LEERDAM CRISAL GLASS

Sustainability Report 2025

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Opening *Message*

2025 was a highly intensive year for LCGlass. We continued to move forward with the implementation of strategic, operational, and sustainability initiatives. Key developments included the deployment of an ERP system, production automation, the installation of photovoltaic systems, FSC logo implementation, CSRD readiness and alignment, and the optimization of critical production processes, including the Oxyhybrid furnace at the Portugal site.

Beyond the topics covered in this report, additional initiatives continue to support LCGlass's strategic and sustainability objectives. This report provides a transparent overview of progress across the organization and reflects the collective contributions of all departments.

Transformation processes do not always deliver immediate positive outcomes, and that is where our company's continuous improvement mindset, combined with strong leadership, demonstrates its value. Openness to both positive and adverse developments remains central to the organization's responsible and pragmatic management culture.

On behalf of the LCGlass Sustainability Team, I hope this report offers stakeholders a clear, consistent, and factual view of our progress, supported by an updated structure and presentation. We will continue moving forward, transforming ideas and concepts into real action and measurable results.

"The roadmap to success requires a continuous improvement attitude and getting things really done."

Marco van Valburg
(Sustainable Manufacturing Director LCGlass)

Glass.
A clear choice.

Glass is one of the world's oldest and most adaptable materials, valued for its functional and aesthetic properties.

- Glass is non reactive and helps preserve the original taste and characteristics of beverages and food.
- Free from harmful chemicals.
- Glass is fully recyclable and can be recycled repeatedly without loss of material quality, supporting circular material use.
- Has a clean, elegant look that enhances the visual appeal of any drink, dessert, or appetizer.

A material chosen for its performance and design!

Sustainability *Mission Statement*

Leerdam Crisal Glass, with producing facilities in the Netherlands and Portugal, is one of the leading companies in sustainability developments, with Europe as a front player. Sustainability is part of Leerdam Crisal Glass' overall agenda in securing the future for its organization and stakeholders.

We strive for continuous improvement steps, in direct relation to the three ESG pillars: Environmental, Social, and Governance.

Applying innovative technologies alongside the best industrial practices, training, and development of our team members to enhance a safe and healthy work environment, compliance with legislation, socially responsible behavior, proactive commitment to decarbonization, and support for circular economic principles.

All examples of how we do business while putting our mission into practice. Fostering a transparent and open-minded culture, maximizing motivation and joy at work to support economic resilience.

Major Milestones *in Our Journey*

LCGlass is committed to sustainable and responsible production. Over recent years, the company has implemented targeted initiatives to improve production efficiency, enhance energy performance, and reduce greenhouse gas (GHG) emissions across its operations.

Key actions include completing a Scope 1, 2, and 3 GHG emissions analysis, implementing an ISO 50001 energy management system, and ongoing alignment with the Corporate Sustainability Reporting Directive (CSRD).

The milestones below highlight selected actions supporting LCGlass' decarbonization efforts, regulatory alignment, and long-term operational resilience.

2017

Leerdam
- L1 Oxyfuel Heat Recovery

2024

Crisal
- F1 Oxyhybrid Electric heating
- GPA Crisal x REGA Energy
- Hydrogen-Powered Lehr
- Cullet Recovery Batch House
- Photovoltaic Unit Installation

2025 - 2026

LCGlass
- F1 Optimization phase
- LCGlass conducted a Scope 1, 2, and 3 emissions analysis
- Crisal obtained ISO 50001 energy management certification
- LCGlass aligned its reporting with CSRD requirements

2027

Crisal
- H2 Implementation F1 and Machines

2028

Crisal
- F2 Rebuild

2029

Leerdam
- L1 Rebuild

2032

Leerdam
- L3 Rebuild

2050

LCGlass
- Working toward a substantially reduced environmental footprint through continuous improvement

Our Sustainability *Framework*

ESG*

Environment

Our environmental efforts focus on reducing emissions, improving resource efficiency, and strengthening circular practices across our operations and value chain. Key actions include increasing our own cullet in the batch, using recycled materials in packaging, reducing waste, improving energy efficiency through electrification and renewable energy, and establishing a comprehensive CO_2 baseline across Scope 1, 2, and 3 to establish priorities and continuous improvement. Last but not least, all our packaging is sourced from FSC certified materials.

Social

Our social focus centers on safe and healthy working conditions and active engagement with our communities. Key actions include improvements to workplace conditions through better ventilation, natural lighting, dust reduction, safer workflows, and ergonomic automation. We also strengthen connection and inclusion through employee support platforms, open days for families, schools, and students, and participation in local community and volunteering initiatives.

