AGC Glass Europe & Americas
AGC toolkit towards decarbonization ; from processes to products

Journées Verre 2025

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Roscoff, France
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Your Dreams, Our Challenge

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AGC Group

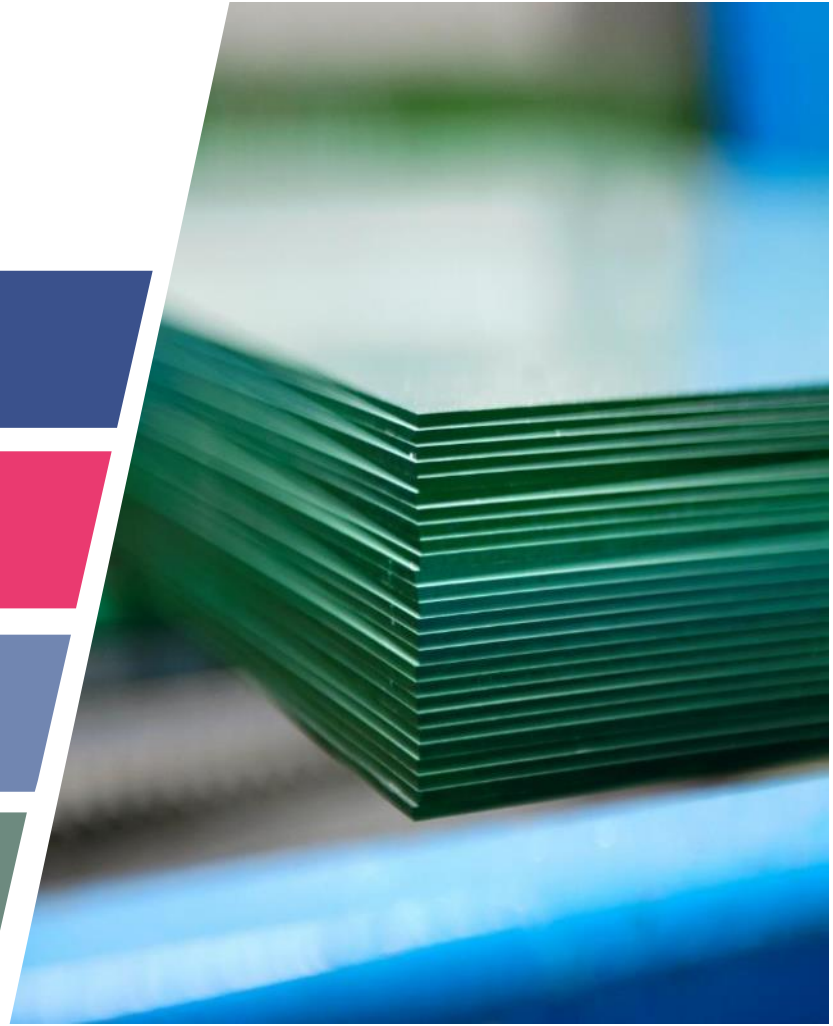
Decarbonization objectives

Toolkit & strategy

Long term vision

Low Carbon Glass

Short term ; answer to customers needs



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AGC Group at a glance

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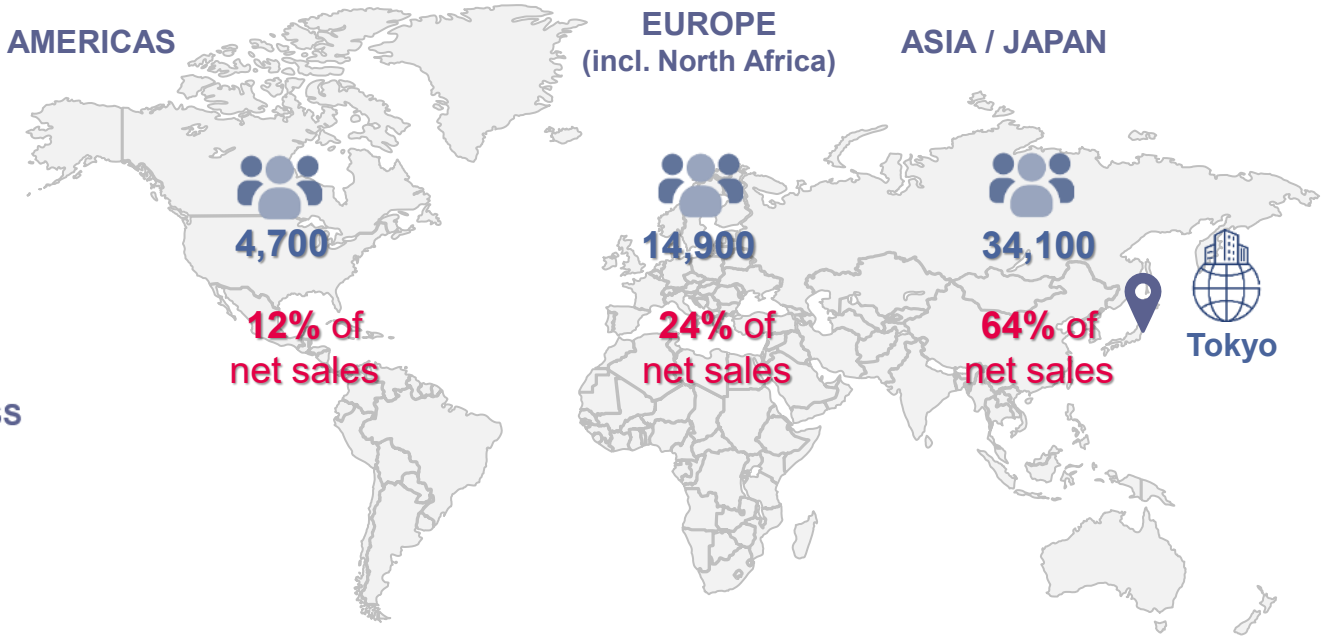
53,700

