2050 FLAT GLASS INDUSTRY CLIMATE NEUTRALITY VISION:

THE START OF THE JOURNEY

Bertrand Cazes
Secretary General of Glass for Europe

GLASS FOR EUROPE

ICG International Commission on Glass

Spring School 2024 – Lloret del Mar


CLIMATE URGENCY
A GLOBAL MATERIAL
LOSS OF BIODIVERSITY
GLASS FOR EUROPE

European climate policy...

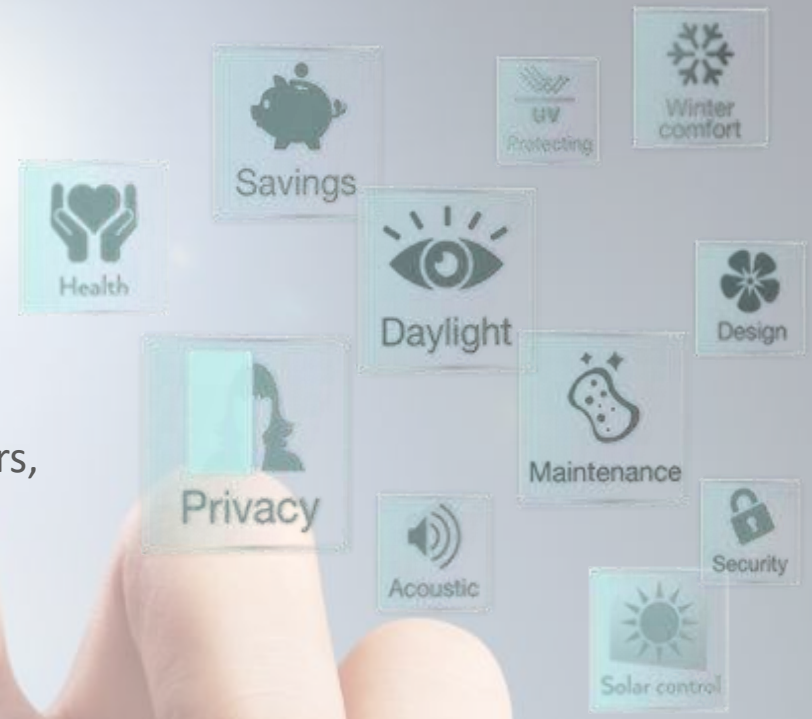
GLASS FOR EUROPE

Over 20 years of climate policy based on key principles

- Reduce CO_2 emissions from all economic activities
- energy efficiency / consumption reduction
- Polluter-pay principle applied to industry
- Decarbonisation of the energy sector
- Ressource efficiency
- Carbon border adjustment mechanism NEW
- Stimulating green investments NEW
- Climate diplomacy
- Support to innovation
- Adaptation to climate change

