



Net Zero Brewing

23/09/2026

Brouwerij Duvel Moortgat

History

- Founded in 1871 as a small local brewery
- By Jan Leonard Moortgat
- Today, the 4th Moortgat generation continues his brewing heritage



12 Breweries in BE, NL, FR, CZ, IT, VS and CHINA



Content

Duvel-Moortgat is transitioning towards net zero brewing, combining heat pumps, heat recovery and thermal storage.

Today we will discuss our journey in this transition and visit operations such as our CO2 recovery system and biogas installation.



Global Carbon Footprint Duvel Moortgat



12%

Agriculture:
FLAG emissions from purchased agricultural products such as malt, hops and sugar sourced from suppliers.

12%

Processing of Raw materials:
non-FLAG part of purchased products such as malt, hops, and sugar sourced from suppliers. But also process aids, cleaning agents, and chemicals for wastewater treatment.

Brewing operations

10%

Scope 1 (Direct emissions):
Emissions generated on-site from the combustion of natural gas used to produce steam and heat for brewing, packaging, and washing returnable bottles. This also includes process emissions from purchased CO₂ that is released during production.

5%

Scope 2 (Indirect emissions – purchased energy): Emissions resulting from the production of electricity and heating that we purchase and use. Although we don't generate this energy ourselves, the emissions released at the power plants or heating facilities that supply us are included here.

14%

Other:
capital goods, business travel, employee commuting, and waste generated in operations.

242.000 ton
CO₂e
100 kg/hl bier

29%

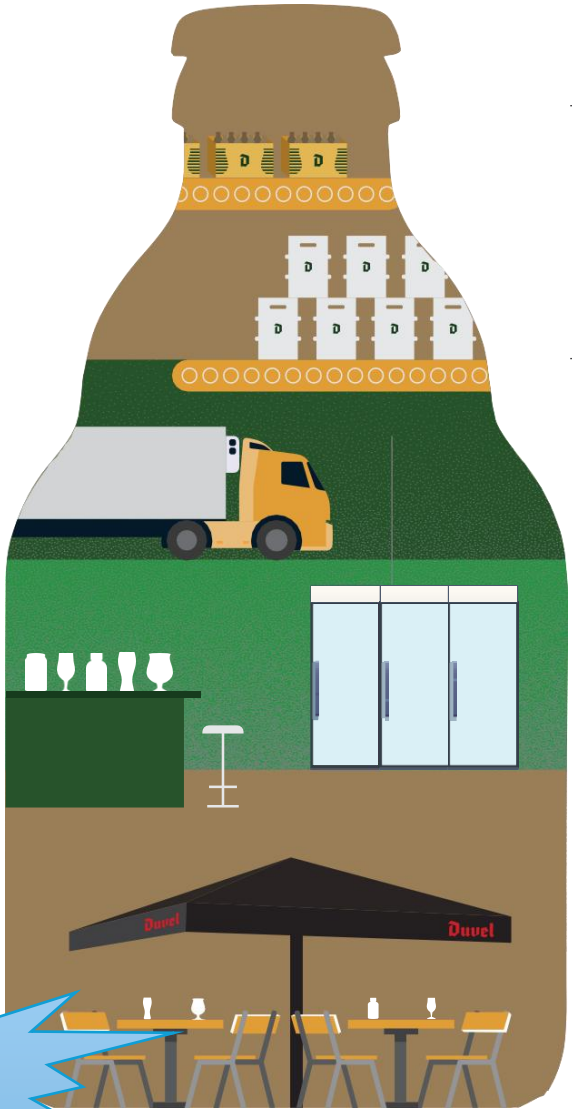
Packaging materials:
sourcing and disposal of packaging materials.

16%

Logistics upstream & downstream:
the transport of raw materials upstream, from field to breweries transport and external warehouses, to bring finished products from our breweries to customers and consumers in their respective markets.

1%

POS (Point of Sale):
displays for discounts, exclusive glasses for collectors, branded umbrellas, and other POS to promote our products.





Targets

To achieve we must tackle heat-related emissions in Puurs.