5 businesses

- ARCHITECTURAL GLASS
- AUTOMOTIVE
- ELECTRONICS
- CHEMICALS
- LIFE SCIENCE



186 companies in **30** countries

€ 12.6 billion
Net sales

€ 768 million
Operating profit

Figures end 2024

AGC: business overview

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ARCHITECTURAL GLASS
21% of sales

- External glass
- Decorative glass
- Glass for high tech applications

AUTOMOTIVE
24% of sales

- Original Equipment Manufacturer (OEM)
- Automotive Replacement Glass (ARG)

ELECTRONICS
18% of sales

- Display
  (LCD and OLED glass substrates)
- Electronic materials

CHEMICALS
29% of sales

- Fluorochemicals & specialty chemicals
- Chlor-alkali & urethane

LIFE SCIENCE
7% of sales

- Synthetic pharmaceuticals, agrochemicals and biopharmaceuticals

(*) Ceramics 4% / Other : -2%

Figures end 2024

Contributing to a sustainable future

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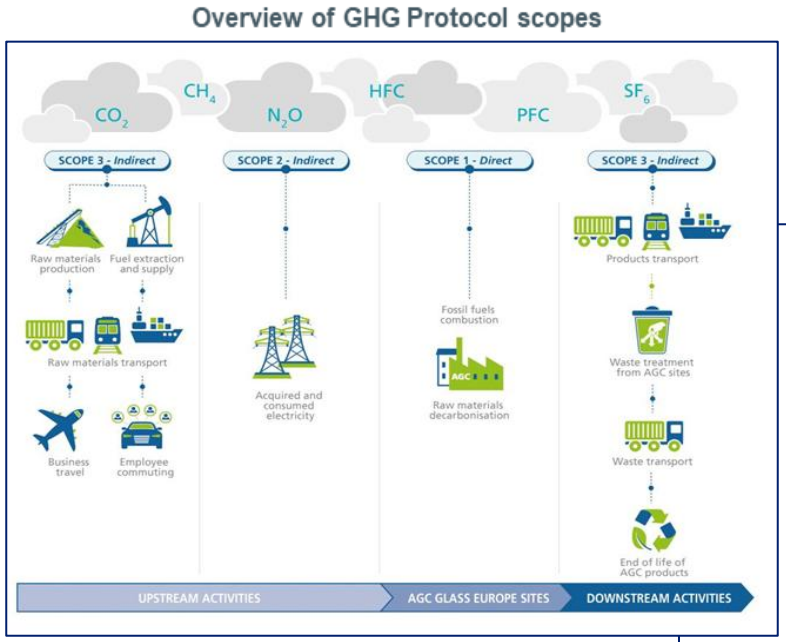
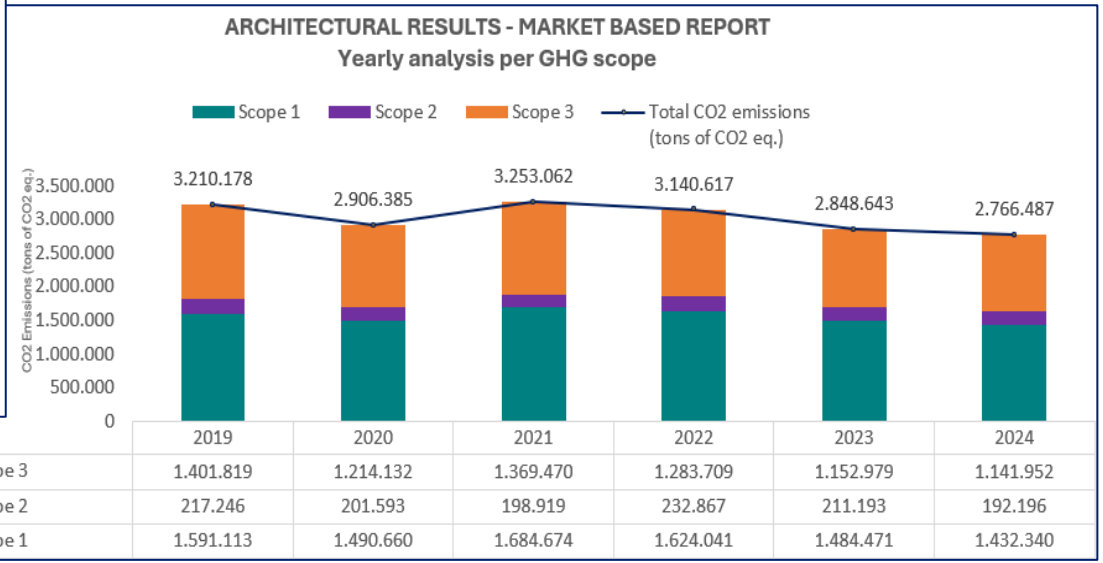
Architectural Carbon Footprint (EU + South-America)





