GLASS FOR EUROPE

FLAT GLASS IN **CLIMATE-NEUTRAL** EUROPE

GLASS FOR EUROPE & THE FLAT GLASS SECTOR

4
MEMBER COMPANIES

AGC GLASS UNLIMITED
GUARDIAN GLASS
NSG GROUP
SAINT-GOBAIN

7
NATIONAL PARTNERS

ASSOVETRO
Bundesverband Flachglas
BV GLAS
Bouwend Nederland | GLAS
UDTVP Union Des Transformateurs de Verre Plat
GGF

1
CORPORATE PARTNER

Carlex™

EU Flat Glass Industry

10Mt production

over 1000 companies

110,000 jobs

90% EU raw material

80% Buildings

5% Solar and other

15% Automotive

Glass for Europe

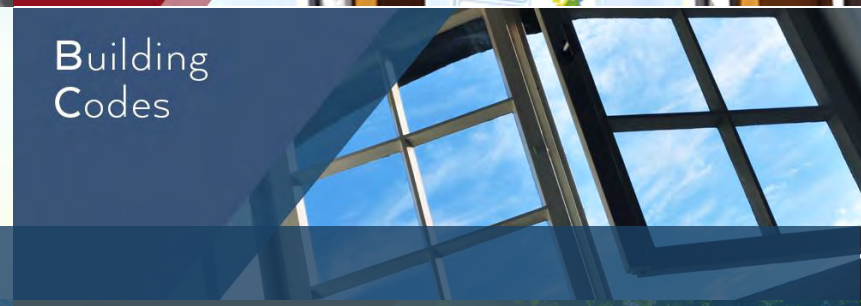
EU ETS

EPBD

Window Energy Label

Automotive Efficiency

Daylight



Building Codes

CPR

Circular Economy

Climate Neutrality

WWW.**GLASSFOREUROPE**.COM

Nanomaterials

2050 vision

Published Standards

Codes of Practice

Industrial Emissions

Food Contact


CLIMATE URGENCY
EUROPE'S ANSWER
FLAT GLASS' VISION
GLASS
FOR·EUROPE

CLIMATE URGENCY

- **LIMITING WARMING TO 1.5°C**
  REQUIRES **UNPRECEDENTED, RAPID** AND **FAR-REACHING** TRANSITIONS
- **CO_2 EMISSIONS TO FALL BY 45%**
  FROM 2010 LEVELS IN 2030, REACHING NET ZERO IN 2050

EUROPE'S ANSWER

- 1ST CLIMATE NEUTRAL ECONOMY
- EUROPEAN GREEN DEAL
  IS THE NEW GROWTH STRATEGY
- CLIMATE LAW
  -55% GHG EMISSION BY 2030
- ALL EUROPEAN LEGISLATIONS
  TO BE REVISED
- RENOVATION WAVE
  X2 RATE OF RENOVATION

2050

Flat Glass in Climate-Neutral Europe

Triggering a virtuous decarbonisation cycle

HIGH PERFORMANCE GLAZING

2050 **- 37%** (68 MILLION TONNES CO_2)

