2025: A global divergence of priorities and technologies

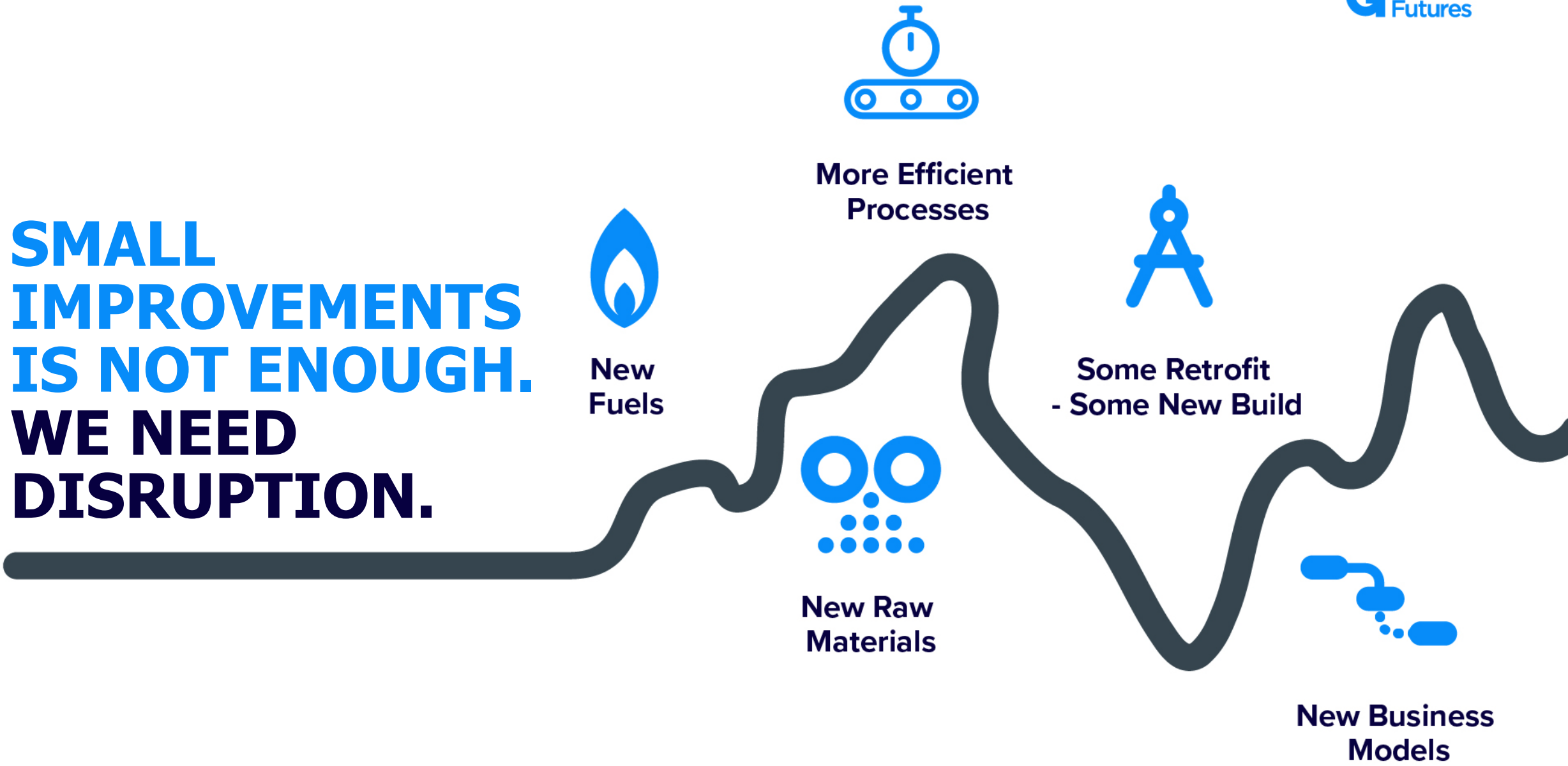
Rob Ireson, Head of Innovation

8th October 2025

86th GMIC GPC Conference, Toledo, OHIO

Glass Futures

SMALL IMPROVEMENTS IS NOT ENOUGH. WE NEED DISRUPTION.