	2019	2020	2021	2022	2023	2024
Scope 3	1.401.819	1.214.132	1.369.470	1.283.709	1.152.979	1.141.952
Scope 2	217.246	201.593	198.919	232.867	211.193	192.196
Scope 1	1.591.113	1.490.660	1.684.674	1.624.041	1.484.471	1.432.340

AGC Group reduction targets,
applicable to all its businesses including glass

We develop our toolkit

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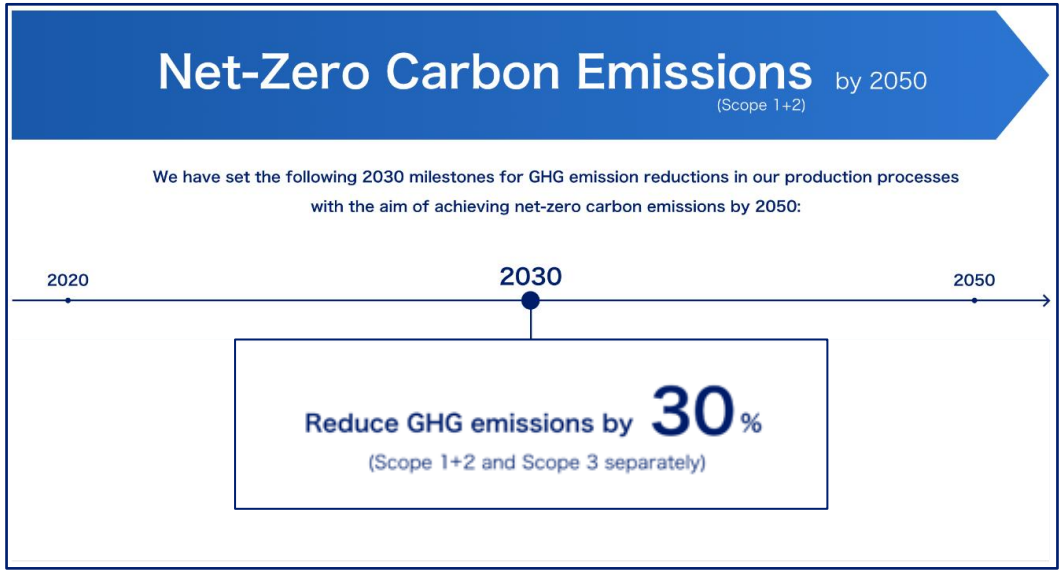

Scope 1+2

- **Low Carbon electricity :** On site & Off site PPAs, GoOs,…
- **Circularity :** Pre & post-consumer glass recycling
- **Electrification :** Eboosting & Hybrid Elec/Oxy melting
- **CCS :** One project in Belgium
- **Others :** H_2, Biofuels, Biogaz

Several projects are on track but for some of them, Final Investment Decision still to be done (CCS,…)

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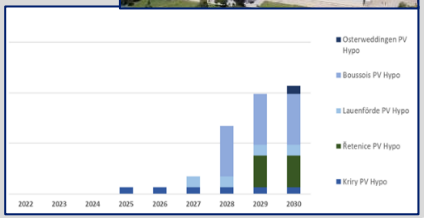
Scope 2 plan : go to 100% low Carbon electricity in 2030

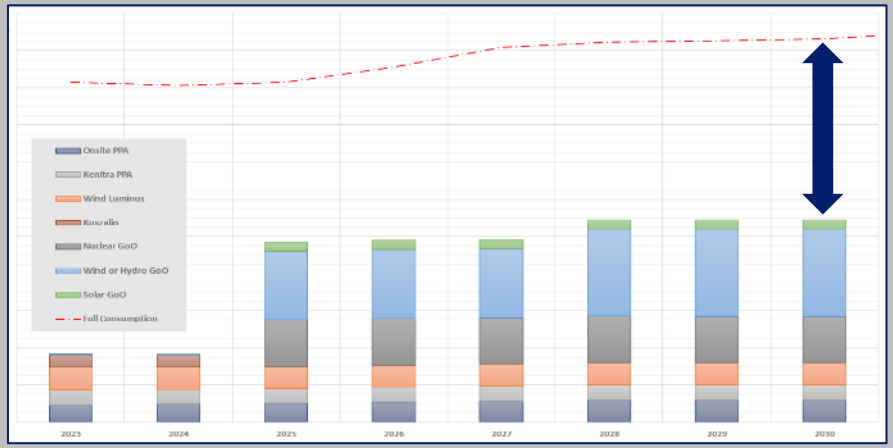
Energy sourcing

- Off-site PPAs :
  14 windmills in Belgium,…
- On-site PPAs :
  PV pannels, ORC, windmill,…
- New projects in the pipe but not possible to cover 100% of the need