Governance

Our governance framework focuses on robust systems, reliable data, and clear management systems to support informed and responsible sustainability decision-making. Key actions include strengthening energy and emissions controls through certified, structured systems, completing a comprehensive CO_2 baseline across Scope 1, 2, and 3, CSRD conclusion, ISO 50001, and further developing a clear decarbonization roadmap. At the same time, investments in ERP, risk identification processes, and sustainability reporting projects reinforce transparency, process control, and consistency across our operations.

* Three key factors to align with global sustainability standards

Aligning with *UN* SDGs***

8

Decent Work and Economic Growth

LCGlass aims to promote sustainable economic growth and ensure productive employment and decent work for all. Each step we take is a step towards a more inclusive and sustainable future. Together we pave the way to a greener world!

9

Industry, Inovation and Infrastructure

LCGlass is building a resilient and sustainable future. We're actively engaged in research for decarbonizing processes and promote learning and innovation as we prepare our teams for technological shifts in decarbonization. With these actions and many more, we contribute to future-ready processes, sustainable industrialization, and climate action.

12

Responsible Consumption and Production

LCGlass is dedicated to enhance efficiency and sustainable development. We're improving energy efficiency and sustainability by enhancing transparency and reducing resource use. Engaging in diverse actions allows us to contribute significantly to global sustainability efforts.

CSRD

Corporate Sustainability Reporting Directive

LCGlass is building a resilient and sustainable future. We're actively engaged in research for decarbonizing processes and promote learning and innovation as we prepare our teams for technological shifts in decarbonization. With these actions and many more, we contribute to future-ready processes, sustainable industrialization, and climate action.

