

# Multi Fuel Port

Inland Navigation Week  
2023

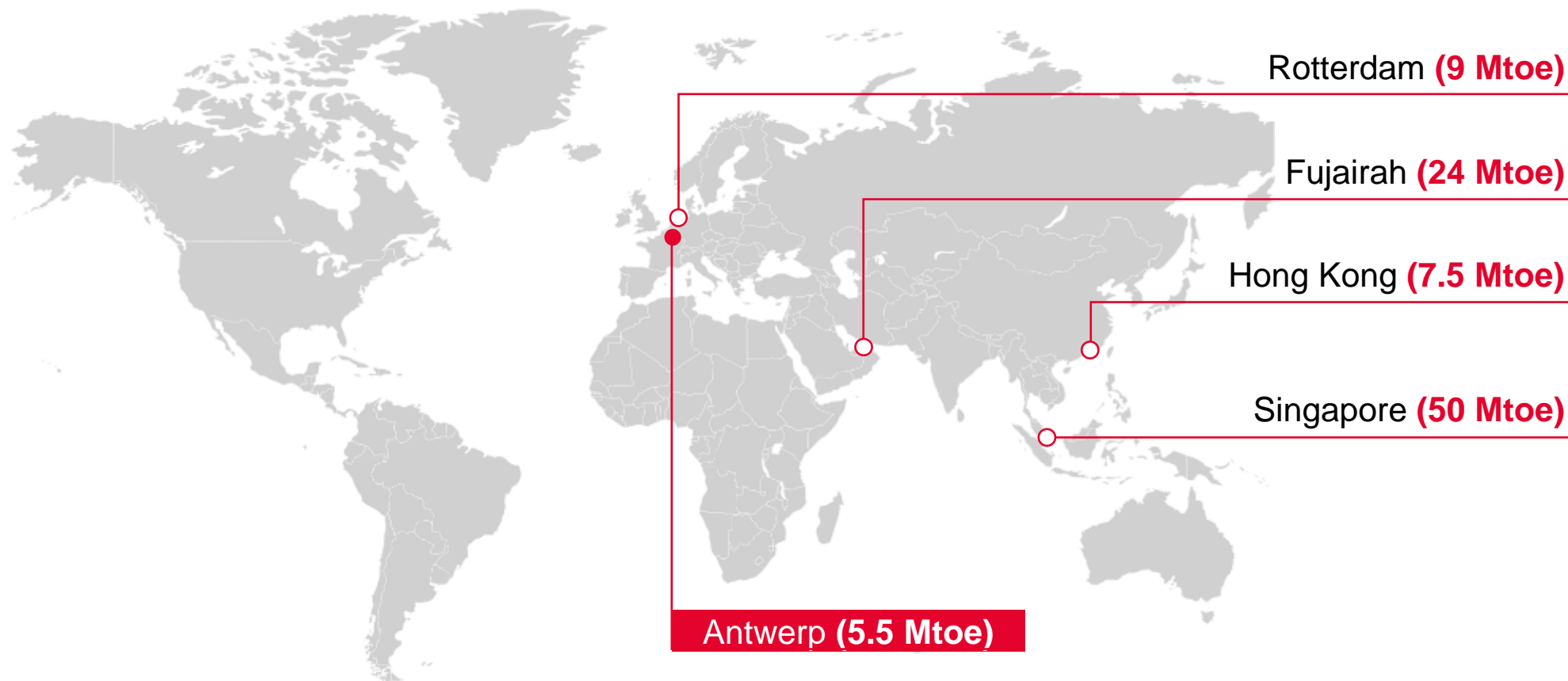


Port of  
Antwerp  
Bruges



# Conventional bunkering in the Port of Antwerp-Bruges

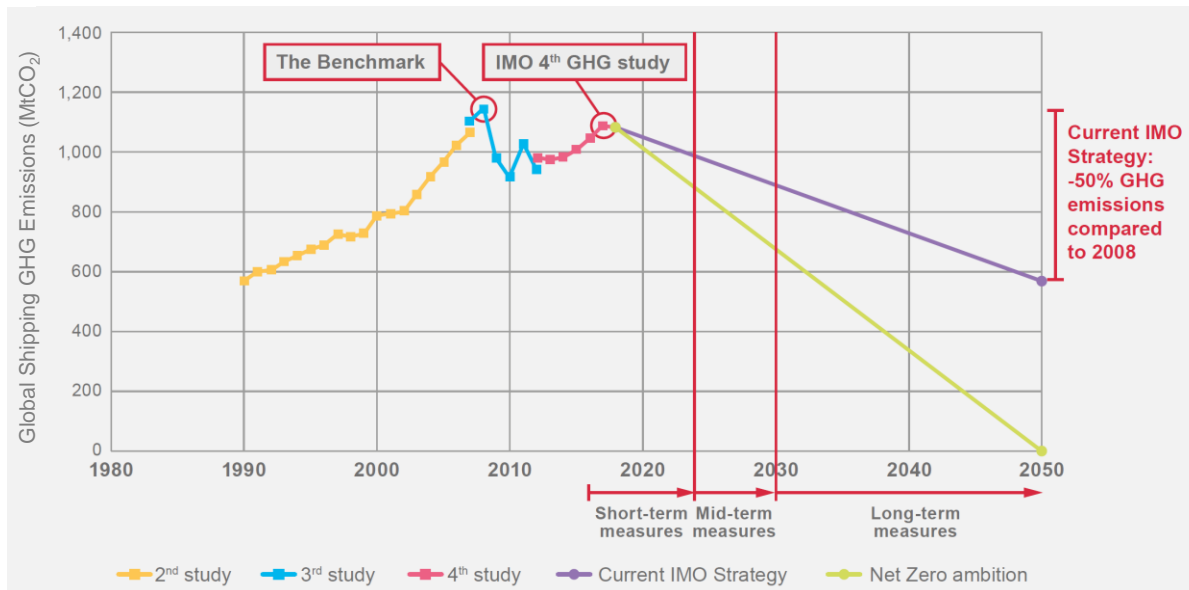
Antwerp-Bruges 5th largest bunker port worldwide