WHO WE ARE

We were built by the glass industry, for the glass industry to create the Global Centre of Excellence to make glass the low carbon material of choice.

Conceptualized in 2014

First major funding in 2020

Furnace started in 2025

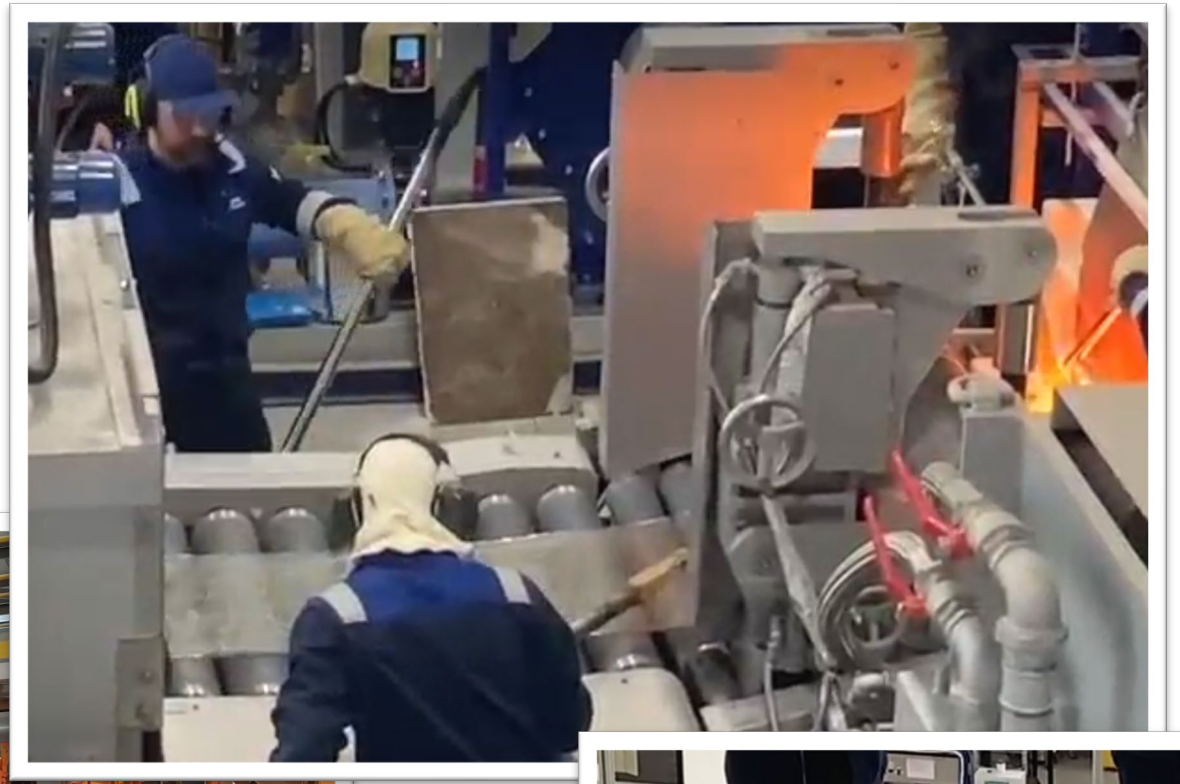
Non-Profit, Membership Organisation

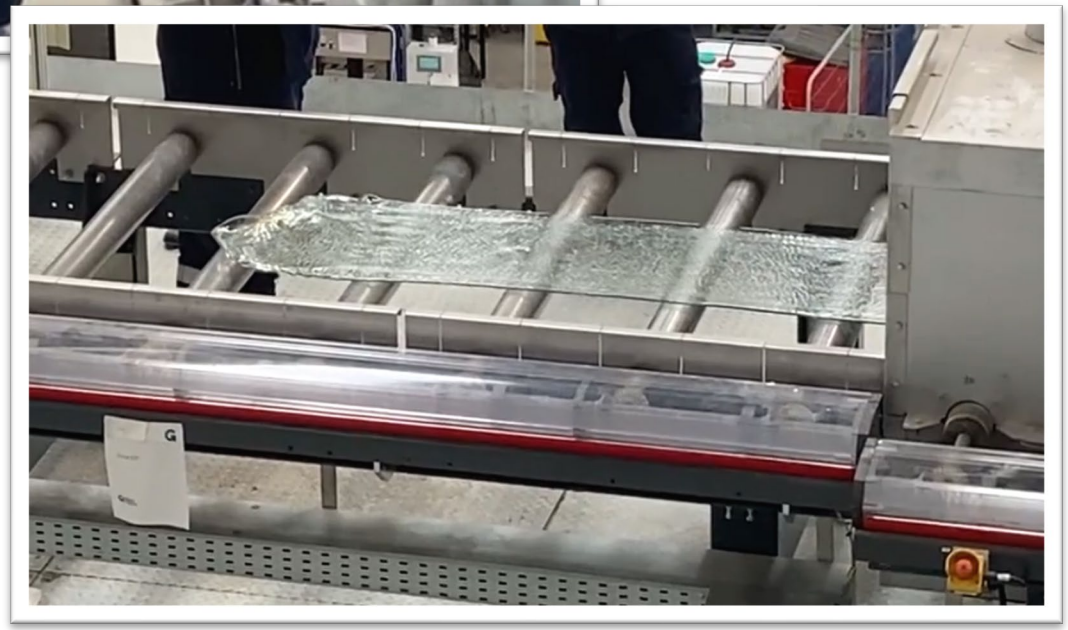
Research and Technology Organisation

Leading the global shift to sustainable manufacture


Glass
Futures™

Photos from pilot plant commissioning process





MEMBERSHIP

Glass Futures

encirc

DIAGEO

ŞİŞECAM

GUARDIAN GLASS

vidrala

SIEMENS

AGI GREENPAC

ArdaghGroup

KNAUF INSULATION

SINA MEDICAL GLASS

RYZE HYDROGEN

merkle international

Calumite

Wiegand-Glas

dsf

MOLSON COORS beverage company

F.I.C. (UK)

AGC

STOELZLE GLASS GROUP

Magma

SEFPRO

GRENZEBACH

verallia

Fickert + Winterling

NSG GROUP

PILKINGTON

eco

Nestlé

EDRINGTON

PSR

STARA GLASS

LAND

Sheffield Hallam University

UNIVERSITY OF CAMBRIDGE

THE WORSHIPFUL COMPANY OF GLASS SELLERS OF LONDON

British Glass

Net Zero North West

UNIVERSITY OF LIVERPOOL

UNIVERSITY OF LEEDS

binkyo

Glass Technology Services

The University Of Sheffield.

Our Hypothesis

There's greater awareness than ever about the need for sustainability...