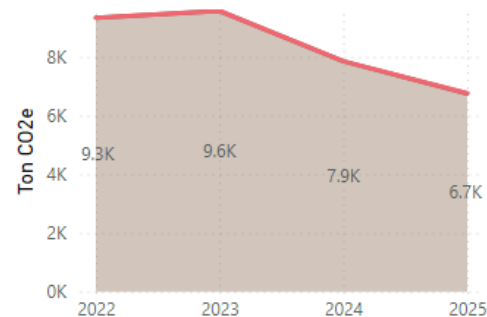


From 2022 baseline Duvel Moortgat commits to:

- reduce absolute scope 1 and 2 GHG emissions 42% by 2030
- reduce absolute scope 1 and 2 GHG emissions 90% by 2050

Absolute GHG Emissions

Scope ● 1 ● 2



2030 Target

2022 Baseline

-42%

Progress vs baseline

-27.52%

Our SBTi validated targets

-42 % Scope 1 & 2 GHG emissions by 2030

HOW?

- Reducing energy use
- Decarbonizing heating through electrification
- Generating and purchasing green energy
- Revalorizing wastewater and spent grains for biogas
- Buying and generating heat from renewable sources
- Carbon capture and utilization

-25 % Scope 3 GHG emissions by 2030

HOW?

- -30,3% FLAG GHG emissions: supporting regenerative practices
- Packaging: returnable, lighter, and less carbon-intensive
- Logistics: moving toward low-impact transport
- Cooling: promoting the use of renewable energy

In order to achieve targets reduce emissions from:

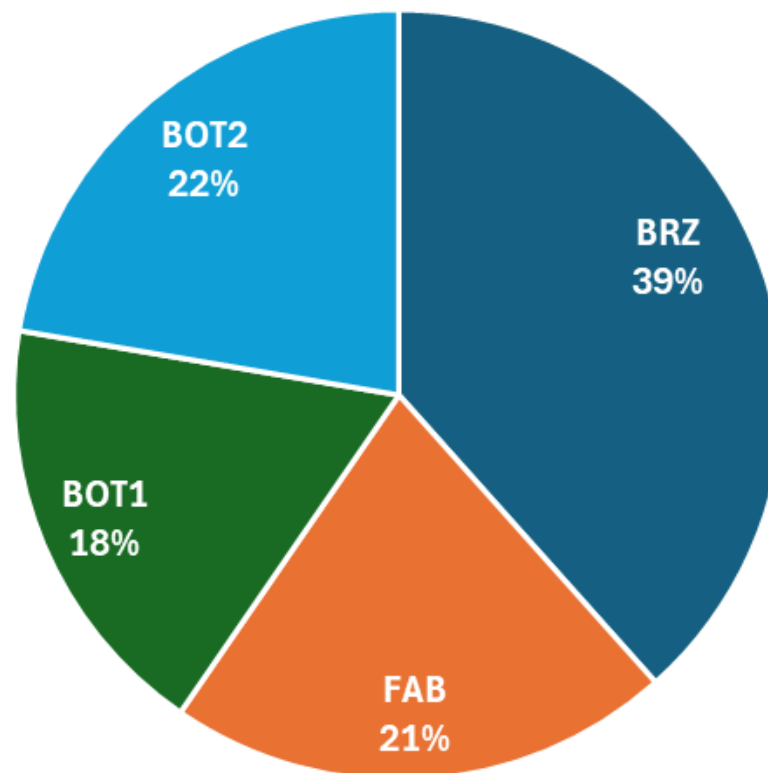
→ Purchased CO2

→ Heat



Bigger picture: from steam to water

- **All heat** from the gasboilers is now being distributed over the site in the **form of steam**
- Switching certain **steam offtakers** → **hot water offtakers** is a critical succesfactor for an efficient decarbonisation plan
- The **steam offtakers** are spread out over the the entire production site
 - Bottling plant 1
 - Bottling Plant 2
 - Brouwzaal
 - Fabricate



Heat balance

Operational data and price outlooks have been used to build a digital twin of the site



Granular, dynamic model

- Hourly demand profiles
- Hourly energy prices
- Hourly renewable generation
- Peak capacity tariffs

System modelling

- Integrated asset operation and procurement
- Optimal solution integration (incl. Storage)
- Equipment CAPEX & OPEX
- Subsidies



The optimized roadmap reduces total costs by ca. 11 M€: emissions are reduced by ca. 58%



Energy purchase, GWh, 2028-2050



Overall energy reduction achieved by thermal efficiency of heat pumps (COP) and more efficient hot water distribution