# Maritime Environmental Regulation Accelerating

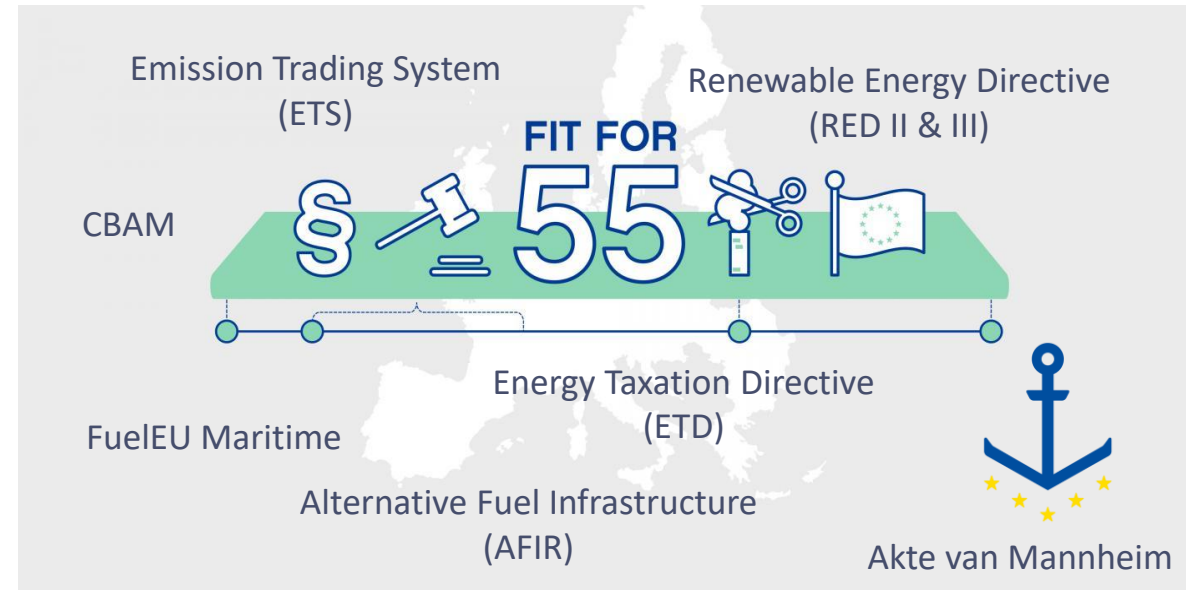
## IMO and Europe

### IMO



Source: IMO