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BUT the world has changed, making it more challenging to deliver the sustainable products of the future today.

Our Hypothesis

There's greater awareness than ever about the need for sustainability…
BUT the world has changed, *requiring new approaches* to deliver the sustainable products of the future today.

Sustainability is more than carbon

Economic sustainability is as critical (if not more so) than Environmental sustainability

- **Corporate alignment**
- **Corporate commitment**
- **Financial investment**
- **Technology**

Pursuing sustainability at any cost is not sustainable!

In 2020, THE GLASS INDUSTRY DECIDED TO BUILD A PILOT FACILITY IN ST HELENS, UK

Between 2020 – 2025, whilst we designed & built the plant in St Helens…

COVID-19

Ukraine War

Red sea blocked

Israel/Gaza

Global Tariffs

New UK Gov

EU politics

US politics

Global inflation

Decreased consumption

2000+ Large Natural Disasters

2020 vs 2025?

2020: Global CO_2 emissions fell ~6.4% (~2.3 Gt)… for 12 months

2024: Fossil-fuel CO_2 emissions climbed ~0.8% (vs 2020)

2020-24: Global population grown by 4.7% (370 million), estimated global GDP grown >20%

January 2025, the global surface temperature reached ~1.6 °C above pre-industrial norms—the first time breaching the 1.5 °C mark for a full year.