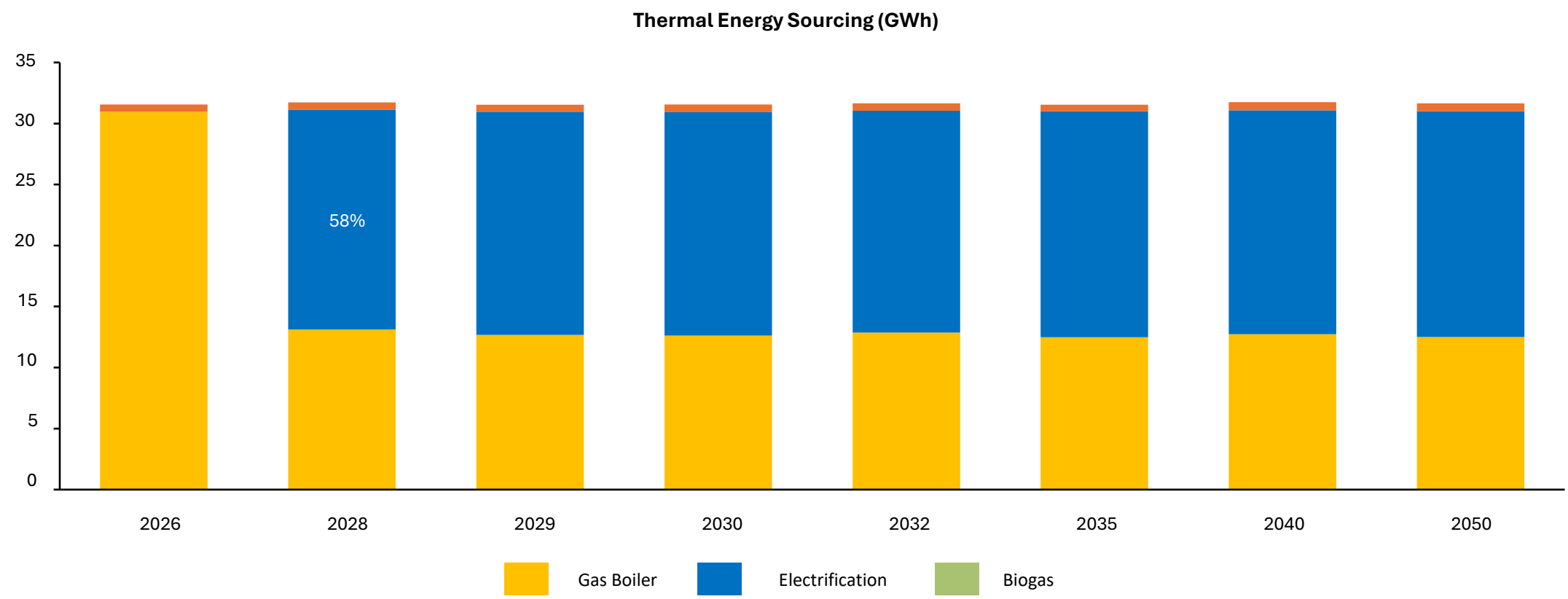
Total Costs of Ownership* (2028-2050) overview

	BaU	Economic Optimum	Difference
Decarbonization (2028)		58%	+58%
TCO	129 M€	118 M€	-11 M€

