Port of Antwerp-Bruges

In tune with the world.

Tom Hautekiet,
Chief Commercial Officer

May 9th, 2023
One port, two platforms
One port
Two sites

A global port in the heart of Europe

2nd largest port of Europe
2nd largest port in Europe

Largest car handling port in Europe
3,507,461 million cars/year

Largest chemical hub in Europe

Largest cargo handling port in Europe

Total throughput
287 mio tons/year

Important cruise port in Benelux
547,374 passenger movements

20,675 Seagoing vessels/year

15% of EU gas market

Number one export port in Europe
14,322 hectares
A world class industrial cluster
Antwerp: the largest integrated chemical cluster in Europe

- Guarantee of **stable supply of feedstock**, raw materials and intermediates
- Outstanding pipeline **connectivity**, tank storage and product handling
- **Import and production** of chemical commodities for the Global and North-West European market
- **Leading chemical companies** are present in the cluster and continue to invest in Antwerp
Europe’s largest integrated oil & chemical cluster

- 15% of EU gas needs (LNG, CNG)
- 90.6 Mt maritime throughput of liquid bulk
- 9 million m3 tank storage
- 1000 km pipelines (57 products)
- 40 Mt of oil refinery capacity
- 20 Mt Chemicals output
- 14 Mt CO2 (ETS) emissions
Zeebrugge: key natural gas import hub North-West Europe

• Fluxys
• 15% of EU gas market
• Large supplier to the German market
• Expansion plans ongoing for additional NG throughput capacity and future energy carriers
Strategic partner of the German industry

- Major **German chemical and logistic players** host their production and import/export facilities in Antwerp, linked with German industrial sites
- Supply of **natural gas** through Zeebrugge
- Key port for steel, machinery and car(parts) **import and export to/from Germany**
- **Rail and barge** connections (20Mton/y) for a multitude of products and commodities as well as pipeline connections
Zeebrugge
14 februari 2023
Energy transition is a European challenge: joint efforts needed

- Tackle climate change **AND security of energy supply** for our economies.
- Belgium and Germany face the **same challenge**: large energy demand/industrialization and insufficient renewable energy potential to match.
- **Interconnection** of electricity grids and gas pipelines will continue to be vital for our economies.
- **Electrones and molecules** will be complementary, as well as European production and imports.
Energy & feedstock hub enabling energy transition
Energy supply transition

3 pillar approach Port of Antwerp-Bruges

- Renewable electrons & interconnected grids
- Green/Blue hydrogen production & pipelines
- Hydrogen imports
Climate transition lighthouse projects

**Sustainable Energy**
- Expand Onshore wind production capacity
- Backbones for sustainable flows (H2, CO2, waste heat & steam)
- Hydrogen Import Coalition / Pilots

**Sustainable Industry**
- NextGen District – hotspot for circular Economy
- Antwerp@C – CCUS
- Power-to-Methanol green methanol production (CCU)

**Sustainable Shipping**
- Multi Fuel Port – alternative fuels in offer
- Onshore power supply for vessels
- Tugboats on H2 & methanol
Green Energy Hub of the Future

- North Sea wind farms
- Rail
- Pipelines
- Shipping
- Barge

Conversion electricity to H₂

Underground CO₂ storage in North Sea

Bruges
Port of Antwerp-Bruges

Antwerp
Port of Antwerp-Bruges

CO₂

FEEDSTOCK CHEMISTRY

ELECTRICITY

HEAT

FUELS

for shipping, aviation or trucks

FEEDSTOCK CHEMISTRY

CHEMICALS

STORAGE

CHEMICAL INDUSTRY

HYDROGEN CARRIERS

NH₃ - CH₄ - LOHC

Brussels

Ghent

Germany

Netherlands

France

Via North Rhine-Westphalia to hinterland

CO₂

Underground CO₂ storage

CO₂

Conversion hydrogen for fuels, green energy hub of the future

Hydrogen carriers

NH₃ – CH₄ - MeOH - LOHC

Storage

Chemical industry

Bruges
Port of Antwerp-Bruges

Antwerp
Port of Antwerp-Bruges
Hydrogen roadmap 2030: supply

**Local production (non-exhaustive)**

**Green hydrogen**
- **Hyoffwind consortium – Zeebrugge**
  Operational by 2024/2025  
  Electrolyser: 25MW, scalable to 100 MW

**Plug – Antwerp/NextGen District**
  Operational by 2024/2025  
  12,500 tons of hydrogen per year

**Green methanol**
- **Power-to-Methanol**
  Production of sustainable methanol from captured CO2 and renewable hydrogen.  
  2023: 8kta methanol synthesis  
  2030: potential to scale to 100kta

**Blue hydrogen**
- **Antwerp@C: Capture and recycling of CO2 into new feedstock, discharge and disposal in North Sea**
  1st phase infrastructure operational in 2025.  
  2030: capture half of the port's CO2 emissions.