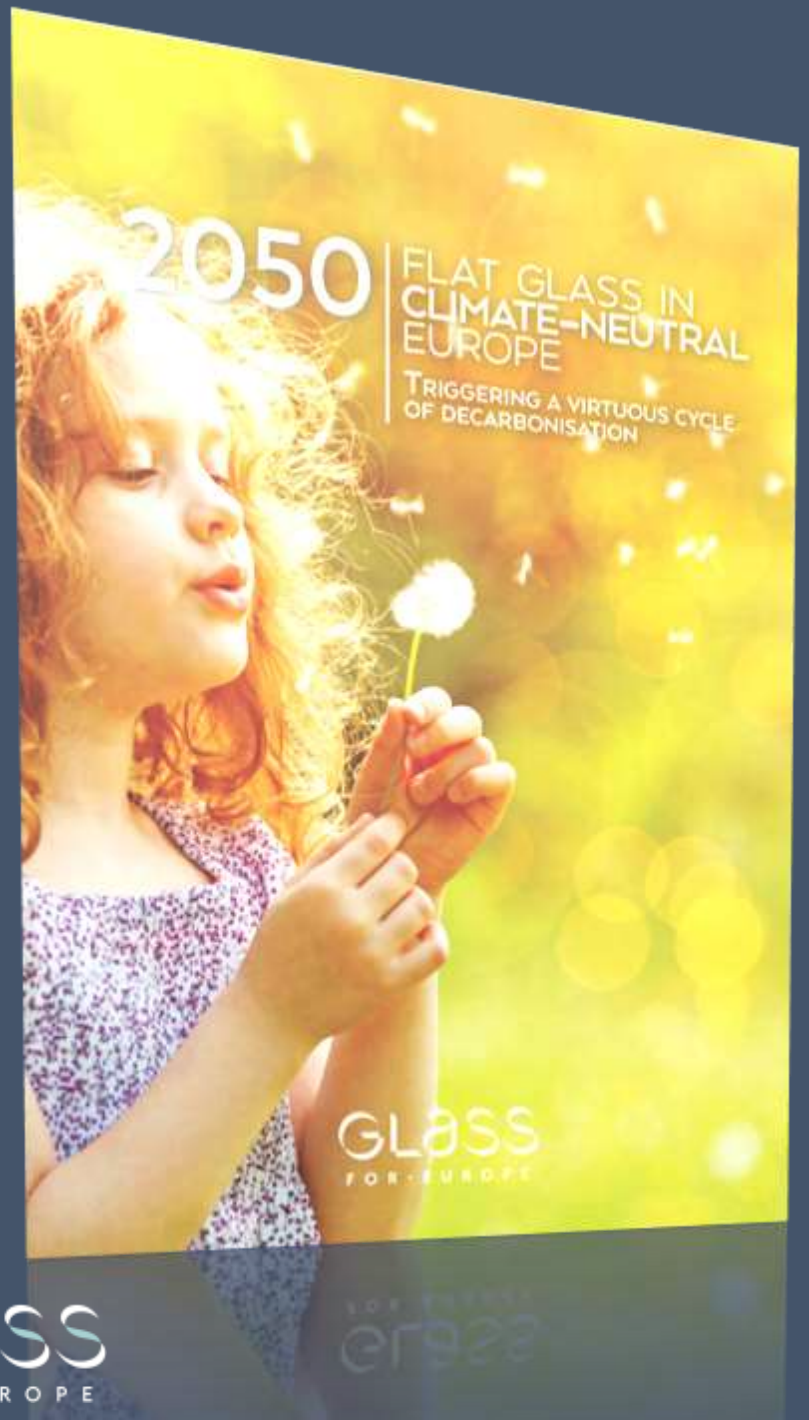
FLAT GLASS IS KEY for climate-neutrality, circularity, digitalisation, safety, health, innovation

- **Energy efficient** glazing solutions for **buildings**
- More **efficient and interactive glass solutions,** which preserve security, offer new functionalities and contribute to **clean and automated mobility**
- Extra clear glass to capture more **solar energy**
- Innovative **IT integration** to support **digitalisation** with touch-screen, smart mirrors, solar-heat modulation, glazing enhancing radio and telecom signals, invisible sensors and radars, etc.
- Specific glass solutions with **hygienic properties** for use in hospitals and most exposed environments
- **Recyclable** product with potential for enhanced collection



THE TRADE ASSOCIATION'S DUTY to support the flat glass sector

GLASS FOR EUROPE



THE EUROPEAN FLAT GLASS SECTOR

TAKES IT AS ITS ROLE TO PRODUCE AT A COMPETITIVE PRICE THE **MATERIALS ESSENTIAL FOR RENOVATING EUROPE'S BUILDINGS, FOR SUPPORTING THE CLEAN MOBILITY TRANSITION AND FOR INCREASING THE SHARE OF RENEWABLE SOLAR ENERGY** IN EUROPE.