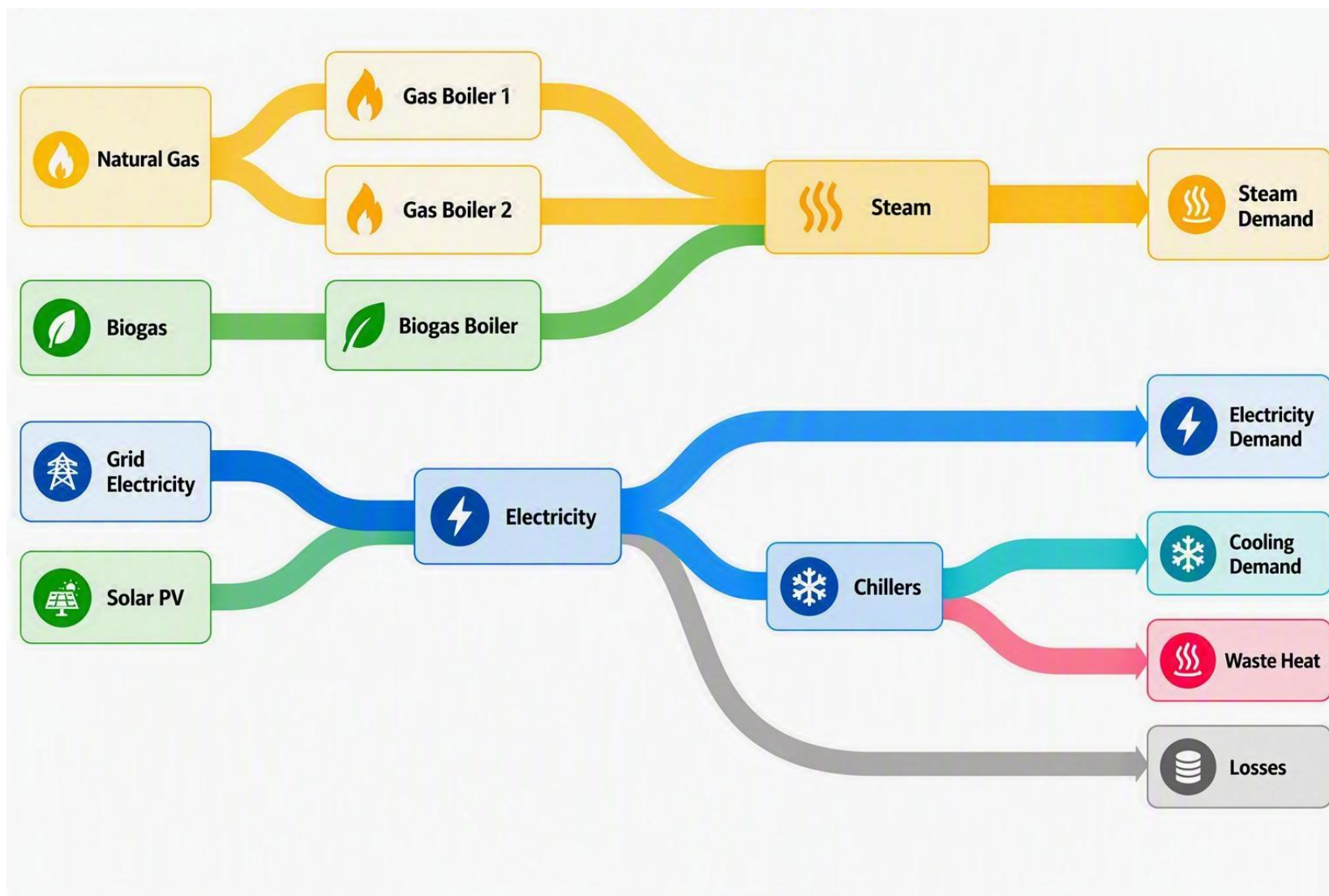
* Total Costs of Ownership include all CAPEX & OPEX, summed over the lifetime of the project