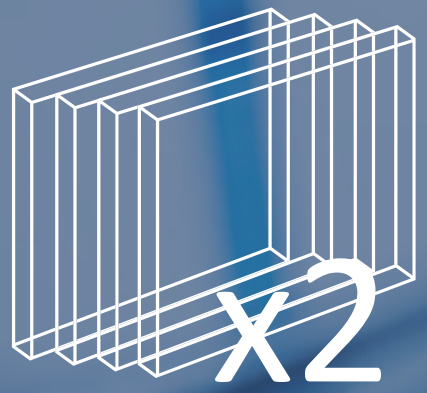
CO_2 EMISSIONS FROM BUILDINGS

2030 **- 240 Mt CO_2** OVER 10 YEARS

BY DOUBLING THE RENOVATION RATE

2020

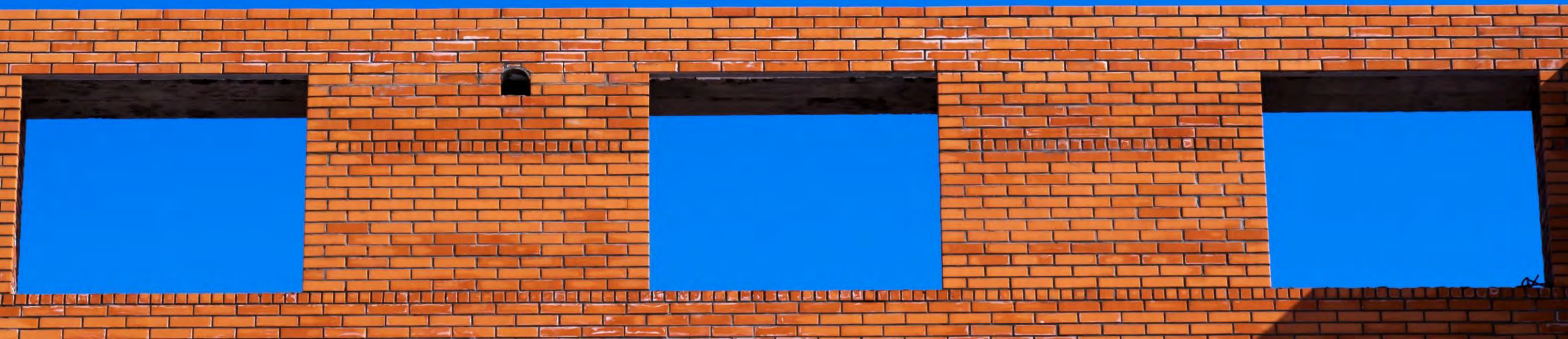
GLASS FOR EUROPE



+66%

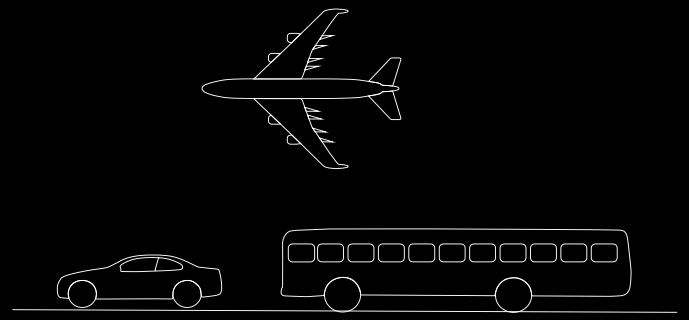
Flat glass demand when doubling the renovation rate.

FLAT GLASS
NON SUBSTITUABLE
STRATEGIC MATERIAL.



€ 1.6 BILLION

ESTIMATED MARKET FOR BIPV IN 2022.