WHILE ALREADY PROVIDING NET CARBON-AVOIDANCE PRODUCTS, THE FLAT GLASS SECTOR IS LOOKING INTO WAYS **TO MASSIVELY SCALE UP ITS CONTRIBUTIONS TO THE EU'S CARBON NEUTRALITY OBJECTIVE**, INCLUDING BY DEVELOPING NOVEL WAYS TO LOWER ITS INDUSTRIAL EMISSIONS.

GLASS FOR EUROPE

DELIVERING THE FLAT GLASS PRODUCTS WHICH ARE ESSENTIAL FOR EUROPE'S TRANSITION TO CLIMATE-NEUTRALITY

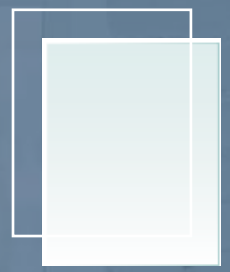
GLASS FOR EUROPE

Flat glass and Buildings

-40%

High-performance glazing can help cut nearly 40% of CO_2 emissions from buildings in the EU.

Insulating glass units

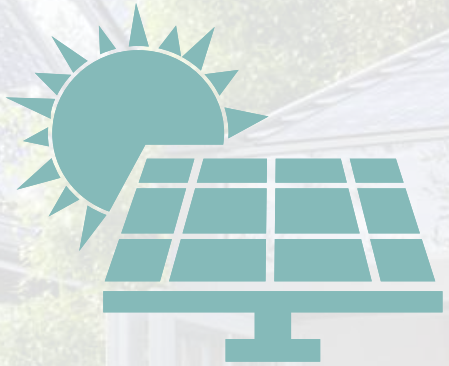


Switchable glazing

BIPV
Transparent photovoltaics

GLASS FOR EUROPE

FLAT GLASS AND SOLAR ENERGY



Glass represents from 65% to over 95% of the weight of PV modules.

Fe

LOW IRON

SELF CLEANING

SOLAR MIRRORS

GLASS FOR EUROPE

Flat glass and Mobility

+17%

Average increase in glass area in passenger cars since 2000.