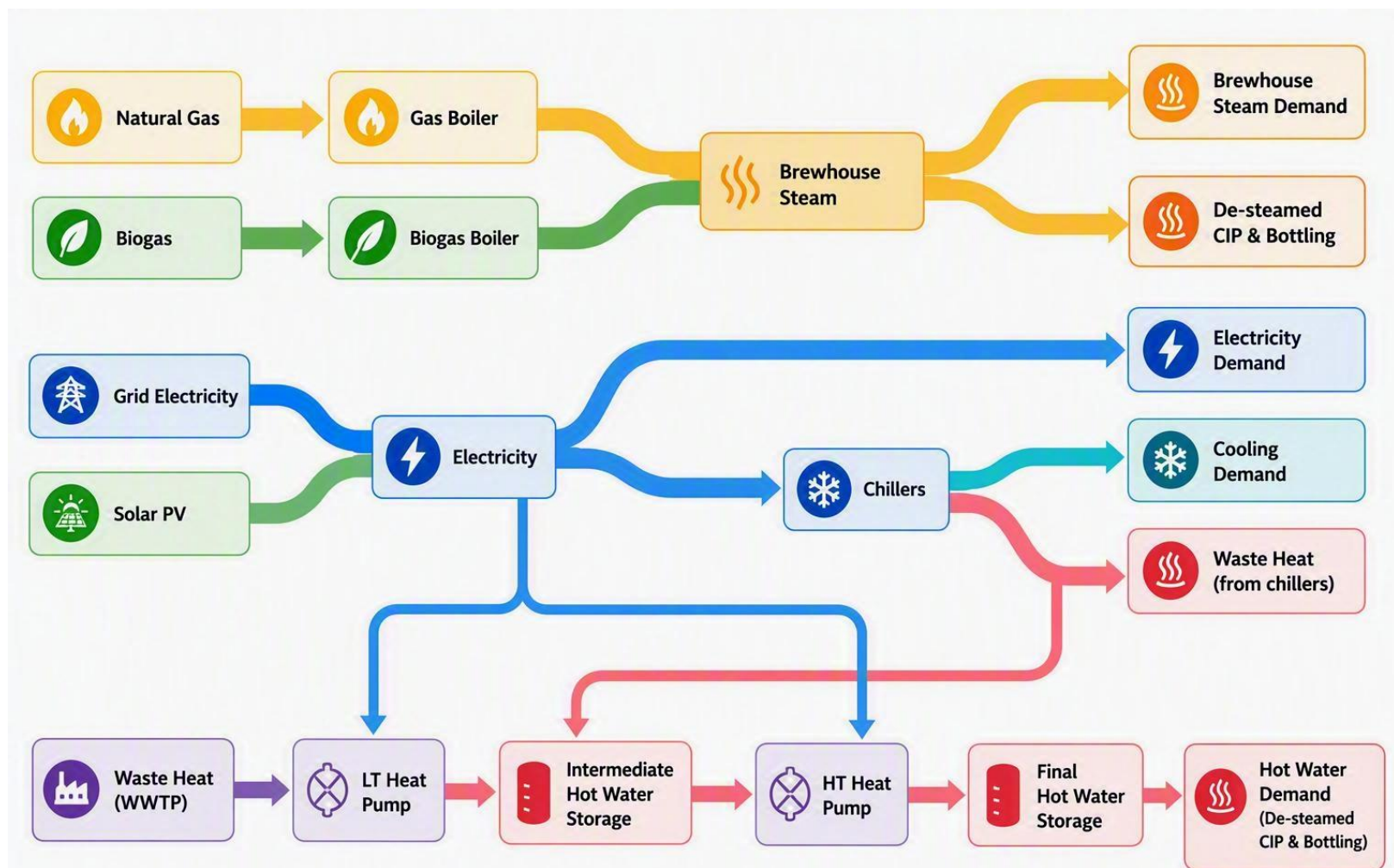
Heat pumps take over 58% of the site's thermal energy consumption



This enables the site to move from a system based on natural gas



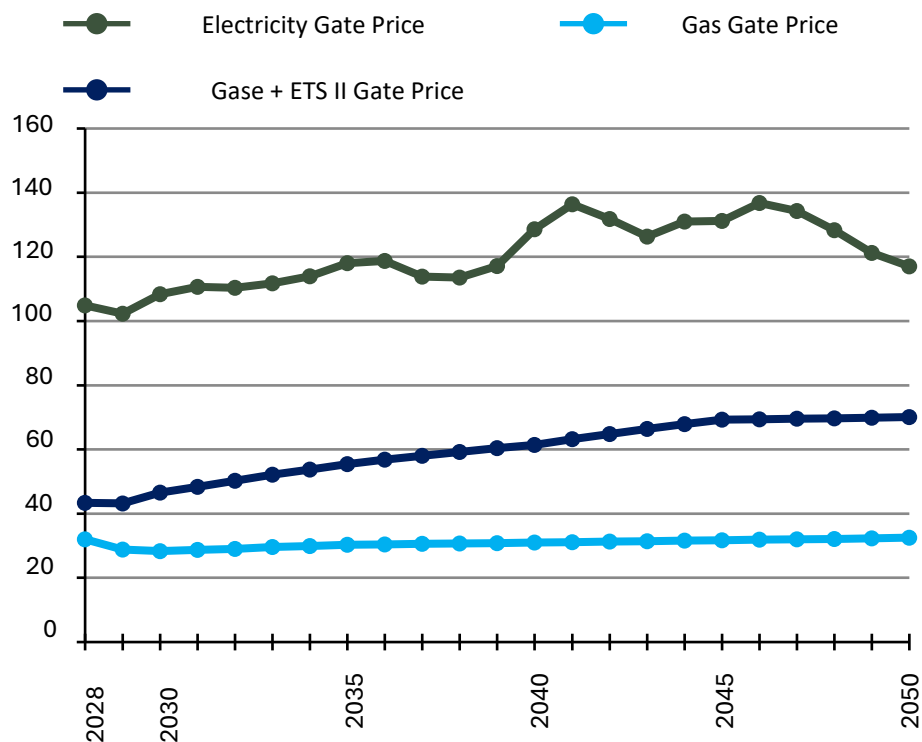
To a diversified, hybrid system that valorises waste heat streams through heat pumps