EXAMPLE SCENARIOS TO TEST OUR HYPOTHESIS AGAINST…

Glass is global

Innovation is global

Glass Futures must be global

EU

US

India

EU – Slowdown in Some Sectors but Broad Industrial Commitment Holds

- Continued investing **albeit slower** in green manufacturing technologies (hydrogen furnaces, electric melting) even in 2025—despite energy cost inflation.
- **Potential delay of the 2035 internal combustion engine ban**, plus lower consumer demand and regulatory uncertainty.
- Banks still supporting green infrastructure projects but warning that "regulatory rollbacks risk long-term investment clarity."
- Reduction in capacity to match demand - Over 10 Furnace closures across Float/container

Conclusion (EU): Some industrial players are **scaling back transition speed** due to policy and cost pressures, but many—especially in construction, materials, and insurance—are **still moving forward**, seeing green as a competitive edge.

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US – Industry Retrenchment Under Financial and Political Pressure

- **Major energy sector** walk backs on previous low-carbon commitments, increasing capital expenditure on oil/gas exploration, e.g. ExxonMobil announced in Q1 2025 that green investments would account for less than 10% of total spend.
- **Tesla** paused multiple U.S. Gigafactory expansions due to federal policy rollbacks and tax credit uncertainty in 2025. Elon Musk criticized the lack of "predictable clean tech policy" under the current administration.
- **O-I "Fit-to-win"** strategy focussed on reducing overheads and central functions and focussing on plant and manufacturing efficiency over R&D investments
- **Key banks** exited the **Net-Zero Banking Alliance** by end of 2024, blaming legal threats and Republican state pressure. Their climate-related loan books shrank, and fossil fuel exposure grew again.
- Over $3Bn of agreed funding arrangements roll-ed back around low carbon tech from previously announced IRA spending commitments
- Solar capacity under development in the US has risen by 50% in the past year, and now comprises 60% of all US capacity under development.

Conclusion (US): Despite strong net-zero rhetoric in 2020–21, industry leaders across sectors are **scaling back green initiatives due to political instability, investor pushback, and cost constraints.**

However the pendulum could swing back the other way in the future…

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India – State-Led Acceleration Despite Capital Constraints

- **NTPC** (India's largest power utility) increased green spending cap by nearly 3x in 2025, backing 60 GW of renewable capacity by 2032.
- **Adani Green Energy** commissioned over 2 GW of solar in 2025 and is expanding into green hydrogen—fueled by domestic policy incentives and concessional finance from multilateral banks.
- **JSW Steel** launched its green steel roadmap in 2024–25, but implementation is slower than expected due to high cost of renewable hydrogen and carbon capture.
- **UltraTech**, India's top cement producer, is investing in alternative fuels and waste heat recovery, but has **not committed to science-based targets**, citing financial uncertainty.
- **SBI** launched a ₹30,000 cr climate finance window for small and medium enterprises (SMEs) in 2025, focusing on clean tech, solar, and efficiency upgrades.

Conclusion (India): Industrial decarbonization is actively **state-driven** and growing in ambition. However, **private sector uptake varies**: energy giants are leading, but cost concerns limit full commitment in harder-to-abate sectors like cement and steel.

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Regions Summary

Region	2020–25 Trend	Financial Pressure Effect	Status at 2025
US	Sharp rollback, uncertainty	High—policy reversals, funding slashed	Major languishing/delays
EU	Stable but uneasy	Moderate—policy signals cause investor caution	Corporate & investor support holds
India	Aggressive growth	Low—state-led support, rising private AUM	Continued expansion & planning

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BUT the world has changed, making it more challenging to deliver the sustainable products of the future today.

Against the hypothesis?

In the U.S., financial strain is real—especially from policy rollbacks impacting both public and private green investments. The result: $14 billion in project cancellations and banks abandoning net-zero pledges.

In India, the picture is largely **positive**, with robust government funding, surging renewables, and policy frameworks taking shape. Private-sector pressure is limited to scale, not rollback.

In the EU, although there’s political and financial strain, investor and corporate conviction remains relatively stable — suggesting a middle ground where financial pressure exists but hasn't derailed transition yet.

WE NEED TO TAILOR SOLUTIONS FOR DIFFERENT REGIONS ACROSS THE WORLD

A special relationship

To face the growing challenges of the future we must leverage special relationships, playing to the strengths of each rergion

Leverage assets and skills

Reduce costs and time to advance technology

Work collaboratively to ensure high energy costs and political uncertainty can be overcome through strong industrial leadership

Glass Futures has helped leverage >£4million funding from UK government to support trials at US-owned glass plants based in the UK…

AN INNOVATION ECOSYSTEM

THIS. IS. NEW.