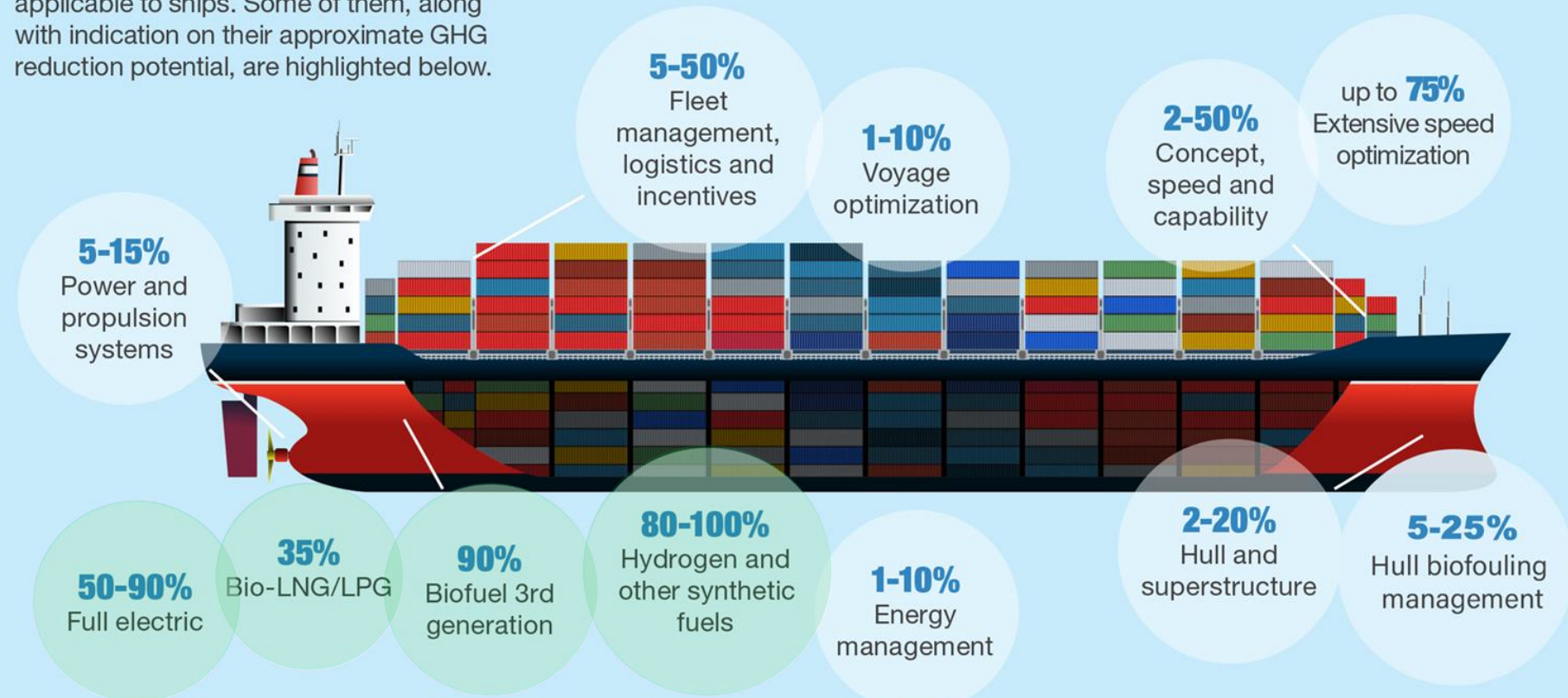
### Europe



# How to reduce CO<sub>2</sub> emissions in shipping?