The Business-as-Usual case is the reference against which roadmap value is measured



Elec & Gas, gate price, EUR per MWh



Current footprint

**6,7 kT
CO₂/year**

Scope 1

Current footprint

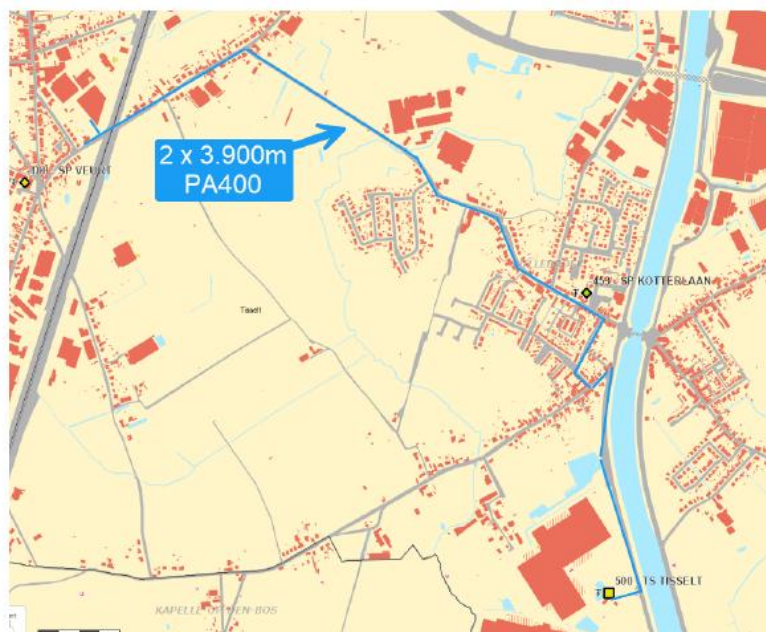
0 kT CO₂/year

Scope 2

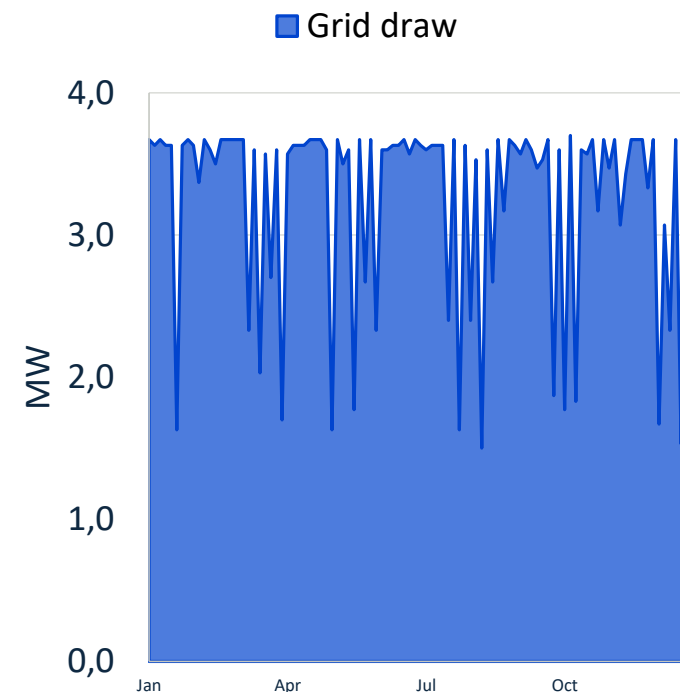
Electrification happens in 2028, causing a significant drop in emissions



More electrification is possible with the new 10 MW grid connection



- **Ready for growth** in volume & electrification.
- **Current grid tariffs** penalise peak electricity demand, limiting the economic case for electrification.
 - Comparable mechanisms are already implemented in France, Germany and the Netherlands, that introduce stronger flexibility and time-based tariff signals to support grid efficiency.



A heat-pump-led pathway can achieve a 60% target; the investment in the electric boiler is not recommended



58%

site decarbonization
in 2030 is feasible

Through three key-
adjustments in the
energy system

Buying

Switch to full-spot procurement

The recommended purchasing strategy gives the site greater flexibility. However, the configuration was also tested with hedged procurement, showing similar results.