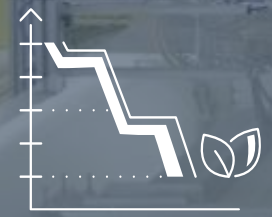
Lighter safety glass

Coatings for efficiency and range

Automated driving components

GLASS FOR EUROPE

RESEARCHING, TESTING AND DEVELOPING NOVEL WAYS TO LOWER INDUSTRIAL EMISSIONS



-43% CO_2

IN 25 YEARS PER TONNE OF FLAT GLASS

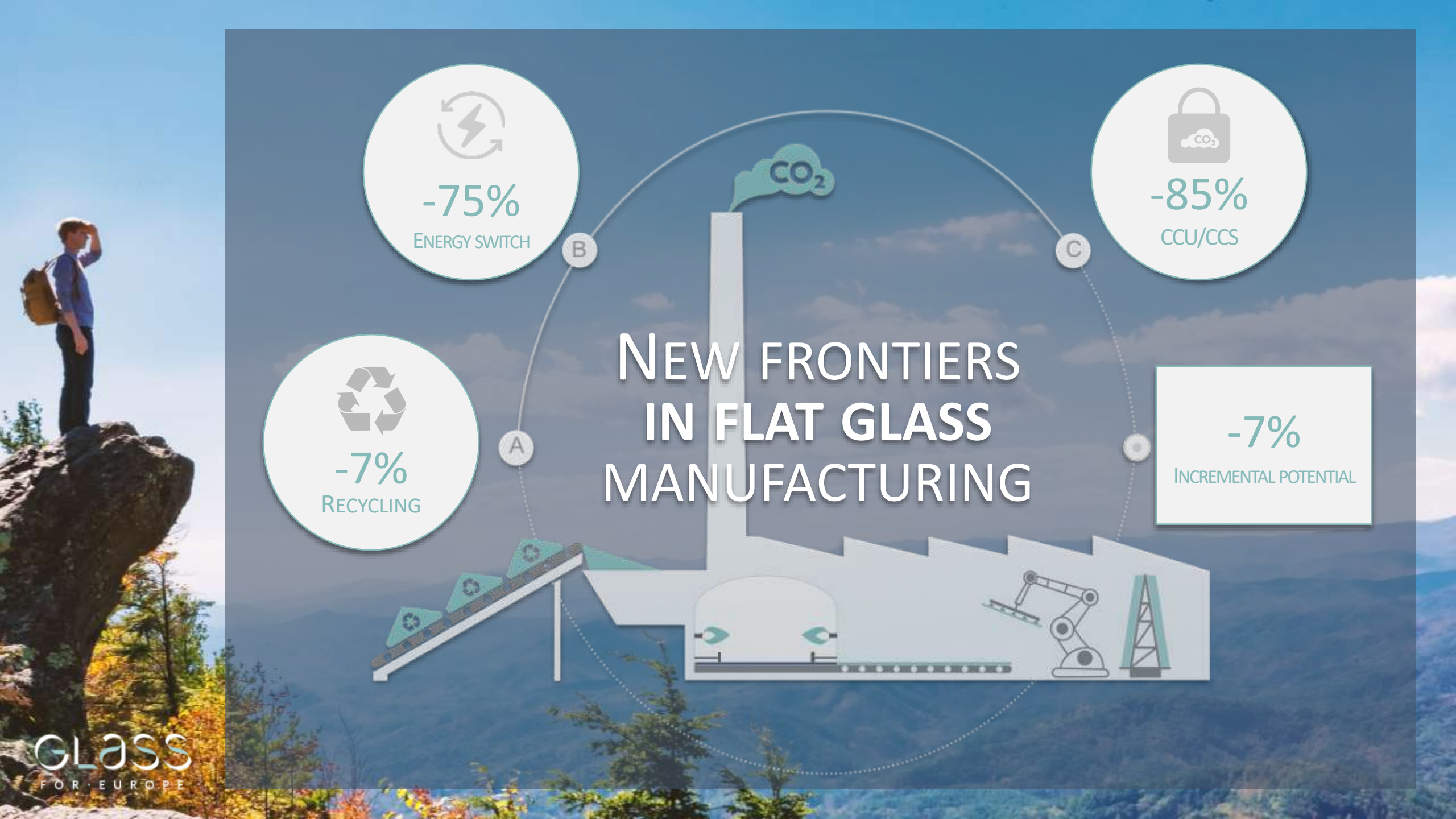
0.13%

OF TOTAL EU EMISSIONS

25%

OF PROCESS EMISSIONS

GLASS FOR EUROPE


-75%
ENERGY SWITCH
-85%
CCU/CCS
-7%
RECYCLING
-7%
INCREMENTAL POTENTIAL
A
B
C
CO2
NEW FRONTIERS
IN FLAT GLASS
MANUFACTURING
GLASS
FOR EUROPE

RECYLING: KEY EUROPEAN DATA

26%

of cullet

in a flat glass batch/ furnace*

(est. 2.75 Mt)

2 to 3%

reduction in energy consumption

for every **10%** extra cullet

in the batch

1t (tonne) **of cullet**

saves

1.2t (tonne) of raw materials

310kg CO_2 in glass manufacturing

+/- 600kg CO_2 (including CO_2 saved upstream)

GLASS FOR EUROPE

* Average EU 2018

Source: Glass for Europe

Challenges

- ✓ Collection and sorting
- ✓ Highest quality levels required
- ✓ Cost-benefit balance
- ✓ Competition

Main Success factor:
Cooperation across the sector

Objective:
FLAT GLASS TO FLAT GLASS

GLASS FOR EUROPE

ENERGY SWITCH: TESTING & PILOTS

ELECTRICITY

AGC and Saint-Gobain partner to create a revolutionary pilot flat glass line with drastic CO2 emissions reduction.

AGC and Saint-Gobain, worldwide flat glass manufacturers leading in sustainability, announce that they are collaborating on the design of a **pilot breakthrough flat glass line** that is expected to reduce very significantly its direct CO2 emissions.

