For directors of companies that issue securities on public markets. Capital at risk.

Net-zero: Glass

c.3% of global greenhouse gas emissions associated with materials production come from glass.[1]
What does the **glass sector** need to do to reach net-zero?

LGIM will vote and implement investment sanctions against companies falling short of our climate expectations. LGIM expects companies' boards to oversee and publicly disclose answers to the following:

Net-zero commitment

- Does the company have a comprehensive target for net-zero by 2050 or earlier, covering scopes 1, 2 and material scope 3 emissions?[2]
- Has the company made a commitment to certify/certified this target with the SBTi or other external independent parties?
- Does the company have a net-zero transition plan that includes short- and medium-term targets?[3]

Strategy

- What are the actions and investments embedded in the company's plan to reach net-zero, and what is the contribution of each action towards meeting its targets?
- How is the company developing a range of low emission products?
- Is executive remuneration aligned with the company's short- and/or medium-term emission targets, as set out in the net-zero transition plan?

Resilience

- Has the company analysed its business model resilience to climate-related risks and opportunities using scenario analysis (including the IEA's net-zero by 2050 scenario and a 'business as usual' scenario) and disclosed how the output has influenced its strategy?
- Has the company analysed the physical climate risks to its assets, operations, and value chain, including potential financial impacts, and evidenced measures to mitigate or adapt to them?

Targets

- Does the company have targets to increase the electrification of heat furnaces and renewable energy uptake?
- Does the company have targets to increase recycling rates of glass (cullet) and improve circularity?

Collaboration

- How is the company working collaboratively across its value chain to reduce emissions (e.g. suppliers, customers, utilities sector, strategic R&D partnerships, sector initiatives)?
- Is the company advocating meaningful policy action, including from regulators, to meet global net-zero targets (e.g., carbon pricing)?

Red lines

- Does the company have a net-zero operational emissions target?
- Does the company disclose its climate-related lobbying/advocacy activities, including trade association memberships, and explain the action it will take if these are not aligned with a 1.5°C scenario?

1. UNEP (2019).
2. Aiming to cover all segments of the business, as articulated within the GHG protocol guidance.
3. Short-term refers to 2022-2025, medium-term 2026-2035 and long-term 2036-2050.
4. E.g., increase productivity of cullet electric heat furnace processes though R&D, green hydrogen, waste heat recovery measures, increase cullet use and alternative raw materials, CCS/CCUS, etc.

Further areas for company consideration

Nature expectations

Why? The climate and nature crises are inextricably linked.[5] Climate change is one of the five direct drivers of nature change. Net-zero requires both emission avoidance and sequestration. Therefore, the inter-dependencies between climate and nature are a critical factor in the transition.

LGIM's expectations: As part of a climate transition plan, companies should integrate an assessment of the related-nature risks and opportunities, impacts and dependencies, and appropriate mitigation actions.[6]

Sector-specific considerations: Indirect impacts could result from aggregate extraction from marine and riverine ecosystems, and direct impacts from the manufacturing process, including water use and the discharge of wastewater and other pollutants.

Company levers

- Growing consumer demand for low-carbon glass
- Circularity
- Re-melting cullet
- Renewable energy
- Alternative raw materials in primary production
- Green hydrogen
- Carbon capture and storage

Government policies

- Carbon pricing and taxation (and border adjustments)
- Green glass standards
- Low-carbon public procurement
- Incentives for hydrogen infrastructure
- Increased recycling and boosting collection infrastructure
- Renewable energy policies and incentives

Challenges

High cost of new technologies and infrastructure in low-margin industry

Availability of low-cost renewable energy/ green hydrogen

Carbon capture and storage

Availability of cullet

Opportunities

Glass as key enabler of emissions reductions (e.g. double glazing and glass wool insulation, solar PV, filament glass for wind turbines, EVs)

Increased partnerships across sectors

High recycling potential

What is needed?