* United Nations
** Sustainable Development Goals

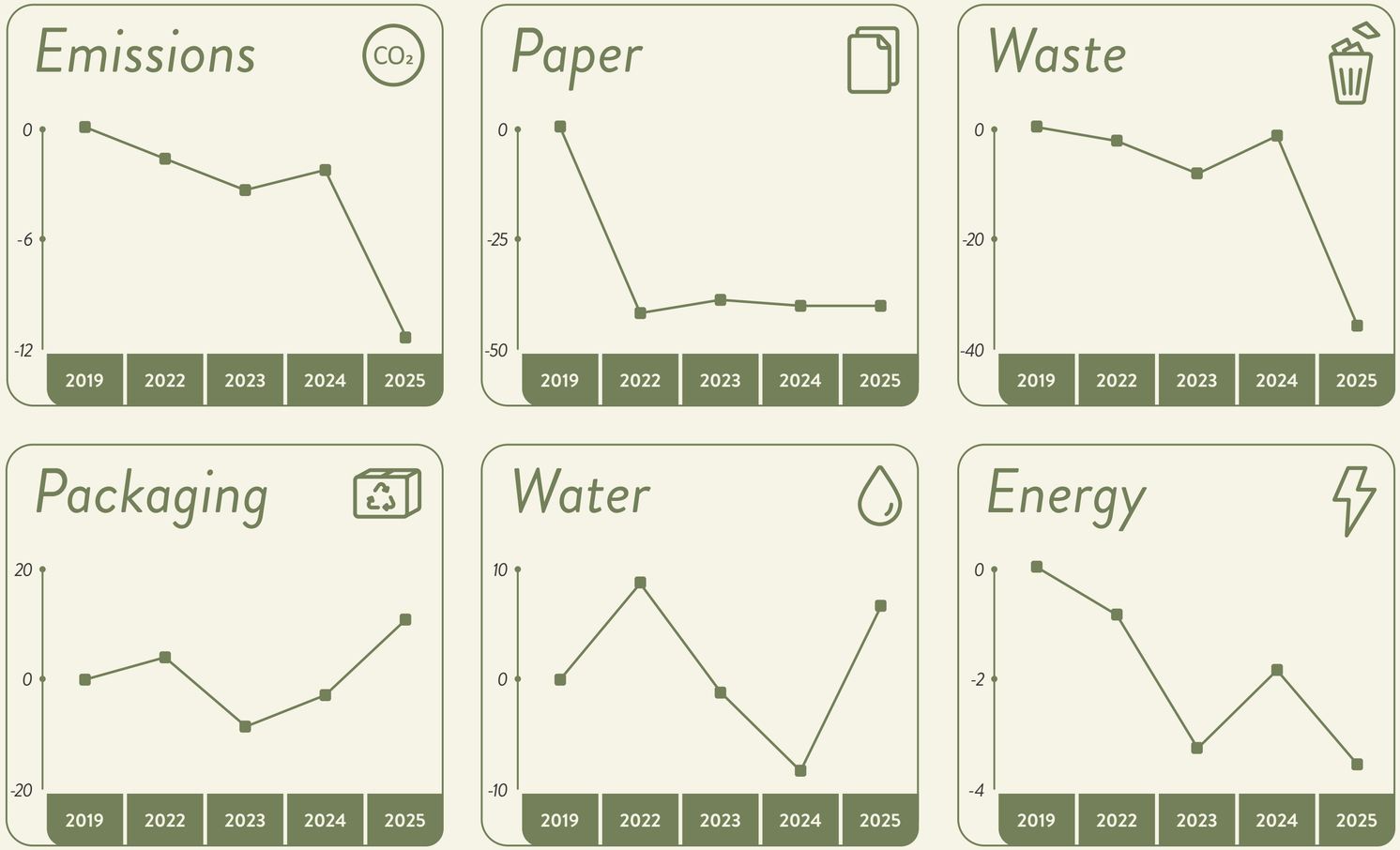
Key *Indicators*

Key *Indicators*

The 2026 LCGlass report focuses on six core environmental indicators: CO_2 emissions, paper use, waste, recycled packaging, water and energy. Based on insights from the CSRD project, the company plans to expand its indicators and targets in 2026 and 2027, with water and energy added in 2025.

Continuous improvement remains a priority, supported by organizational and technical measures to reduce environmental impact. As an energy-intensive industry, LCGlass continues investing in technologies to improve glass melting and production efficiency, alongside initiatives targeting material use, waste reduction, and packaging performance. Packaging trends highlight the need for closer collaboration with customers and suppliers, while water management will gain increased focus through dedicated projects and actions in the coming years.*

Performance Improvement vs 2019 Baseline (%)



* The next slides explain the graphics and the key drivers behind the trends.

Emissions

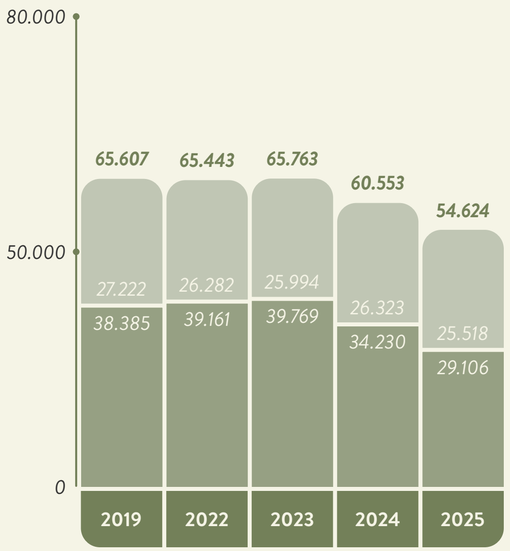
CO_2 emissions (Scope 1) decreased significantly due to improved melting efficiency, driven by the Oxyhybrid furnace installed at the Crisal plant in 2024. By combining electric heating with natural gas and oxygen, it increases electric melting and reduces direct CO_2 emissions.

In 2025, the Crisal plant reduced CO_2 emissions per ton of glass melted by 18%, contributing to a 9% overall improvement for LCGlass versus 2024, despite some negative impact from previous furnace ageing.

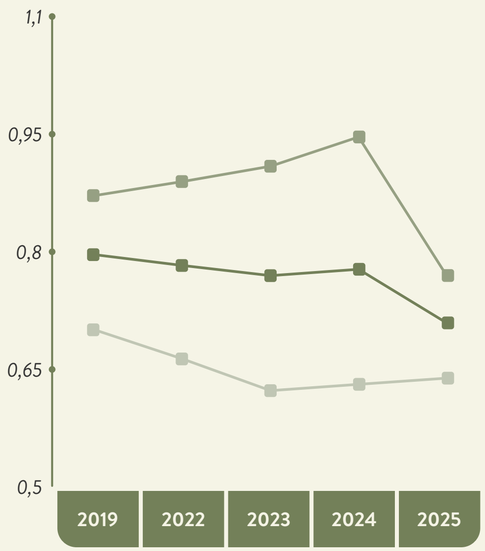
Throughout 2025, the operational team increased electric heating up to 60% of melting, with further testing underway to optimize performance. Additionally, the 2024 capability to reuse nearly all internal cullet at Crisal supports further CO_2 reduction and lowering the need for new raw materials.