Guarantees of Origins (GoOs)

- 2030 electricity need evolution forecast done
- Up to 1000 GW/h year including auto & building
- Some automotive customers request 100% Low C electricity by 2028 for glass car sets
- Decision to progressively cover the need with GoOs : https://www.youtube.com/watch?v=67XwPO09zNI



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Circularity

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Cullet recycling pathways

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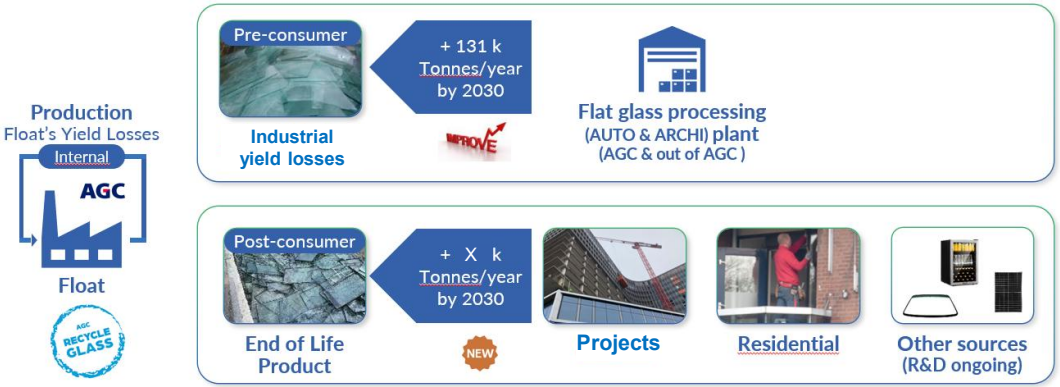

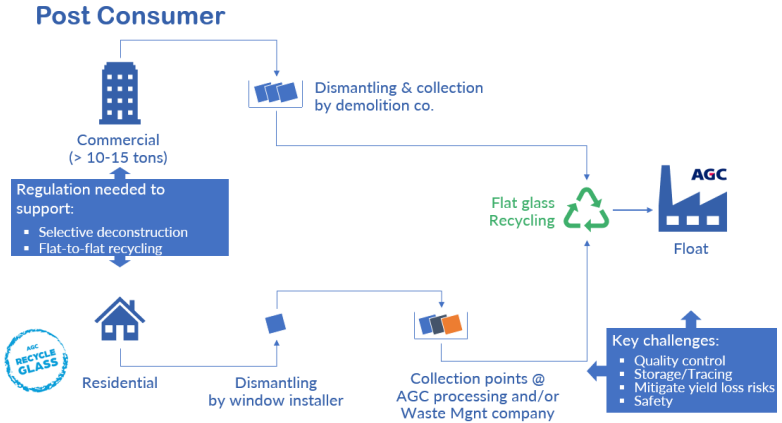

♻ Oxy Brussels: a renovation project focused on recyclability!

https://www.youtube.com/watch?v=sEriagJcvmU

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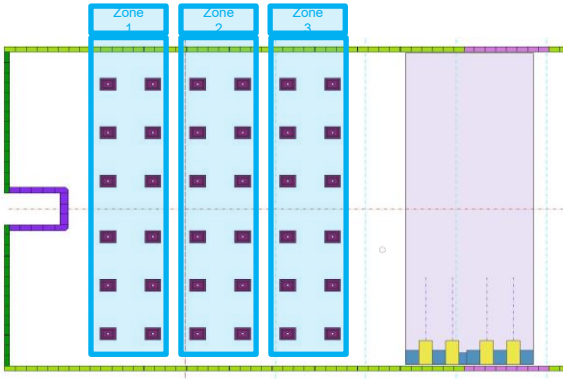
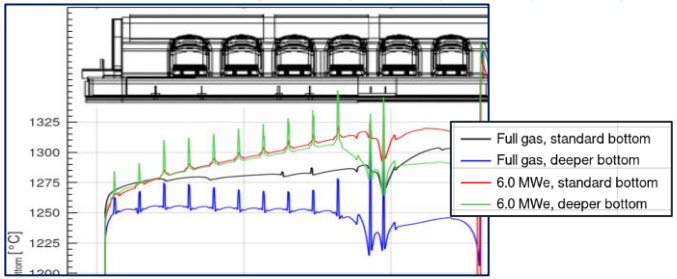
Electroboosting & Super-boost







- Deployment program on the way
- At cold repairs or during production
- From 1-2-3 MW…
  …to 10MW (Southern Belgium grants)

- Energy efficiency +/- 1.8 vs natural gas
- CO_2 emissions reduction depending on the country
- Capex, running cost, retrofitting
- Sometimes infrastructures requirements

Technology breakthrough | Volta Project

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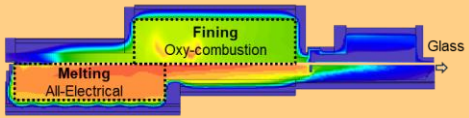
New hybrid Furnace Design

Not actual design



All-electrical melting expertise

Oxy-combustion (incl. heat recovery and reheating of natural gas and oxygen) **expertise**

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Share risks
Share Capex

Share results

Build together
New know how

Key insights

Novel furnace design

Before: 100% air – gas

After: 50% electricity / 50% oxygas

Constant Pull.

