: Use of a predictable carbon price signal** to ensure companies can make the very significant investments necessary to decarbonise their production processes and value chains.



**Ask 5: Demand-driving policies** supporting new build construction and building renovations, as well as novel building techniques, and encouraging the use of more sustainable lightweight construction to drive the transformation of Europe's building stock. Our low-carbon, energy-efficient solutions can contribute significantly to this transition, within a supporting policy context.



**Ask 6: Incentives for best performers**, rewarding enabling businesses and sectors and those creating the biggest contributions to the EU's climate objectives. This should include important facilitating sectors.

# 8.

## If you want to know more

**To download the electronic version of this publication and find additional information, please refer to:**

**<https://eurogypsum.org/towards-climate-neutrality-with-gypsum/>**

**For more information on EPDs of gypsum products, please refer to:**

- <https://www.eco-platform.org/the-eco-epd-programs.html>

- <https://www.environdec.com/home>

- <https://www.hqegbc.org/>

- <https://ibu-epd.com/>

- <https://bregroup.com/>

- <https://www.epd-norge.no/>



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