total crisal leerdam

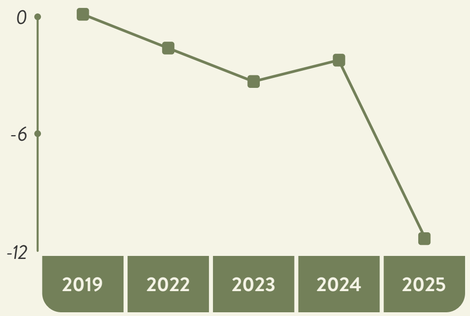
Ton CO_2



Ton CO_2 / Ton melted



% improvement each year versus 2019



Paper

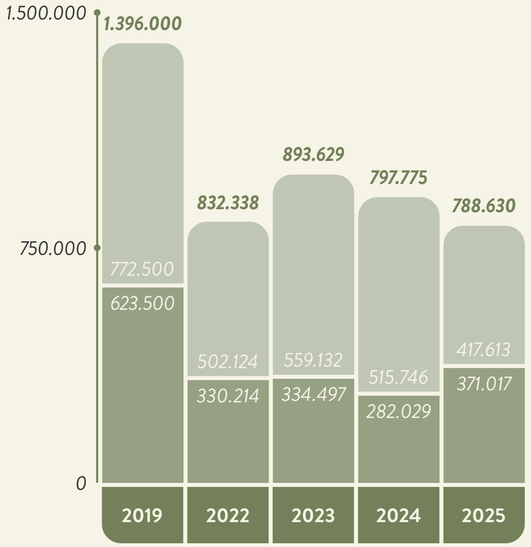
LCGlass continues to reduce paper consumption across its operations. Pallet labelling remains a key focus area, as it is essential for identifying finished products throughout the supply chain.

In 2025, LCGlass implemented a new ERP system at the Crisal location and Leerdam site at the beginning of 2026. Projects of this scale require time and organizational adjustments to be fully embedded.

Positive impacts are being observed from the introduction of a print management system at both sites over the past two years, combined with the implementation of the new ERP system. Monthly data on paper consumption is now shared with leadership teams, supporting ongoing monitoring and the identification of further improvement opportunities. Pallet labelling remains a key focus area, as it is essential for identifying supplies and finished products throughout the supply chain.

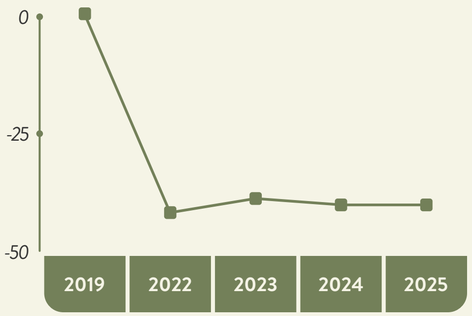
total crisal leerdam

Paper prints



Paper prints / 1.000 products sold

% improvement each year versus 2019



Waste

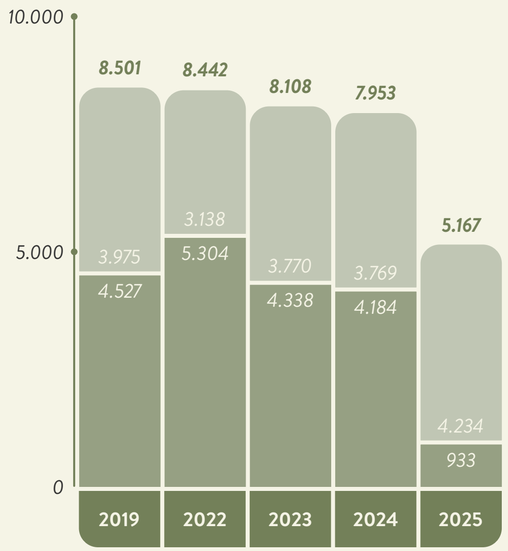
By enabling the reuse of almost all internal cullet at the Crisal operation, the waste volume was significantly reduced in 2025 while before it was treated as waste. Total waste at Crisal decreased by 78% compared to the previous year, contributing to a 35% reduction in overall LCGlass waste.

Of the remaining waste, 95% is directed to the recycling flow, so a minor amount is sent to the landfill. LCGlass continues to work closely with waste treatment partners, which leads to improved understanding and optimization of our waste.

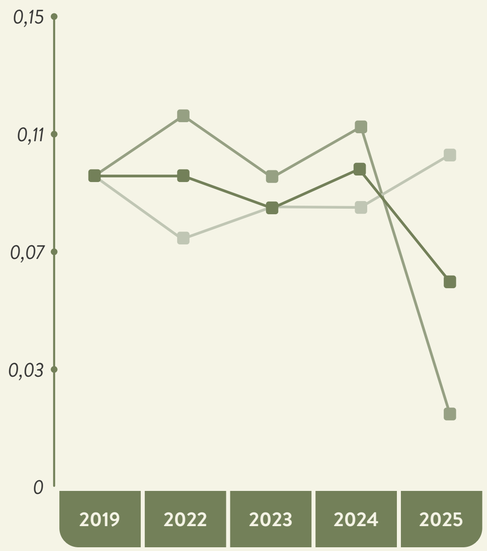
In addition, several projects identified through the CSRD project are planned for implementation in the coming years to further reduce waste generation across operations.