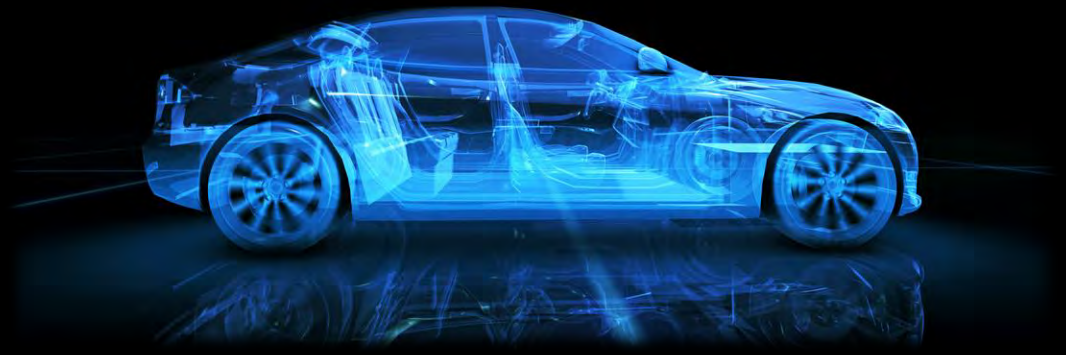


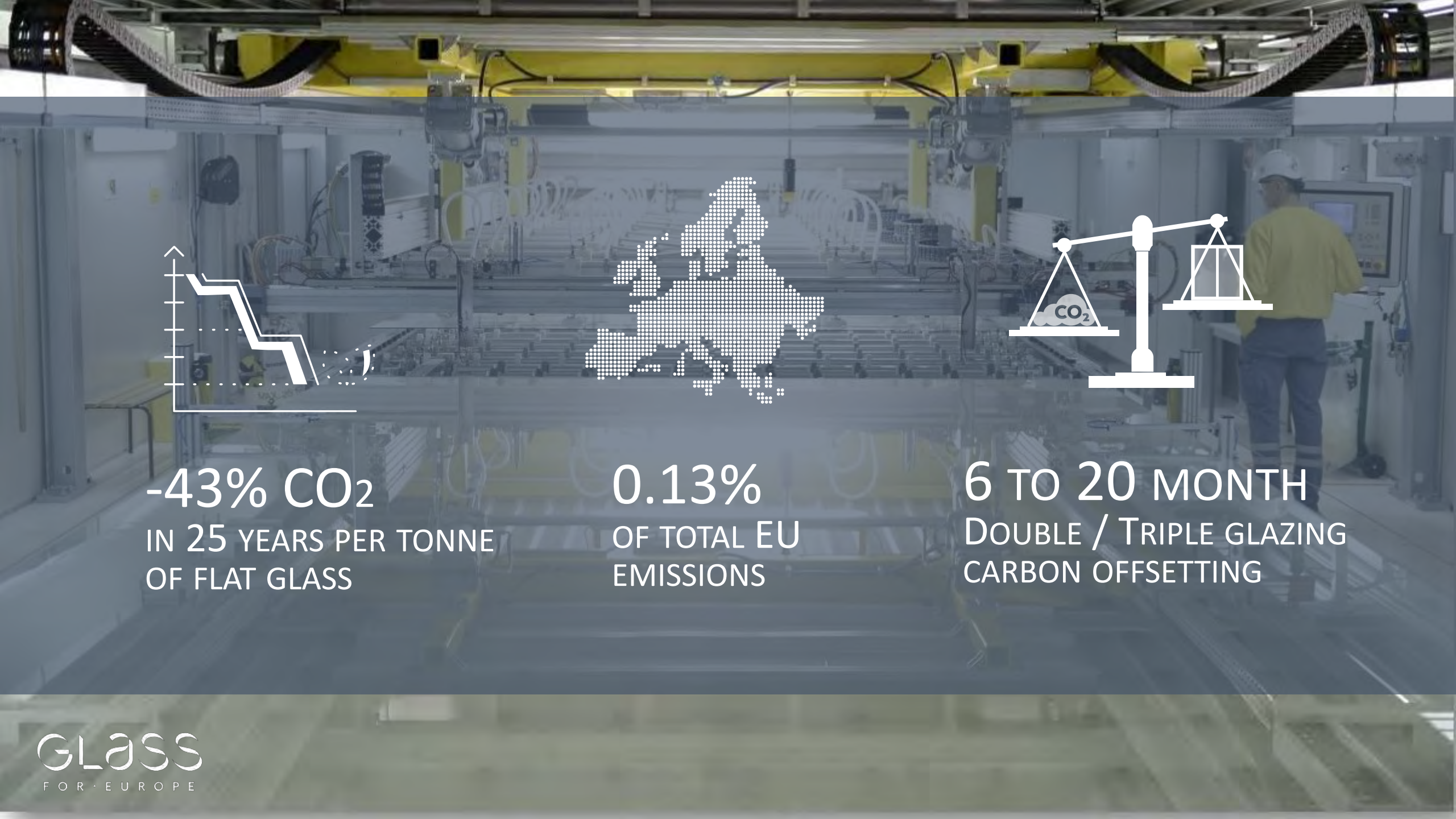
+ 17%

INCREASE IN GLASS AREA IN PASSENGER CARS SINCE 2000.

DIGITALISATION

GLASS, THE INVISIBLE ENABLER.