As part of this R&D project, Czech Republic, will be enti… the-art line that targets to … of oxygen and gas. This is a … technology used in flat glass … **sustainable flat glass line** … towards carbon neutrality … industry decarbonization.

AGC Glass Europe

AGC and energy company E.ON strengthen their existing partnership with a joint project for waste heat recovery and production of green power at AGC's float glass plant in Seingbouse, France. Read more on https://lnkd.in …see more

AGC and E.ON deepen their partnership to improve energy efficiency and decarbonization by signing the first Green PPA in France | AGC Glass Europe

BIOGAS

Pilkington UK runs furnace on biofuel in four-day trial

Published 23rd February, 2022 by Jess Mills

Pilkington UK, part of the NSG group, has become the world's first flat glass manufacturer to fire its furnace on 100% biofuel. https://youtube/5B7I3W-VWwQ

A WORLD'S FIRST: TWO WEEKS OF ZERO CARBON PRODUCTION

- ✓ ANICHE (FRANCE)
- ✓ 100% MADE OF RECYCLED GLASS
- ✓ 100% GREEN ENERGY
- ✓ MARCH 2022

HYDROGEN

Saint-Gobain

[#PressRelease]
#SaintGobain achieves the first flat glass production using more than 30% hydrogen …see more

NSG GROUP

NEWS RELEASE

3 September 2021
Nippon Sheet Glass Co., Ltd.

Architectural Glass Production Powered by Hydrogen in World First

The NSG Group has successfully manufactured architectural glass at its facility in the UK, using hydrogen power in a world-first trial.

As previously announced on 27 February 2020, this trial is part of the "HyNet Industrial Fuel Switching" project (*1). The successful three-week trial late August was conducted at the Greengate site of Pilkington United Kingdom Limited, a group company, in St Helens.

In the trial the NSG Group managed to achieve a seamless transition between its current main fuel, natural gas, and hydrogen, with the expertise overcoming many challenges. The trial proved that hydrogen was as capable as natural gas in achieving excellent melting performance and that it could be possible to operate the furnace with vastly reduced carbon emissions. It is a key step in the Group's plans to decarbonize. The switch to hydrogen to power the production from natural gas means that float glass furnaces – which account for the majority of the Group's overall carbon emissions – would be able to operate with hugely lower emissions.

GLASS FOR EUROPE

ENERGY CHALLENGES TO GO LOW-CARBON

ELECTRICITY

Full electric melting not yet ready in flat glass

BIOGAS

Availability challenge

HYDROGEN

Availability and infrastructure lacking

HYBRID

The most probable middle-term solution

CAPEX (roll-out) + OPEX (competitiveness)

GLASS FOR EUROPE

MORE AVENUES PURSUED

EFFICIENT
FURNACES


AGC Glass inaugurates renovated furnace

Published 15th October, 2021 by Zahra Awan

Guardian Glass invests in expanded capacity and energy-saving technology for Goole plant