Company leadership

Investment and R&D for net-zero production/ manufacturing of cullet at large-scale

Research and innovation

Low-carbon primary production technologies such as calcinated and alternative raw materials

Increase the productive capacity of electric furnaces for large scale glass melting

Hydrogen-powered furnace

CCUS

Consumer behaviour

Willingness to pay for low-carbon products

Recycling culture

5. UN IPCC-IPEBS, Biodiversity and Climate Change workshop report (2021)
6. LGIM's Nature Framework can be accessed here

Sources of emissions

'Scope 3' Upstream

Indirect GHG emissions from a company's supply chain (e.g. during extraction and transportation of silica sand and limestone)

'Scope 1'

Direct GHG emissions from operations (e.g. fossil fuels combustion, heating used in melting process)

'Scope 2'

Indirect GHG emissions from purchased electricity

'Scope 3' Downstream

Other **indirect** GHG emissions (e.g. from transporting finished products)

Source: British Glass (2021).

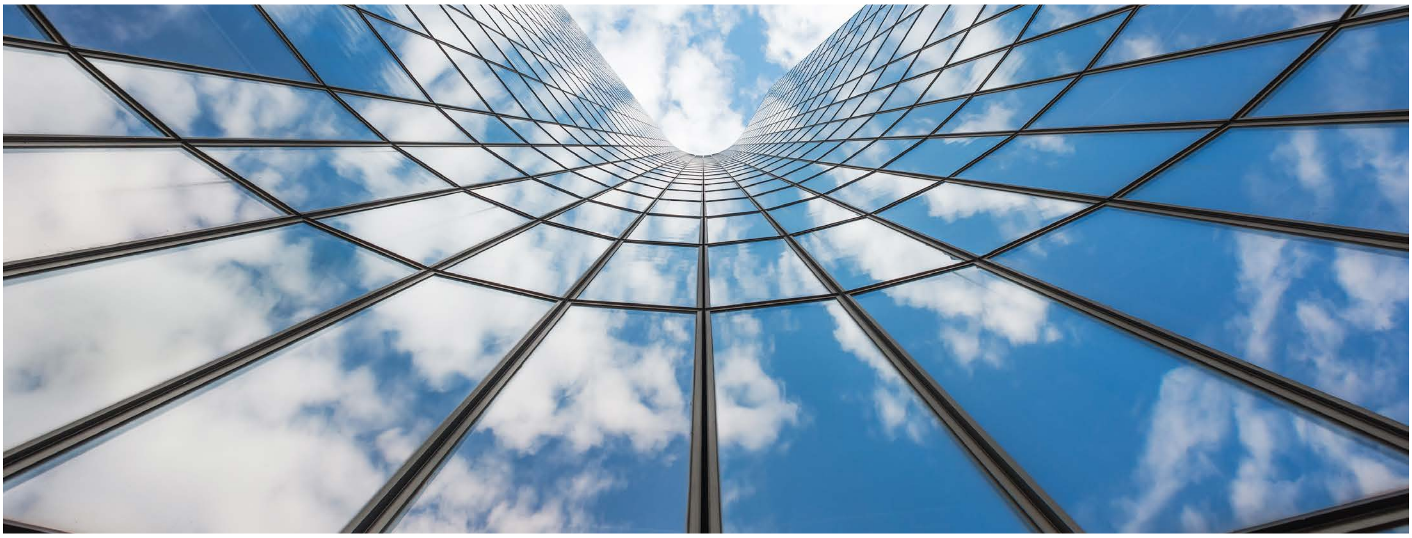
'Just Transition' considerations

Potential implications for employees, supply chain, customers, and communities from the transition to a lower-carbon business model

Physical risk impacts

Disruption to production facilities from extreme weather

Water availability



For more information and to see how companies are rated

[LGIM Climate Impact Pledge score]

[LGIM Climate Impact Pledge]

Important information
Source: LGIM as at October 2024. The value of an investment and any income taken from it is not guaranteed and can go down as well as up, and the investor may get back less than the original amount invested