total crisal leerdam

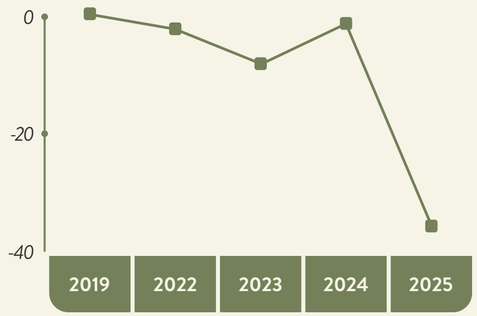
Tons waste



Ton waste / Ton melted



% improvement each year versus 2019



Packaging

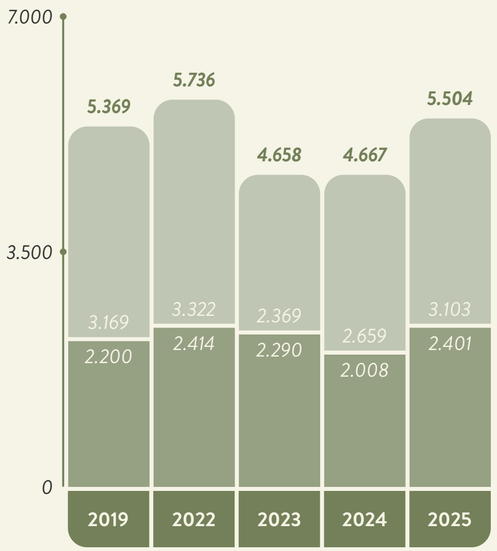
Packaging material usage remains an area requiring attention. In 2025, cardboard consumption increased by 13% compared to the previous year and by 11% compared to the 2019 base year.

An upward trend in tonnes of cardboard used per packed product has been observed across both operations over recent years. LCGlass will further analyse the underlying drivers and define targeted actions to reduce material use.

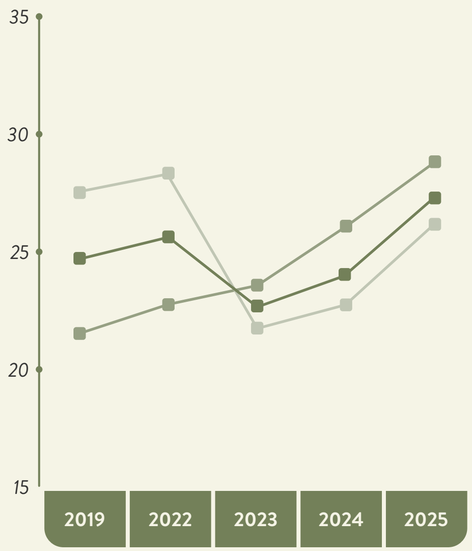
At the same time, all ONIS packaging is made entirely from recyclable materials, and all ONIS, Royal Leerdam, and private-label packaging now carries FSC certification. This supports LCGlass's approach to responsible sourcing of packaging materials.

total *crisal* *leerdam*

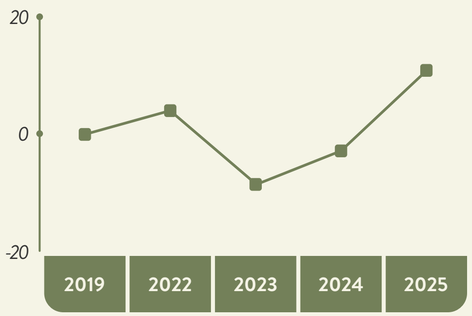
Tons cardboard



Ton cardboard / Million pcs



% improvement each year versus 2019



Water

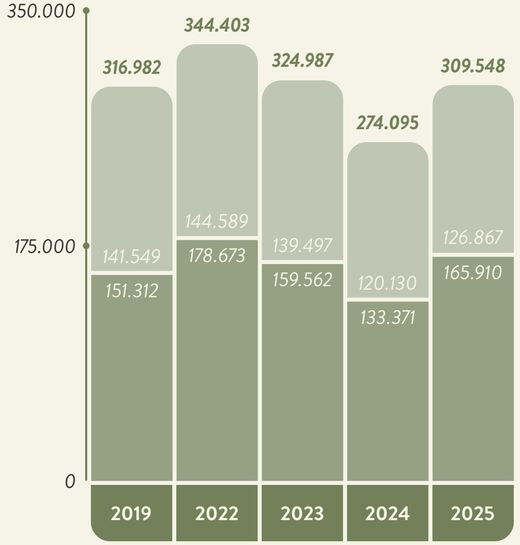
Water is an increasingly scarce resource, and LCGlass aims to reduce consumption, increase reuse through closed-loop systems, and ensure all discharges meet strict quality standards.