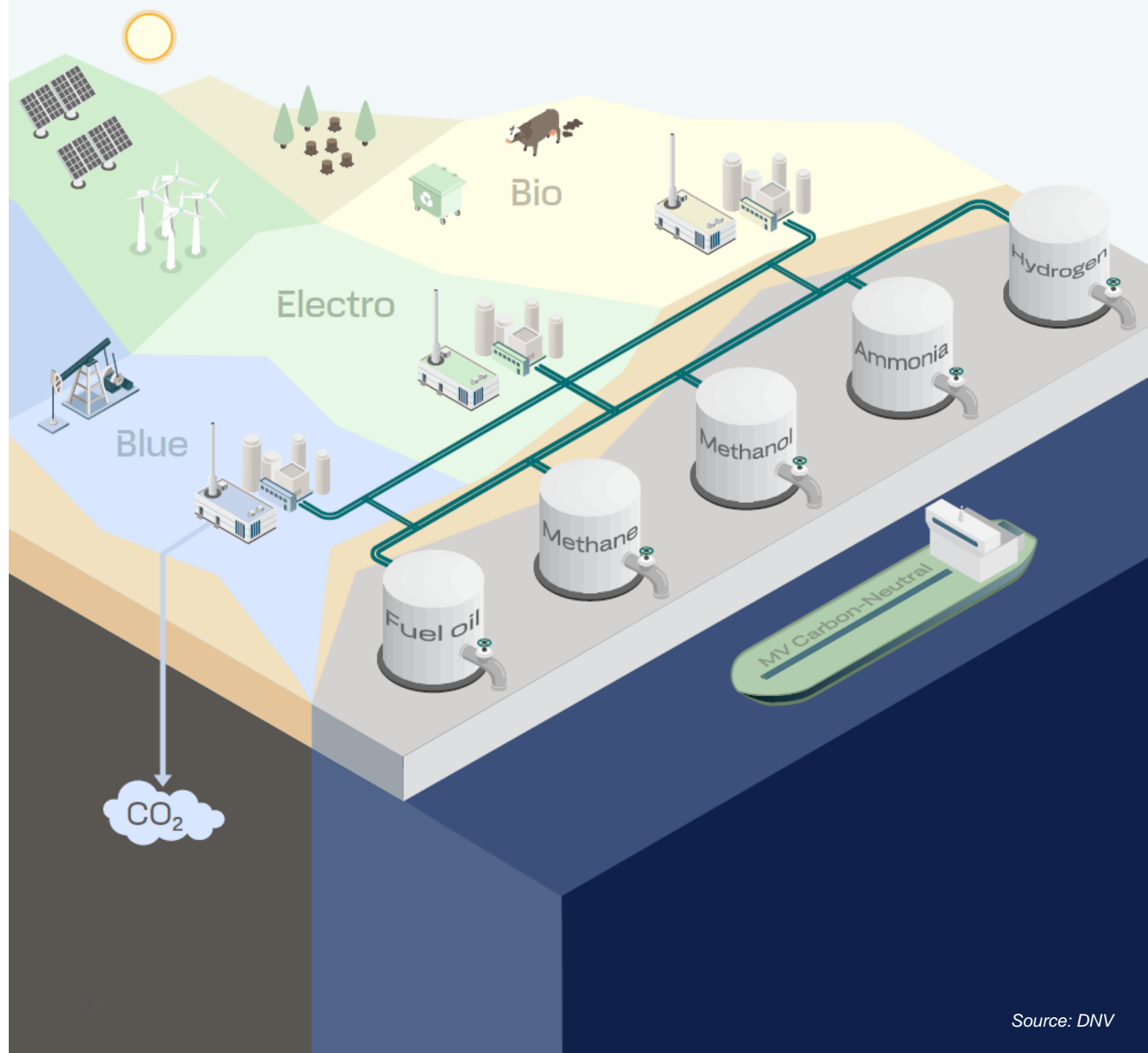
## A wide variety of design, operational and economic solutions