FOR.

GLASS….

AN INNOVATION ECOSYSTEM

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GLASS….

→ **Across all glass manufacturing sectors** *(container, float, tableware, fibre, specialty, pharma)*

→ **Across the supply chain**

→ **Industry collaborating with academia**

→ **Working with national governments**

→ **Collaborating with other sectors** *(steel, ceramics, cement, aluminum, paper, chemicals, energy, aerospace…)*

A COLLABORATIVE MEMBERSHIP APPROACH

We must work collaboratively to achieve net zero… And gain:

Corporate alignment

Corporate commitment

Financial investment

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Financial investment

Create business models where everyone wins:

→ **Business**

→ **Investors**

→ **Customers**

→ **Environment**

Harnessing the power of Digitalisation & AI…

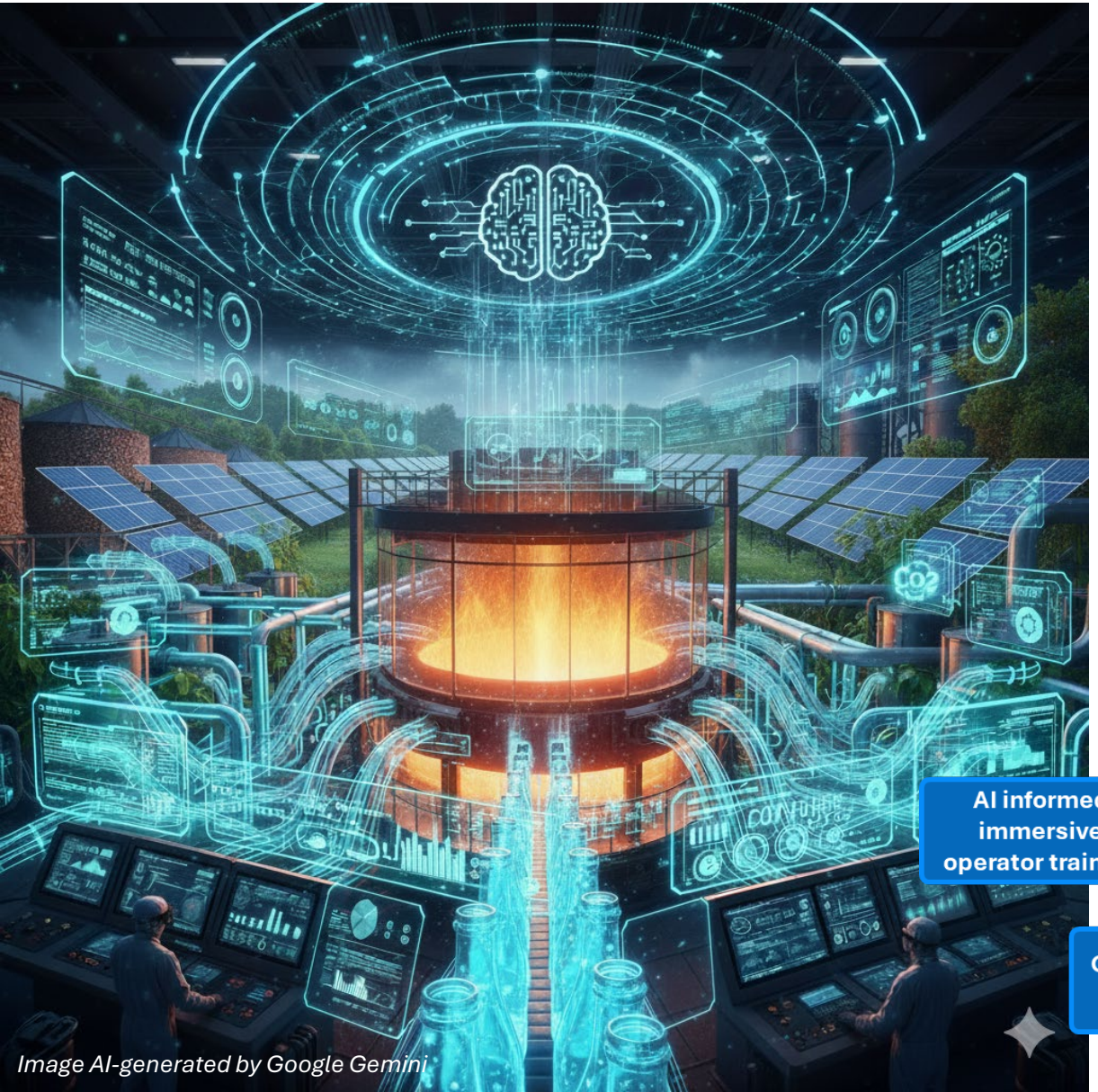
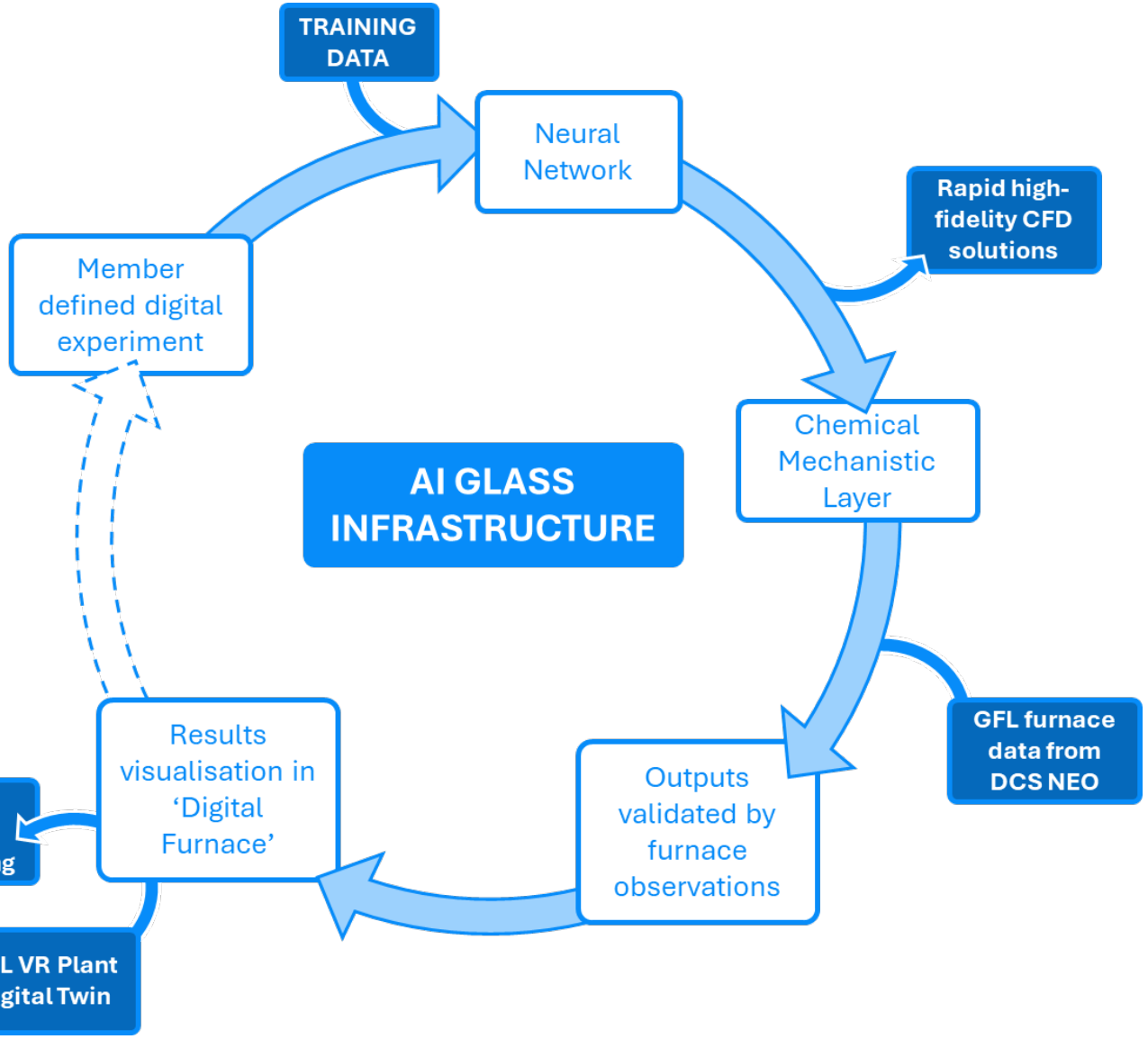
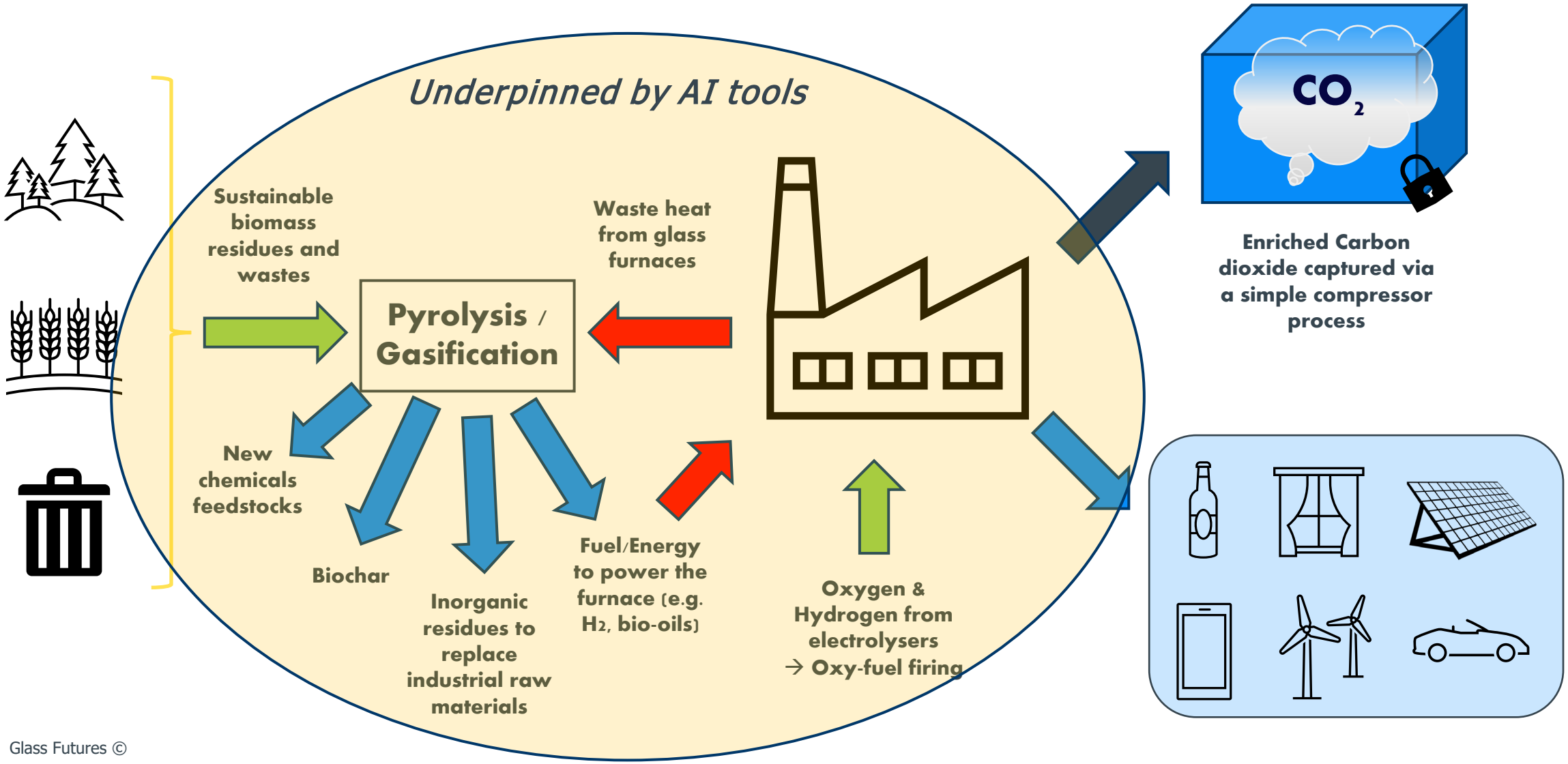