In 2025, water use per melted ton (m^3/ton) increased at both Leerdam and Crisal. This is partly due to lower sales volumes, leading to machine downtime and an increase in average water use per ton. The impact varies depending on the production process.

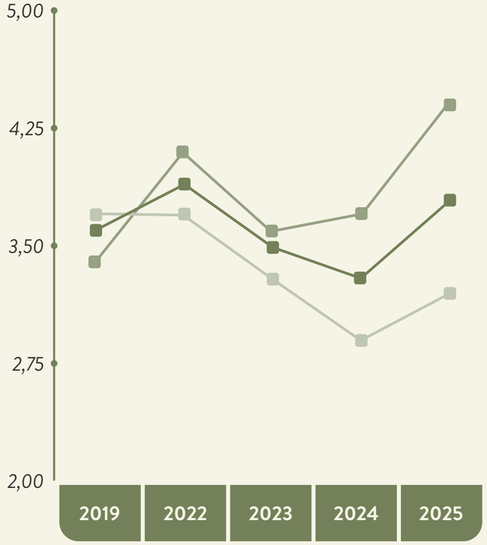
Despite this, water management requires deeper analysis to better understand the drivers and identify opportunities for improvement. This is also reflected in the CSRD double materiality assessment, where water use is identified as a relevant environmental topic requiring ongoing monitoring and action.

total crisal leerdam

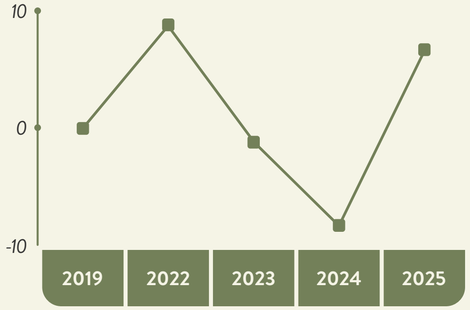
m^3 water



m^3 water / Ton melted



% improvement each year versus 2019



Energy

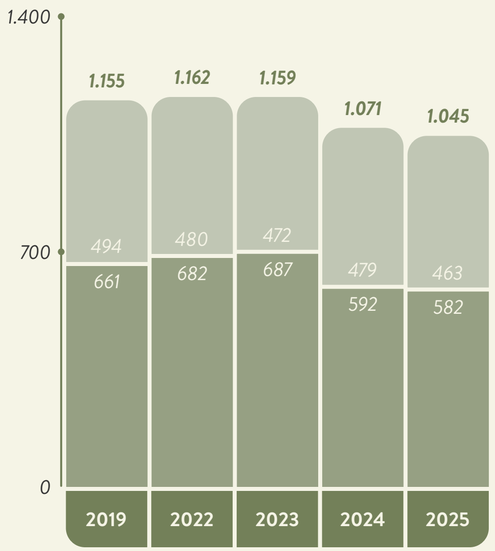
Energy consumption is measured in terajoules (TJ) and includes natural gas and electric power, as well as minor utilities. Energy efficiency improvements and emissions are related, as they affect each other.

Years 2024 and 2025 were impacted by slower sales, which negatively affected the energy efficiency of the melting furnaces. This impact was partly offset by efficiency improvements, including the commissioning of the new Oxyhybrid furnace, which increases the share of electric heating (during its first operational year in 2025, the furnace was not yet operated at full electric capacity). Future furnace rebuilds are expected to support a structural reduction in energy consumption per tonne of glass melted, particularly at the Crisal site.

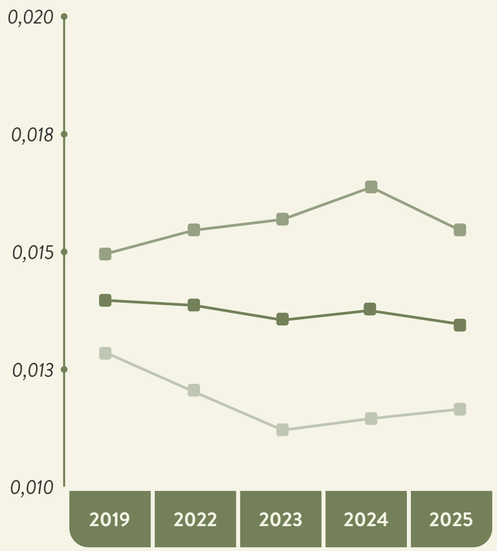
Operating the Oxyhybrid furnace at stable electric heating levels over a full year will support further improvement in TJ/melted Tons in the coming years.