Circularity via a high cullet recycling rate **(>80% vs 30% as an industry standard)**

Scope 1&3 emission avoidance of ~75%, while achieving flat glass quality. **Scope 2 fully covered by green electricity**

Funded by the European Union
Emissions Trading System
Innovation Fund

Path forward

1. Novel design is tested in **Barevka** (Cast glass, CZ) **from 2025**
2. During 36 months, we will test **float glass quality** and assess **scalability**
3. Main drivers for scalability : **regulatory framework, electricity cost in EU, willingness to pay of customers**

VOLTA project, supported by Innovation Fund

Volta Project

Funded by the European Union
Emissions Trading System
Innovation Fund

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- After 6 months of cold repair :
  - First glass on 7/02/2025
  - Opening day 12/02/2025
  - Production and tests are running for 9 month with interesting results up to now.

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‘EU2NSEA’ objective & participants

The ‘**EU2NSEA’** project aims at developing a **scalable pipeline-based system** enabling the transport and storage of anthropogenic and biogenic CO_2 **from North-West Europe to the North Sea**, designed to provide **resilience and security of CO_2 transport**, whilst enabling significant **cost reductions** and expediting deployment of CO_2 capture, transport and storage networks at European scale.

** renewal PCI: following project submission EC is currently conducting due process according to the TEN-E regulation. Outcome evaluation expected in Q4 2025*

Promoters and affiliated organizations – actors along the capture, transport and storage chain, working together to realize a strategic cross-border energy infrastructure project

Key highlights - Renewal PCI ‘EU2NSEA’

22
emitters

28
capture sites

42
CO_2 Mtpa

7
countries

2
storage sites

CO_2 value chain with Fluxys & Equinor partnership

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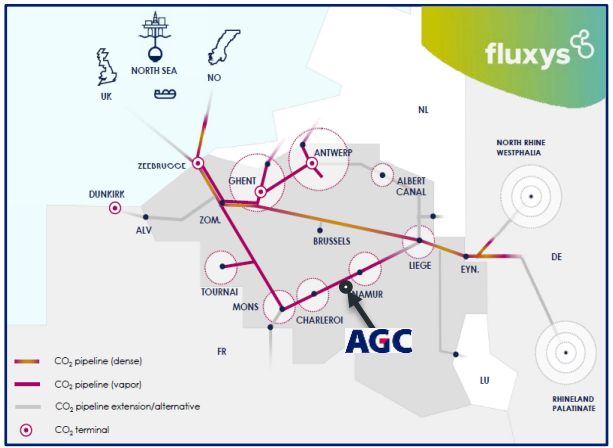
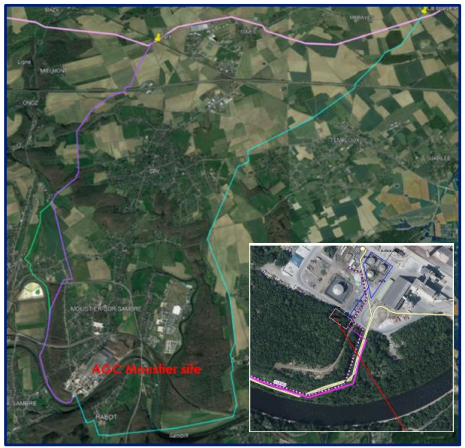
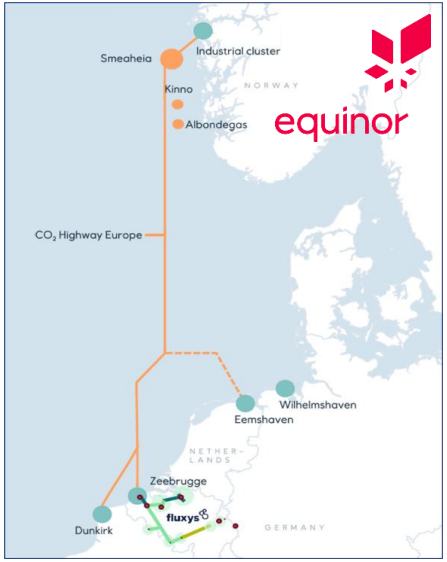
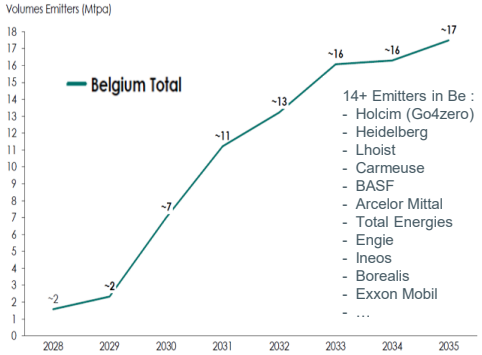




- Fluxys to be nominated in 2025 CO_2 Network Operator (CNO) in Belgium
- Fluxys feasibility study to connect AGC to CO_2 backbone done
- AGC answered to «Call for Market Interest» Zeebrugge and Antwerp@C exit points
- AGC members of Equinor « CO_2 Highway EU » stakeholders