Steam demand

De-steam bottling and CIP

Removing steam demand delivers direct energy-efficiency gains.

Heat supply

Prioritize heat pumps; not the electric boiler

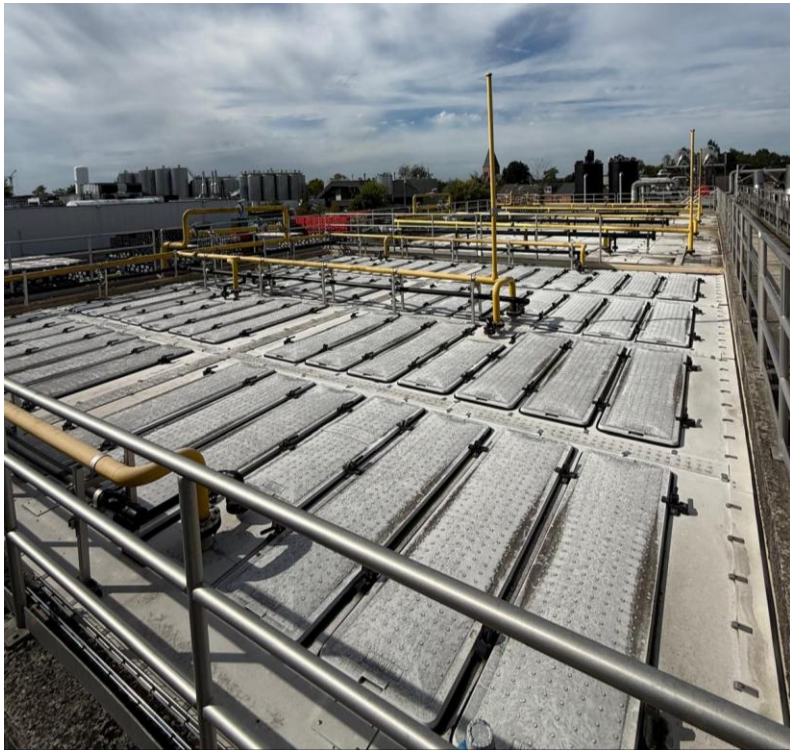
Heat-pump COP and available waste heat make the electric boiler less feasible, since that business case is especially sensitive to the high grid tariffs. The prospect of dynamic grid fees might change this in the future.

Brewery tour – Operational Sustainability Projects



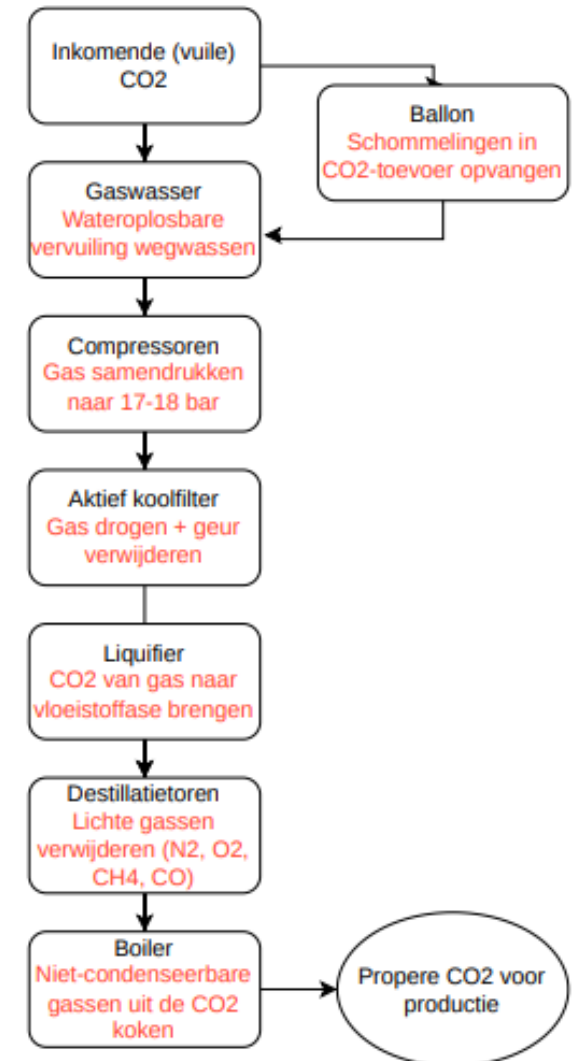
Biogas

- Biogas recovery from organic matter in wastewater (**anaerobic biogas fermentation**)
- Biogas production: **9–10% of total gas** consumption