total crisal leerdam

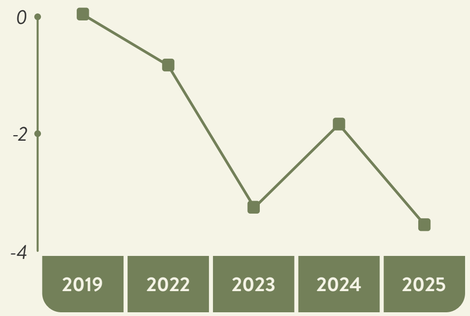
Energy TJ



Energy TJ / Ton melted



% improvement each year versus 2019



Sustainability in Action
Exploring Our ESG Goals

The impact of Storm Kristin in early 2026 was a strong reminder of the importance of resilience, safety, and cooperation. Despite significant disruption, our teams and partners responded with a strong focus on people's safety, operational continuity, and rapid recovery. The experience reinforced our commitment to strengthening preparedness and responsible operations in the face of external challenges.

Across our sites, we continue to take practical, measurable steps to reduce environmental impact. These include improving energy efficiency through electrification, LED lighting, energy management systems, and on-site renewable electricity generation, as well as implementing new technologies such as Oxyhybrid furnaces, alternative fuels, and hydrogen readiness.

We are increasing the use of cullet, reducing waste through reuse and process optimization, and working with suppliers and logistics partners to lower emissions across our value chain. These actions are supported by detailed CO_2 analyses across Scope 1, 2 and 3, which help guide priorities and future improvements.

Our social focus centers on employee well-being, safety, and engagement with the communities around our sites. We have improved working conditions through better ventilation, temperature control, ergonomics, automation, and safer workflows. At the same time, we actively promote inclusion, learning, and openness through family open days, partnerships with schools and universities, community events, volunteering initiatives, and internal platforms that improve access to information and support services.

Strong governance and data reliability underpin all these efforts. We are strengthening internal systems, including ERP and energy management tools such as ISO 50001 energy certification, to improve process control, transparency, and the quality of sustainability-related information.

The following pages present selected examples of these actions in practice.

Environment

Rodrigo Serra
(EHS Supersivor / ETS Manager Crisal)

Currently, it is not possible to imagine the future of CRISAL without considering sustainability. In this framework, we have made significant investments in the electrification of processes to replace natural gas, in the incorporation of internal waste into the glass-melting bed, and in continuous improvements in energy efficiency. However, the environmental restrictions imposed by the European Union under the EU ETS make this transition particularly challenging. The recent change in the fuel benchmark for 2026–2030, from 42.6 to 28.1 CO_2/TJ, is impossible to meet without a viable alternative to natural gas, which has a value of 56.6 CO_2/TJ.

Renewable gases are still not available in sufficient quantity or at a price that enables a fair and sustainable transition. In addition, some EU rules do not properly recognize the investments made by companies, as is the case with the circular economy: by increasing the use of cullet and reducing carbonated raw materials, we are penalized in the allocation of CO_2 emission allowances.

CRISAL has been actively addressing these limitations, both individually and through APICER, working with national and European authorities and calling for more balanced conditions compared with competitors from non-EU countries.

Environment

Photovoltaic Unit *generated 1500 MWh, equivalent to 944 trees planted and 691 CO_2 emissions avoided.*

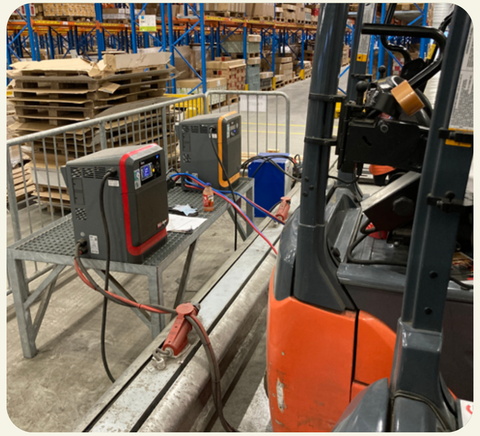
Oxyhybrid Furnace *contributed to 18% reduction in CO_2 emissions per tone of glass melted at Crisal site.*

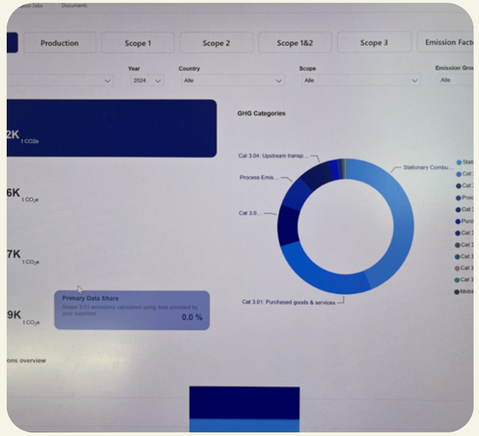
Oil skimmer *installation at Crisal to remove the oil before the water is moving into the internal circuit.*

Batch house *dust aspiration system improvements enable material reuse and reduce dust levels through a closed circuit. Also improving air quality for our team members.*

Environment

Electric forklifts *management system to balance forklift battery to reducing grid peak demand by the end of working day.*





CO2 Scope 1, 2 and 3 *data currently under optimization.*

Bulk bags *installation at Crisal site has reduced material waste by allowing the reuse of raw materials.*

Water Coolers *replacement at Leerdam site to reduce water leakage issues, relocate at a better spot for maintenance and health aspects.*

Social

LCGlass remains committed to supporting employee motivation and engagement.