Equinor's strategy based on solid progress

30-50
MILLION TONNES/ANNUM
CO_2 transport and storage capacity by 2035
Equinor share

4-8
PERCENT
Real base return
Excluding effects from farmdowns and project financing

CO_2 HIGHWAY EUROPE

- Offshore 36-40" pipeline - 1 000 km to NCS
- Capacity 20-30 Mtpa
- CO_2 transported in dense phase
- Branch with landfall connection from Dunkirk & Zeebrugge
- Smeaheia as anchor reservoir, more storages to be connected

Long term strategy making

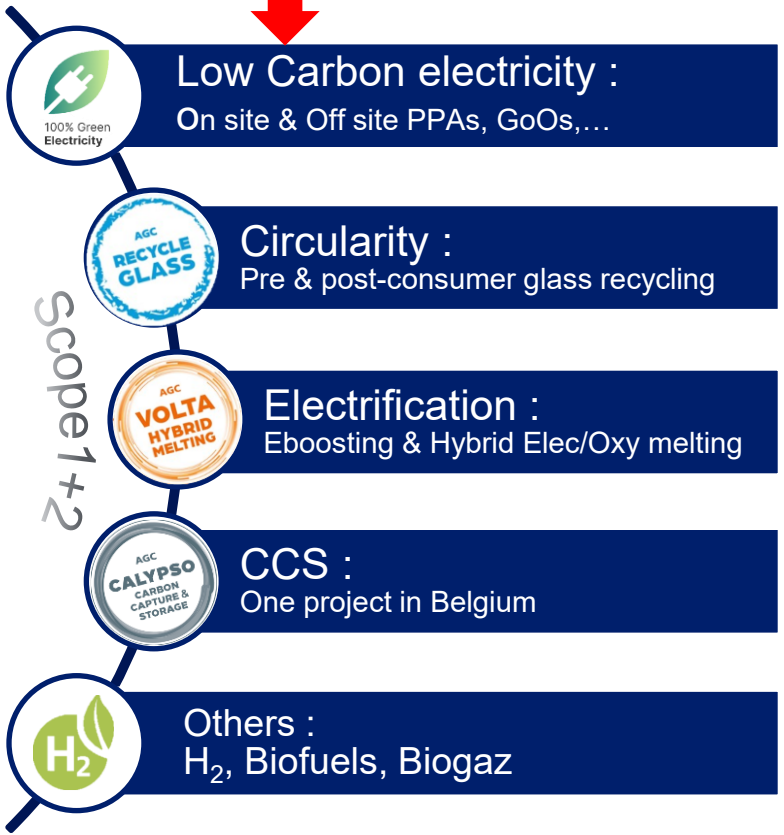
We have our toolkit

We fixed the target for 2030 & 2050

We have our toolkit

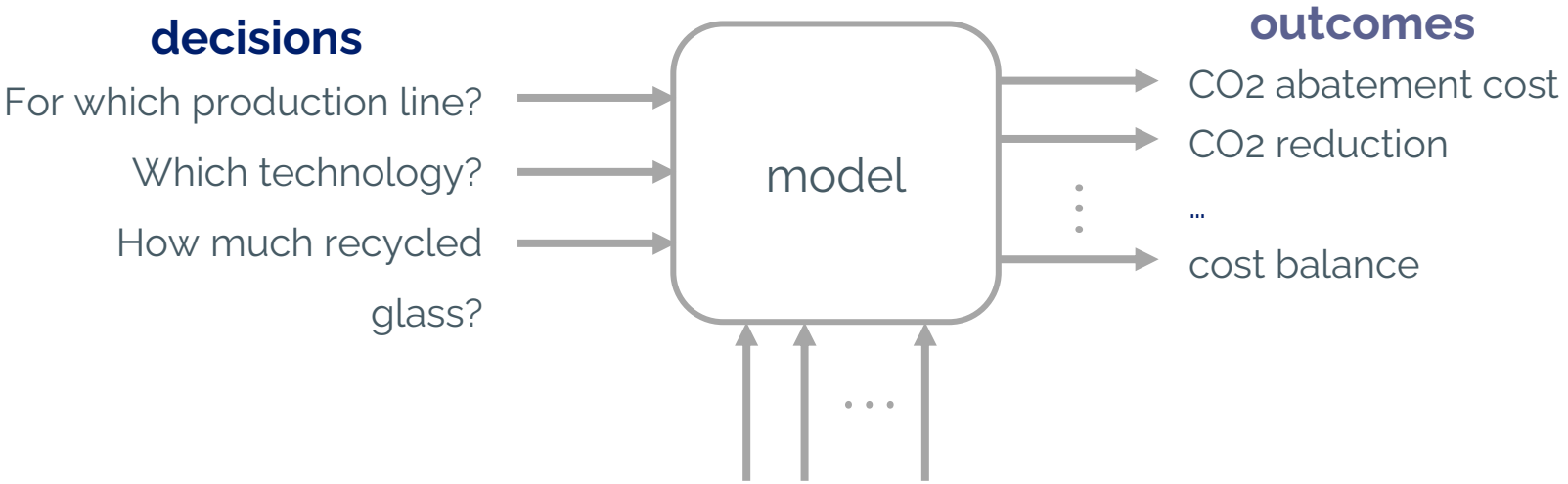
How do we choose **what** we will do **where** and **when** ?