-43% CO_2

IN 25 YEARS PER TONNE OF FLAT GLASS

0.13%

OF TOTAL EU EMISSIONS

6 TO 20 MONTH

DOUBLE / TRIPLE GLAZING CARBON OFFSETTING

GLASS FOR EUROPE

GLASS FOR EUROPE

HIGH EFFICIENCY FLAT GLASS MELTING IN EUROPE

25%

PROCESS EMISSIONS

1600°

FURNACE TEMPERATURE

26%

RECYCLED GLASS IN RAW MATERIALS

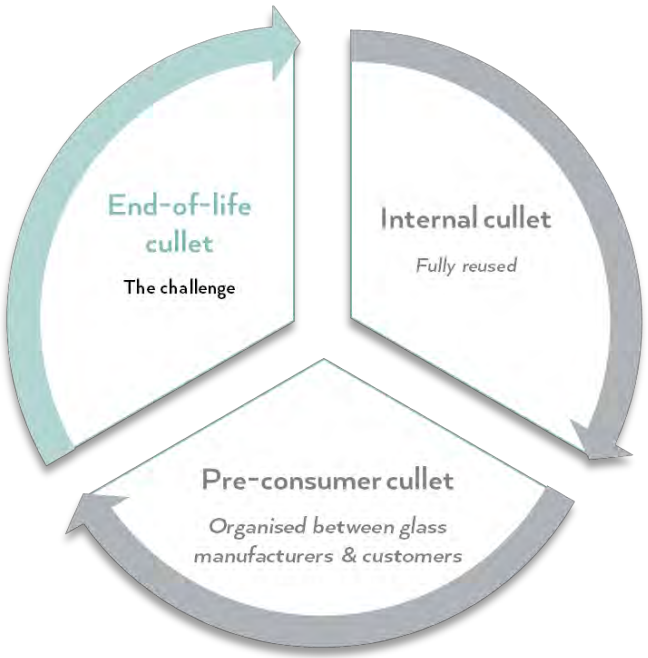
650 TONNES/DAY

PRODUCED PER FLOAT LINE


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

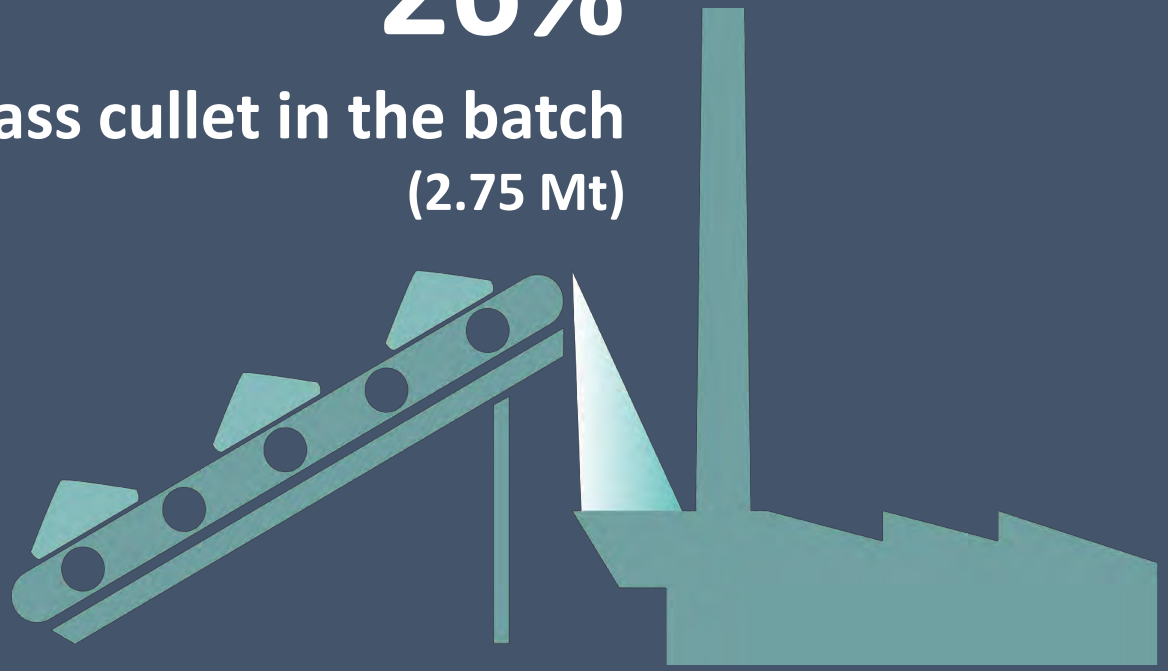
STATE OF PLAY
FLAT GLASS RECYCLING IN EUROPE

3 STREAMS



26%

of glass cullet in the batch
(2.75 Mt)