We continue to organize initiatives, events, and projects aimed at fostering motivation, well-being, and a positive working environment. Both internal programs and external initiatives are implemented to sustain motivation levels, boost our attractiveness as an employer, support employee health and welfare, and encourage long-term engagement.

Our employees and the environment in which we operate are the foundation of our organization and its results!

"Sustainability isn't about the budget; it's about our behavior."

Linda Bakker
(HR Manager Leerdam)

"Supporting people consistently is what creates stronger teams and sustainable results."

Raquel Simões
(HR Manager Crisal)

Social

Celebrating *International Women's Day, small gestures that count.*

Erasmus students *visited Crisal as part of an educational site visit.*

Open Days *at Leerdam and Crisal to share in loco new investments and what we do best.*

Ecological walk & Forest clean-up *and activity involving Crisal employees and "One Piece After Another" Environmental organization.*

Social

Forklift workflow *improvement at the repack area, Gorinchem, for the safety of our team.*

Improved ventilation *in the batch and furnace area to improve work conditions.*

Automation *In/off-line automatic loading of master carton boxes, at Leerdam site, line L96, for ergonomics and production efficiency.*

Automation *at the Leerdam site with the installation of a robot for handling pallets and product flow.*

Governance

We continuously work to improve the efficiency of our production processes. Through process and shape optimization, we aim to increase production speed and improve material yield. These measures contribute to reducing material use and energy consumption in our operations. By optimizing glass distribution and production stability, we work to minimize material losses while maintaining high quality standards. We monitor these improvements through internal performance indicators to ensure consistent progress over time.

We believe that incremental improvements in operational efficiency can support more resource--conscious manufacturing practices.

Bas Coenders
(Quality & EHS Manager Leerdam)

Nuno Tonico
(Quality & EHS Manager Crisal)

Implementing an ISO 50001 Energy Management System is about much more than just achieving a certification. It reflects a genuine team effort to improve how we use energy and to make a real difference. At Crisal, it shows our commitment to using energy more responsibly while supporting sustainability and contributing positively to society.

In practical terms, this means lowering energy costs and improving efficiency by identifying where we can do better and by optimizing energy use across our processes. It also means encouraging a culture of continuous improvement, where everyone is involved in finding more sustainable ways of working. Because every consistent step counts for a better tomorrow!

Governance

ISO 50001 *is a new certification for Crisal. Leerdam site is currently in the certification process.*

A New ERP *system is now operational both at Crisal and Leerdam. This system improves the process flow and efficiency.*

In preparation for CSRD *even though compliance has not yet been confirmed, we are actively implementing CSRD related processes to strengthen transparency and future readiness.*

Governance

ECP Open Day | Crisal *"Solutions for the Glassware Industries" served as a platform for collaboration and knowledge exchange under the ECP* Agenda – PRR | C5 project.*

LCGlass partners at Glass Trend *focused on doing together a global research program focusing on optimizing materials and processes, including improving refractory performance for hydrogen combustion and exploring CO_2 free batch materials.*

*Portuguese Association for Ecoceramics and Glassware

Looking *Forward*

- Explore partnerships in Leerdam and Portugal to assess opportunities for sourcing, handling, and recycling cullet within existing operational frameworks.
- Continue reviewing and optimizing production processes, including assessing new burner concepts and potential energy recovery solutions.
- Create additional internal awareness initiatives to encourage conscious, responsible resource use across daily operations.
- Promote social initiatives through volunteering activities carried out in partnership with local community organizations.
- Continue developing product passport frameworks and eco-design concepts to support information traceability and internal decision-making.
- Strengthen procurement policies by incorporating structured criteria for supplier selection and documentation review.
- Support compliance with upcoming regulatory requirements, including CSRD, PPWR and Life Cycle Assessment obligations.
- Following completion of the CO_2 analysis across Scope 1, 2, and 3, the next phase will focus on reviewing methodologies and defining internal follow-up actions.

LEERDAM CRISAL GLASS

THANK YOU

www.lcglass.com

communication@lcglass.com