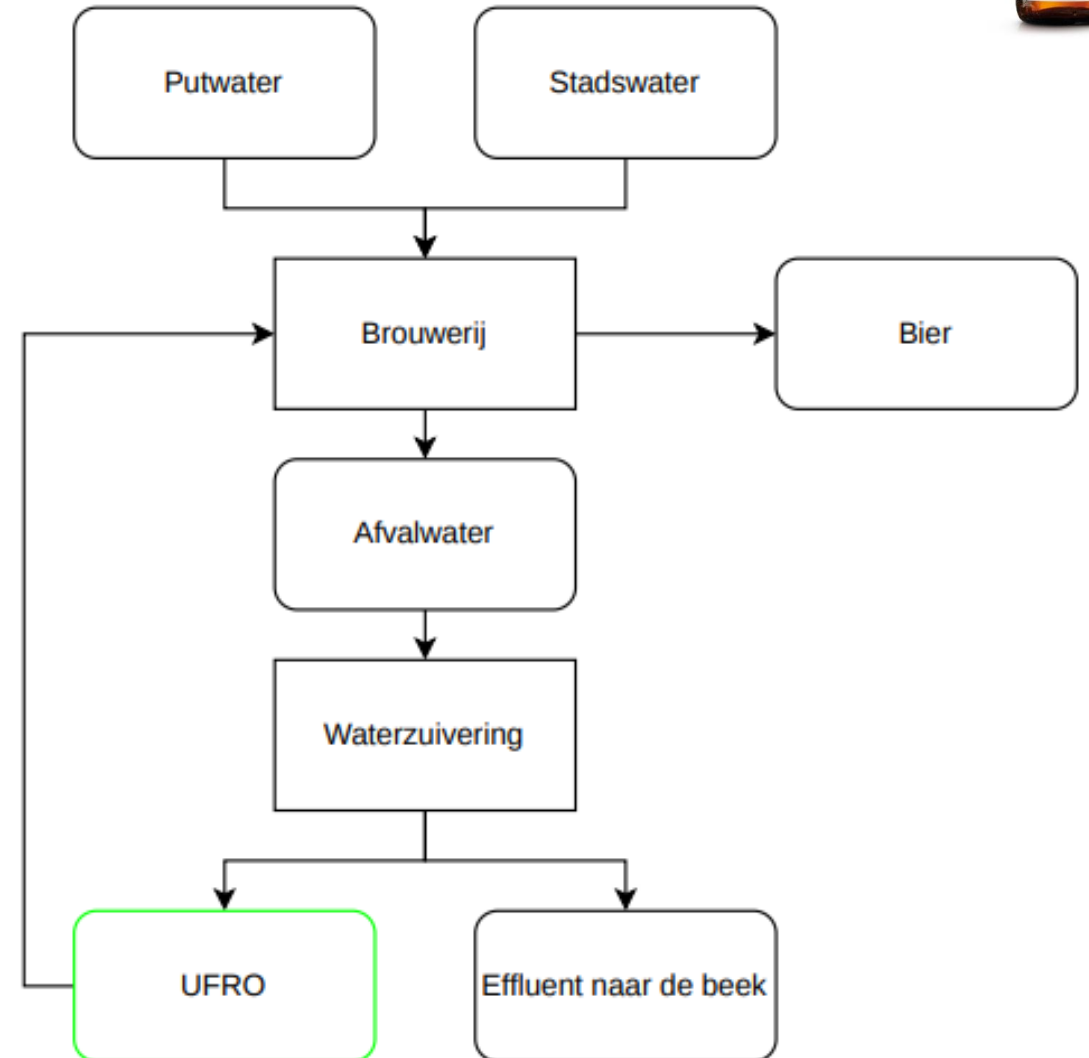
CO2 Recovery

- **Capturing excess CO2** during beer fermentation for later use during the finishing and bottling of beers
- Commissioning of new CO2 recovery system: **July 11, 2025**
- **Goal:** Make Puurs 100% self-sufficient + supply SAE



UFRO-water

- **Objective:** To upgrade water purified using membrane technology (UF and RO) to drinking water
- UFRO: 13% of total incoming water
- Target: 20% of total incoming water



Solar Panels



Questions?

THANK
YOU!