We need a tool to help decision, …



Long term strategy making

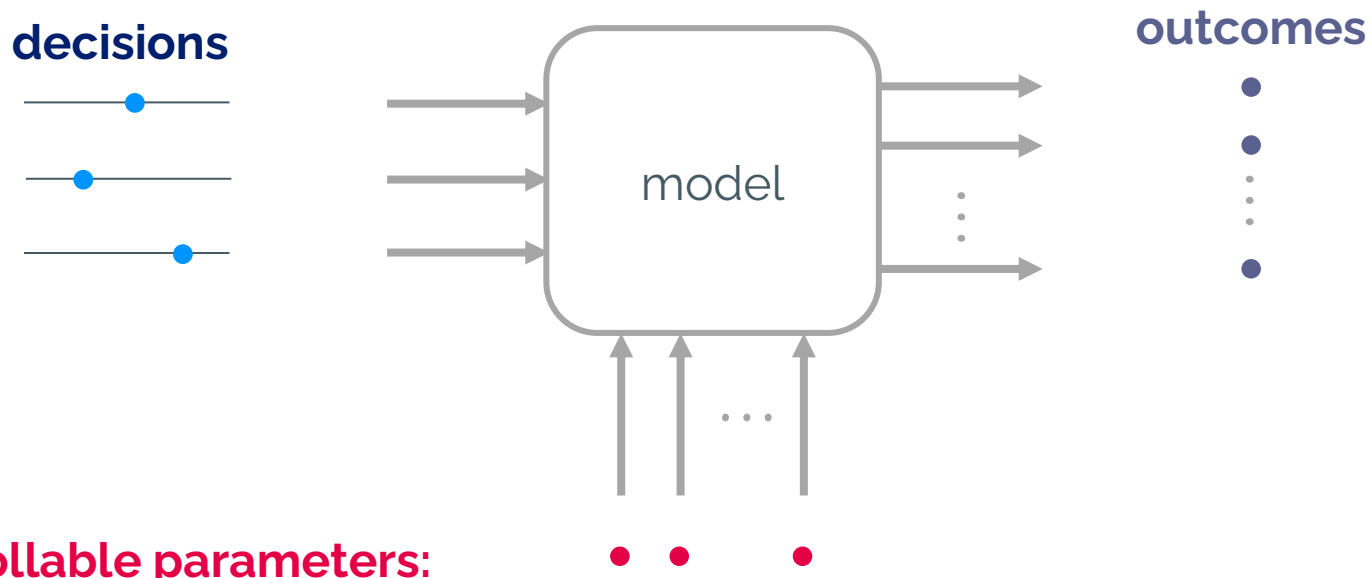
François Bioul (AGC Glass Europe)
dr. Diederik Coppitters (UCLouvain)



Uncontrollable parameters: Energy and CO2 price, efficiencies, grid carbon intensity, CAPEX, OPEX,...