RAW
MATERIALS


Synthetic raw materials for float-glass production

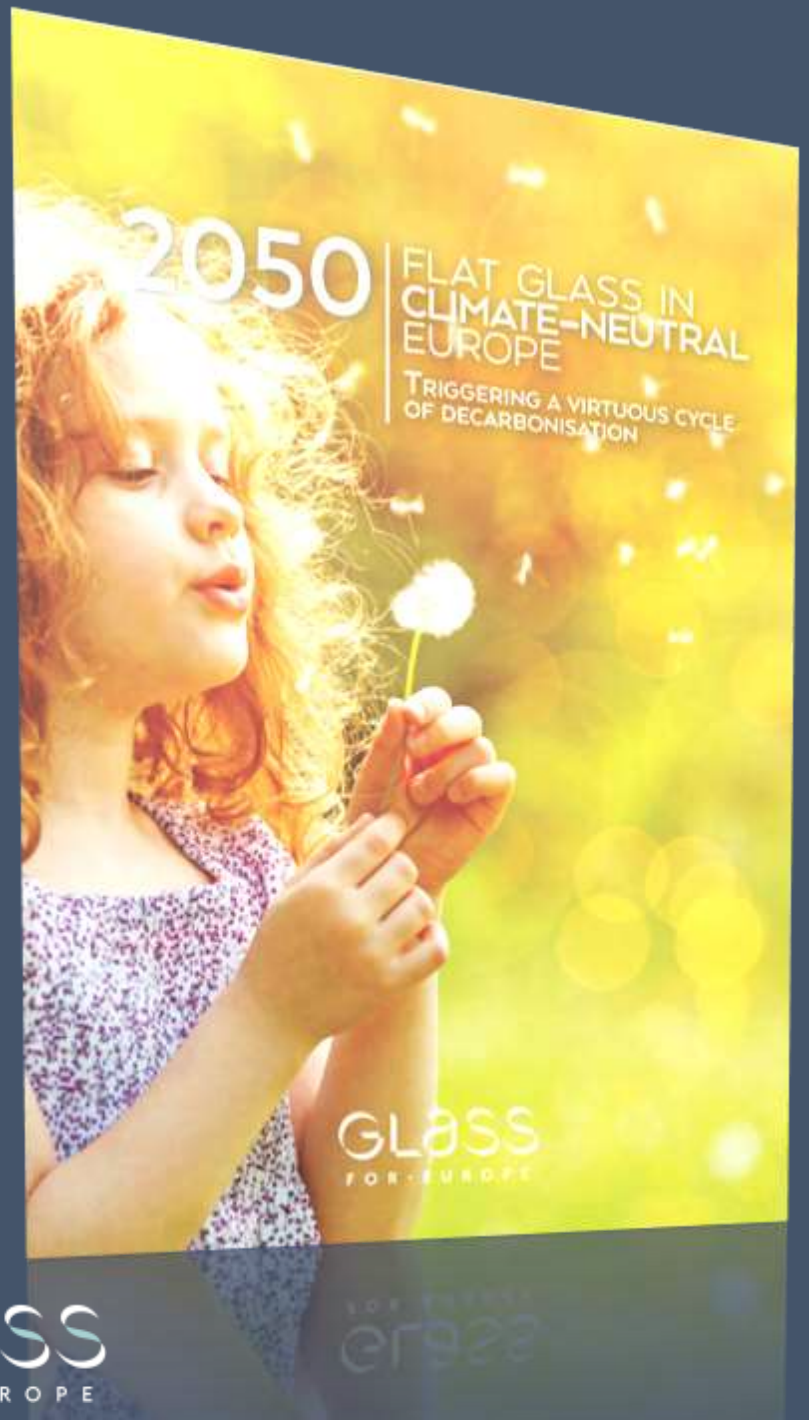
RESEARCH


Glass Futures construction nears completion

LOGISTICS & AUTOMATION

A CHALLENGE FOR **THE ENTIRE FLAT GLASS ECO-SYSTEM** REQUIRING COOPERATION

GLASS FOR EUROPE