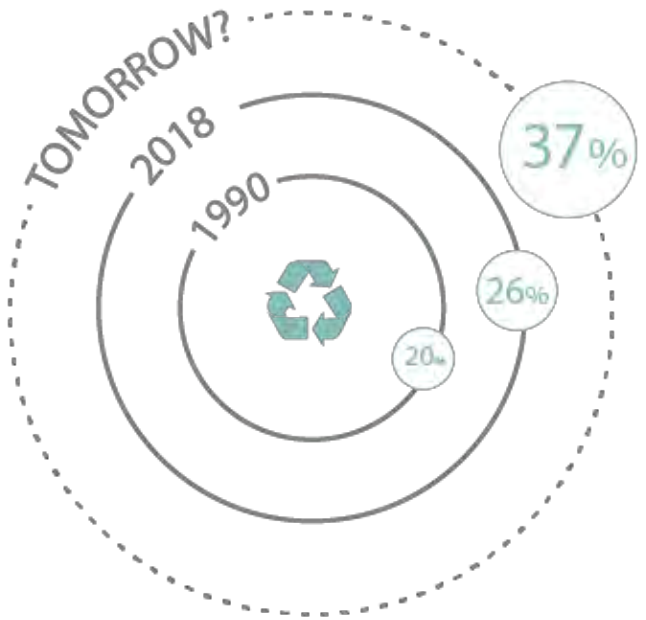


THE RECYCLING CHALLENGE
POST-CONSUMER FLAT GLASS CULLET

OVER 1.1 MT OF END-OF-LIFE BUILDING GLASS ANNUALLY AVAILABLE[24] **COULD SAVE UP TO 1.32 MT OF RAW MATERIALS.**

THE RECYCLING CHALLENGE
POTENTIAL CO_2 SAVINGS

IMPROVEMENT MAXIMUM **POTENTIAL(S)**



+ 11pts

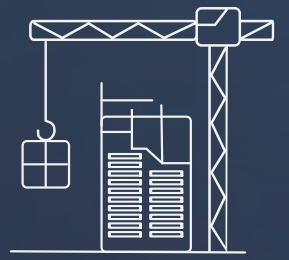
Considering untapped potential of recycling streams

- 7% CO_2

emissions compared to 2018*

* This estimate is an absolute maximum, which ignores a number of barriers (technical economical and in recycling infrastructures) and emissions from transport, which could in some cases outweigh the emissions savings in manufacturing

THE VIRTUOUS DECARBONISATION CYCLE



MAINSTREAM CARBON AVOIDING PRODUCTS

REWARD INNOVATIONS IN CLEAN TECHNOLOGIES AND PRODUCTS

NURTURE THE EU **INDUSTRY'S COMPETITIVENESS**

DEVELOP THE CLIMATE-FRIENDLY INFRASTRUCTURE

ATTRACT INDUSTRIAL INVESTMENTS

GLASS FOR EUROPE

2050 Flat Glass in Climate-Neutral Europe

Triggering a virtuous decarbonisation cycle

Focus on ETS in Phase IV (2021-2030)

Each year installation have to give to their state, allowances corresponding to their production = free allowances received + allowances to buy on market

Free allowances received by flat glass production sites because the sector recognised at risk of carbon leakage

Free allowances calculated in different ways for float glass and cast glass

Different calculations for a new site than for an existing site (here the formulas apply for an existing one)

Float glass (for one year in 2021-2025):

Free allowances = Float glass Benchmark (0.399 tonne CO2/ Tglass) x (Average Glass production on 2014-2018 in T glass/year x CSCF (still unknown)

Cast glass (for one year in 2021-2025):

Free allowances = [42.6 tonne CO2/Tjoule x Average Fuel $Consumption_{2014\text{-}2018}$ in Tjoule/year + Average Process $CO2_{2014\text{-}2018}$ in tonne CO2/year * 0,97] * CSCF

Focus on ETS in Phase IV (2021-2030)

Benchmark determination:

- Done by the European Commission with the Member States
- Possibility to comment. Internal exercise conducted in Glass for Europe reaching similar value

Benchmark calculation:

- Collection of emission and production data on all float glass installations for the years 2016/2017
- Calculation for each installations: Emissions 2016 + emissions 2017 / (Prod. 2016 + Prod. 2017)
- Determination of the average of the 10% best performers (in our case, 4 installations), in our case the value is around 0.42 tCO2/tmelted glass
- Calculation of the annual reduction rate: (10%best 2016/2017 – 10%best 2007/2008)/9. The Commission estimated this rate at 0,79%
- This Benchmark value is obtained by applying this rate between the previous BMK and considering 15 years: $BMK_{2021\text{-}2025} = BMK_{Phase\ III} \times (1 - 15) \times$ reduction rate = 0.399 tonne CO2

Focus on Carbon Border Adjustment Mechanism (CBAM)

Announced with the European Green Deal but sill under discussions

- The goal is to address the CO_2 reduction efforts inside EU and outside EU. A CBAM pilot phase is foreseen, with few industrial sectors on which it will be tested
- The Commission launched a consultation with 4 possible mechanisms:
    1. Carbon tax on imports
    2. New ETS mirroring the carbon price of the EU ETS,
    3. Carbon tax at consumption level,
    4. Extension of the EU ETS to imports
- The Parliament expressed in a report a preference for a parallel ETS for importers
- The Commission is expected to release a proposal of regulation by mid-2021; then discussions with the UE parliament and the Council will take place

Glass for Europe recognizes CBAM as a possible route to ensure a level playing field between EU and non-EU based manufacturers when guaranteeing that importers of industrial goods bear carbon costs equivalent to the ones paid by EU-based actors.