**Import (non-exhaustive)**

**Most of our H2 demand will need to be imported**

Hydrogen imports will be key for North-West Europe to feed the growing demand for these derivatives in industry and transport. Complementary to local production of green and blue hydrogen.

**Global partnerships**

To facilitate the market ramp-up of this global supply chain we set out several partnerships around the world. Cooperation agreement with partners in Chile, Oman, Namibia, Egypt and Brazil.

With Port of Antwerp-Bruges International we offer consultancy, management and investments to ports globally. With several locations aiming to become hydrogen production-usage-export hubs.

**Hydrogen import coalition**

Coalition of industrial partners with expertise throughout the full value chain of hydrogen import proofed the technical-economical feasibility of hydrogen import with their study in 2019. In this next phase all partners are developing separate projects and continue to collaborate on advocating the right framework in Belgium for import.
Hydrogen roadmap 2030: infrastructure

**Terminals: import and storage for hydrogen carriers**

**Further expand hydrogen carrier existing capacity**
for methanol, ammonia, LOHC and methane. Through reconversion or new built. Several projects in development, coming online 2027-2032.

**Hydrogen carrier conversion to hydrogen gas**
can be consumed directly or converted back into hydrogen gas. Ammonia cracking and a LOHC splitting installations are coming online from 2024 onwards.

**Concrete projects**
Fluxys and Advario are studying construction of an open access terminal in Antwerp (2027). Other projects from commercial parties are in development but confidential.

Air Liquide is developing a first Ammonia Cracker in Antwerp, operational by 2024.

**Pipelines**

**Largest hydrogen network**
in Europe runs through the port, connected to other clusters.

**(open-access) hydrogen pipeline**
Construction of a pipeline in the Antwerp port area (early 2026) connected to Zeebrugge and German hinterland, among others, in the period 2028-2030.

**Over 1,000 km pipelines**
of other product pipelines connected to the Antwerp platform.
Hydrogen roadmap 2030: consumption and transit

**Industry**

**Feedstock**

Hydrogen molecules and derivatives like ammonia and methanol are already consumed in large quantities today in the Port and Belgium. In refineries and as feedstock for the chemical industry.

**NextGen District**

At NextGen District, new circular processes on hydrogen will be developed, as well as green hydrogen production and innovation.

**High-temperature heat**

For high temperature heat production hydrogen carriers can be burned.

**Steel production**

Steel is currently produced in blast furnaces, hydrogen can replace partially the fossil feed. In new DRI plants the full feed can be hydrogen, where enormous quantities will be needed.

**Transport**

**Heavy duty transport or non-road vehicles**

**HyTrucks**

consortium with Air Liquide and DATS 24 as partners, aims to run 300 hydrogen-powered trucks in Belgium by 2025.

**World’s first-ever refuelling hydrogen station**

where ships as well as trucks, cars and tractors can fill up with green hydrogen, operated by CMB.TECH.

**PIONEERS project**

port equipment on the terminals which cannot be electrified will switch to hydrogen or derivatives. In Pioneers project several pilots will be launched.

**Shipping: maritime, inland & tugboats**

**Multi Fuel Port by 2025**

where alternative shipping fuels such as methanol, ammonia and hydrogen, among others are available. For inland shipping we also aim for hydrogen.

**Hydrotug and methatug**

testing tugs running on methanol (methatug) and hydrogen (hydrotug). This will make our own fleet more climate-friendly.
Supply chain towards hinterland
Barge, rail, cables & pipelines: expanding the existing logistics

Barge & rail connections to/from Germany

Pipeline connections to/from UK, Norway, Netherlands, Germany, France

Cable connections to/from Netherlands, France and Germany
Port of Antwerp-Bruges as lever for a global hydrogen supply chain
Partnerships are the key to success

Active membership of national and international organisations, bring together cross-sector partners

Partnerships & collaboration agreements (non-exhaustive)

- European Clean Hydrogen Alliance
- Hydrogen Europe
- WATERSTOF INDUSTRIE CLUSTER
- IEA CEM Global Ports Hydrogen Coalition
- Road Freight Zero
- Transitioning Industrial Clusters towards Net Zero
- Getting to Zero Coalition
- NAMPORT
- duisport
- HyTrucks
- Hydrogen Import Coalition
Innovation/development needed for:

- NH3-cracking
- Elektrolyzer efficiency/technology
- LOHC dehydrogenation
- ... 

But biggest challenge is not technology, but:
- workable policy framework
- business-cases and building real value chains
- skilled work force (blue and white collar)
- ...
BE project BE-HYFE

• Belgian Network for academic hydrogen expertise to support Belgian Industry
• Funded by the BE federal transition fund
• Core group of 16 PhD-students at 12 BE knowledge institutes
• PhD thesises covering the whole value chain of H₂

Three pillars in the project

https://www.behyfe.be/research
In tune with the world.