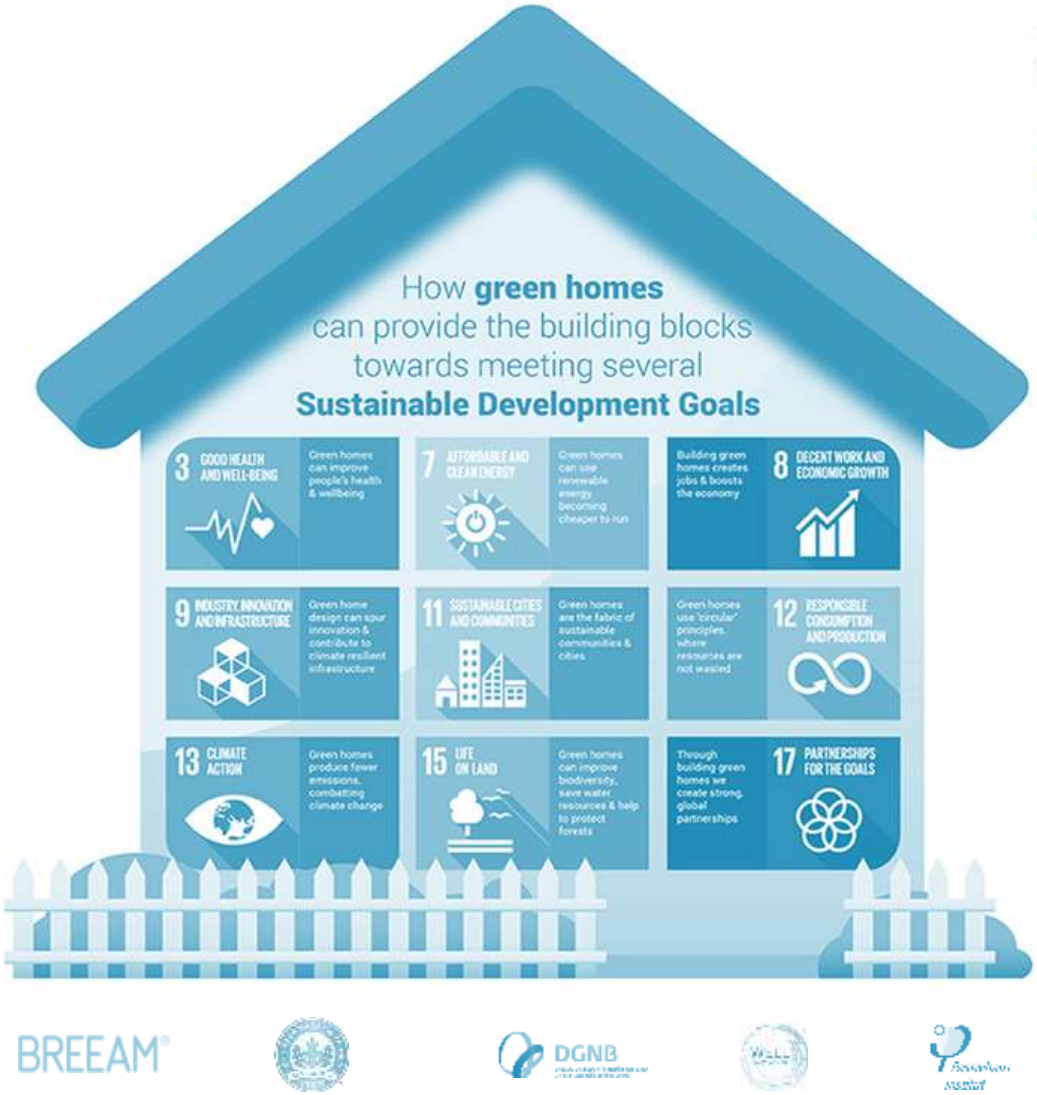


A STRATEGIC AGENDA

GLASS FOR EUROPE

GLASS REMAINS RELEVANT IN SUSTAINABLE BUILDINGS

- ✓ LOW-CARBON
- ✓ LITTLE WASTE
- ✓ AFFORDABILITY
- ✓ CLEAN ENERGY
- ✓ RESPONSIBLE PRODUCTION
- ✓ INDUSTRY INNOVATIONS
- ✓ GOOD HEALTH & WELL-BEING
- ✓ …