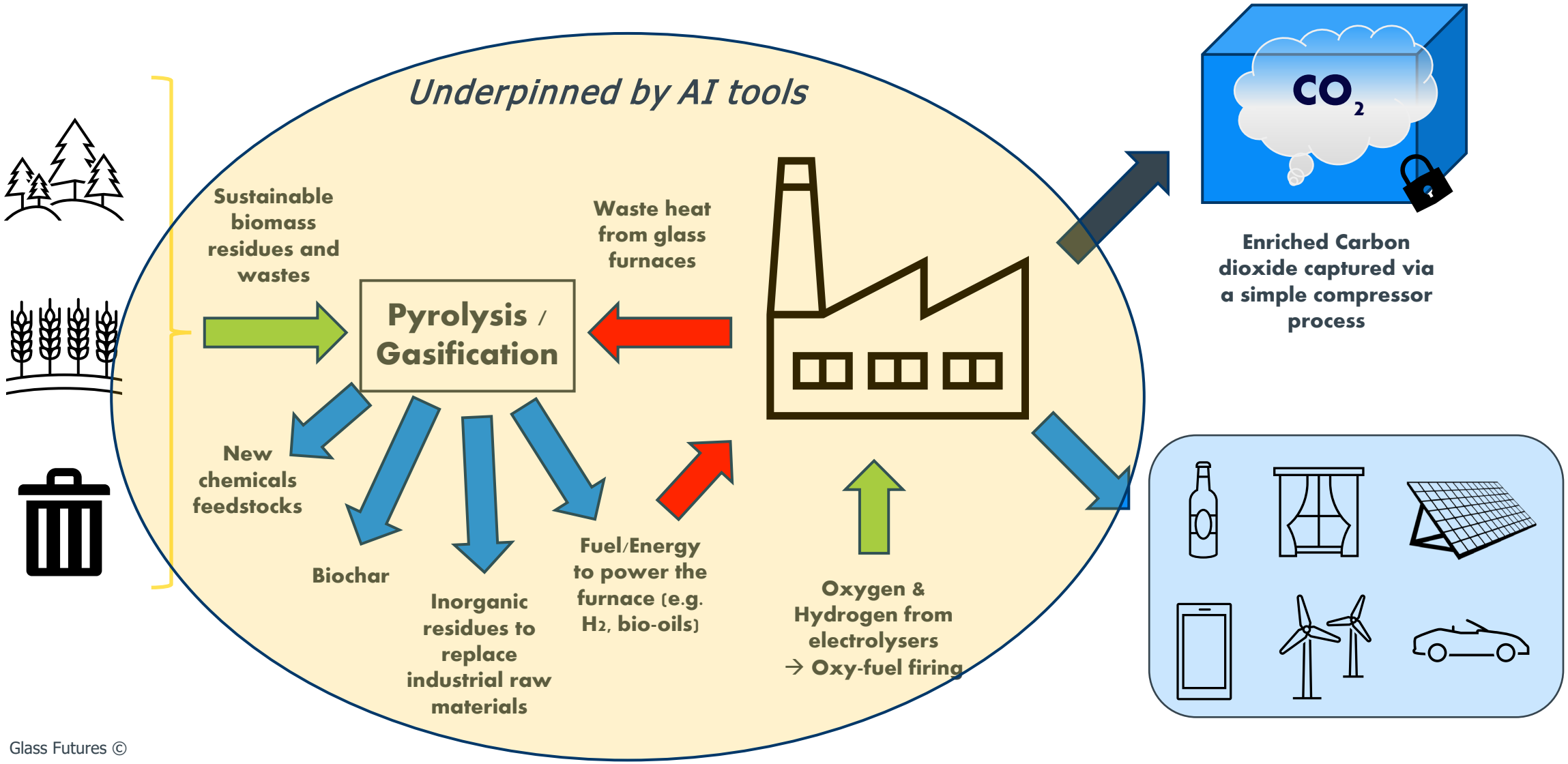
Image AI-generated by Google Gemini



...to realise a new future: Glass production, a by-product of carbon capture?!



…or should that be Carbon capture a route to increase profitability of Glass production?!



THANK YOU

ANY QUESTIONS?

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