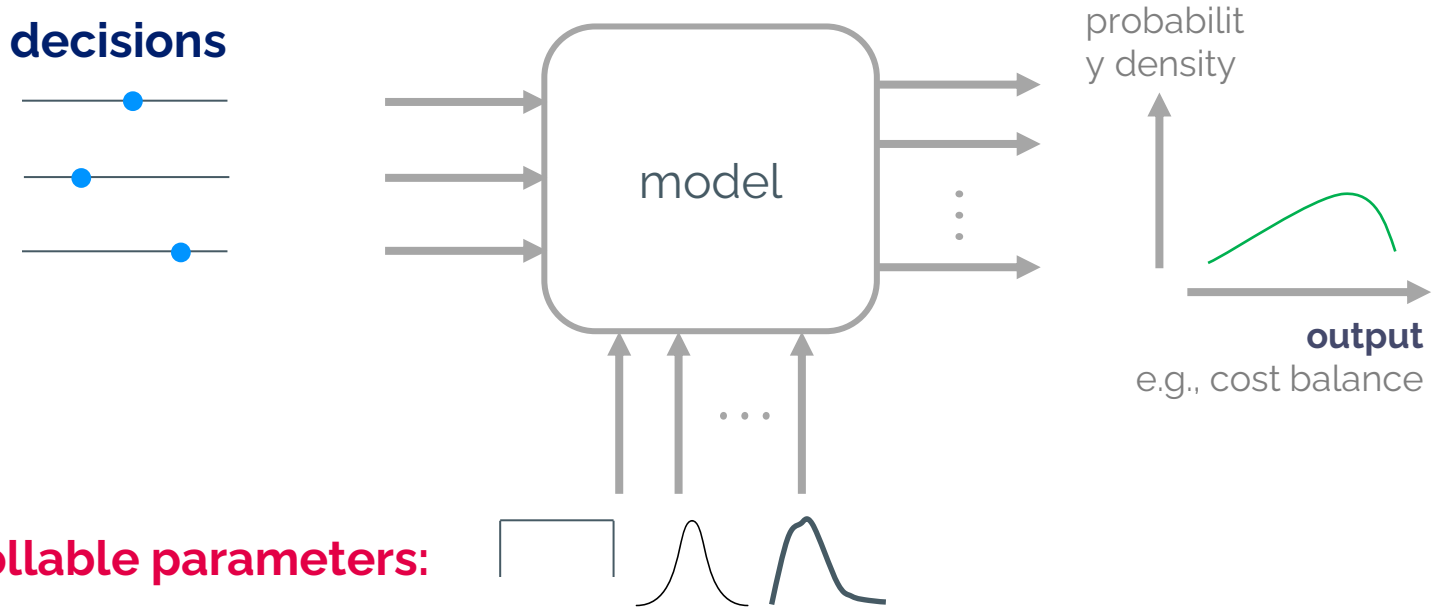
Long term strategy making

A decision leads to a fixed performance for a fixed scenario



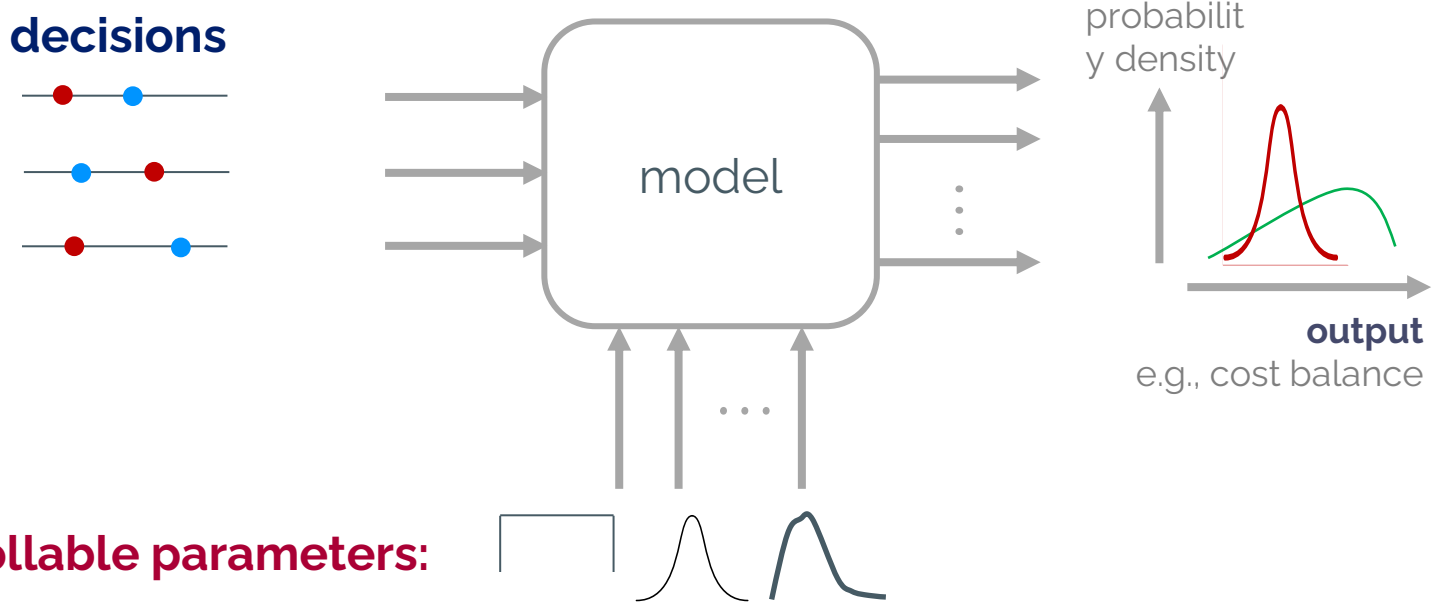
Long term strategy making

As the real world is uncertain,
performance will be uncertain as well



Long term strategy making

What is the robust decision?



Long term strategy making

How to make the right investment decisions
without knowing what the future holds?

1. Create a computer **model** to evaluate technico-economic performance and environmental impact

2. Characterize relevant **technical** and **economic uncertainties**

3. Optimize investment decisions for a wide range of scenarios and identify **must-haves**, **must-avoids**, and **real choices**

What can we do to help our customers immediately

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Products | Low-Carbon glass production

Belgium France Germany

https://www.youtube.com/watch?v=8-QWJPp3ZmE

AGC Low Carbon Glass:

https://www.youtube.com/watch?v=pKMoa2oxjL0&list=PLZiYhNIxPwtEXUuMBrETLlfIO76IXyKgl

kg of CO_2e/ m^2
for 4mm glass

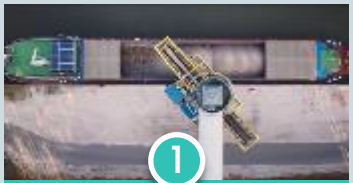
10,3 *

kg of CO_2e/ m^2
for 4mm glass

5,5 **

*Value of GWP extrapolated from the results of Planibel 8mm EPD (Cradle to gate, A1-A3)
** Value of GWP from the Low-Carbon Planibel EPD (Cradle to gate, A1-A3)

Decarbonization levers



THANK YOU!

For more information, please contact:

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