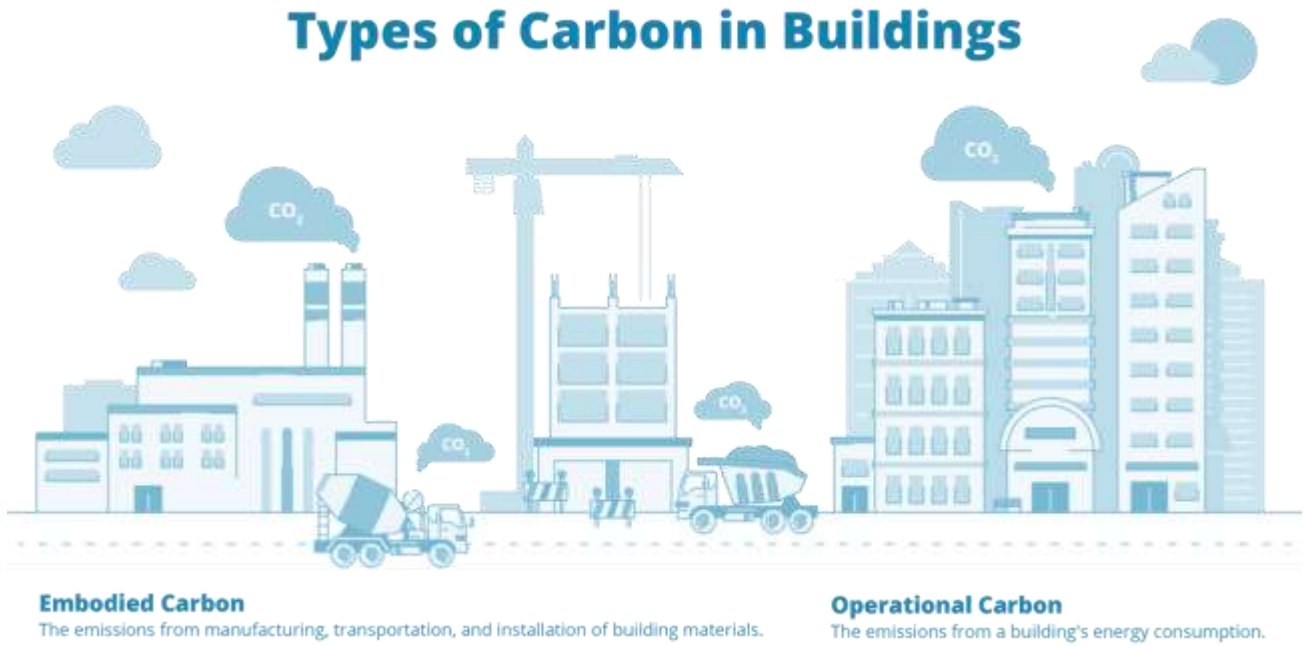


WORLD GREEN BUILDING COUNCIL

SUSTAINABLE DEVELOPMENT GOALS

GLASS FOR EUROPE

LIFE-CYCLE THINKING IN BUILDINGS



POORLY EFFICIENT BUILDINGS:

OPERATIONAL OVER 70% - EMBODIED BELOW 30%

HIGH-PERFORMANCE BUILDINGS:

OPERATIONAL AS LOW AS 25% - EMBODIED OVER 75%

REDUCE & OPTIMIZE
ENERGY DEMAND
+
GENERATE BALANCE
WITH RENEWABLES

GLASS FOR EUROPE

GLASS SOLUTIONS

- ✓ Laminated safety glass
- ✓ Tempered glass
- ✓ Acoustic glazing
- ✓ High-transparency glass
- ✓ Glass louvres
- ✓ Building Integrated PV
- ✓ Connected glazing
- ✓ Dynamic glazing
- ✓ etc.

GLASS FOR EUROPE

HEALTHY BUILDINGS

Forhealth foundation is a Program at the Harvard T.H. Chan School of Public Health – www.forhealth.org

LIGHT AND COMFORT

GLASS FOR EUROPE

DESIGN

MIRADOR DE LA TORRE GLORIÈS - BARCELONA

Our way to grow

GLASS FOR EUROPE

2050 FLAT GLASS IN CLIMATE-NEUTRAL EUROPE

TRIGGERING A VIRTUOUS DECARBONISATION CYCLE

THANK YOU!

BERTRAND.CAZES@GLASSFOREUROPE.COM