Achieving the goals of the Initial IMO GHG Strategy will require a mix of technical, operational and innovative solutions applicable to ships. Some of them, along with indication on their approximate GHG reduction potential, are highlighted below.



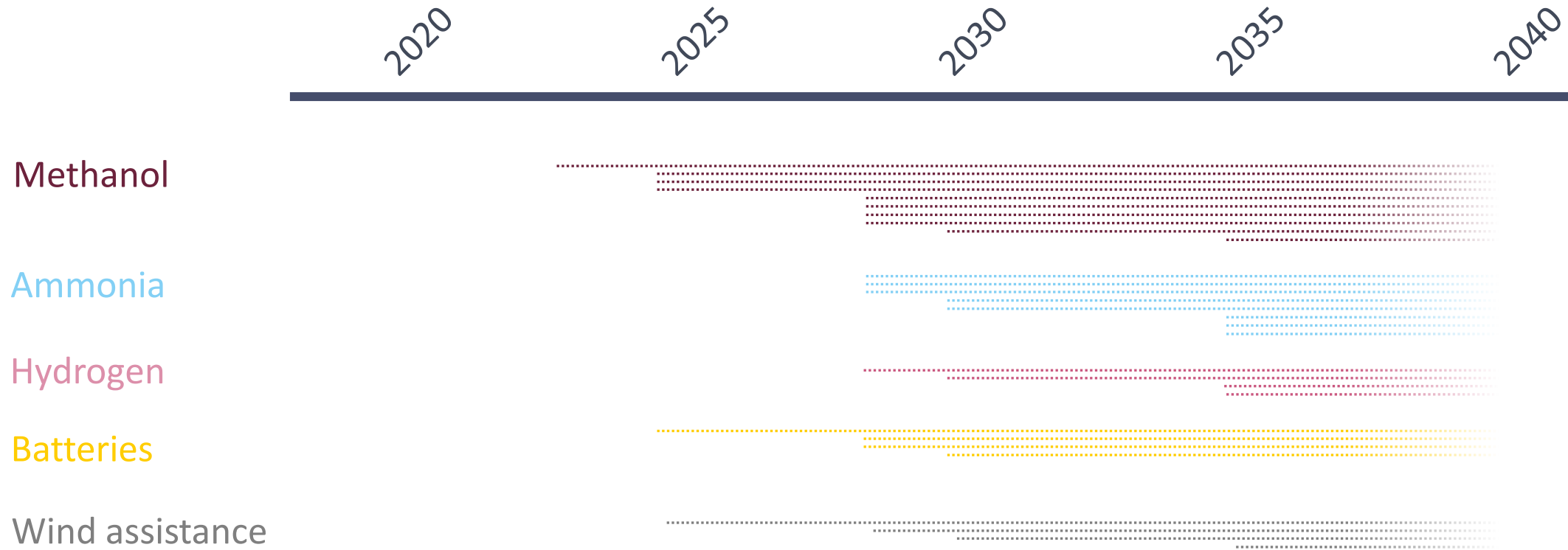
# Alternative fuels only possible long term measure

- Decarbonization of shipping with low and zero-carbon fuels
- Driven by legislation and CSR
- No silver bullet solution

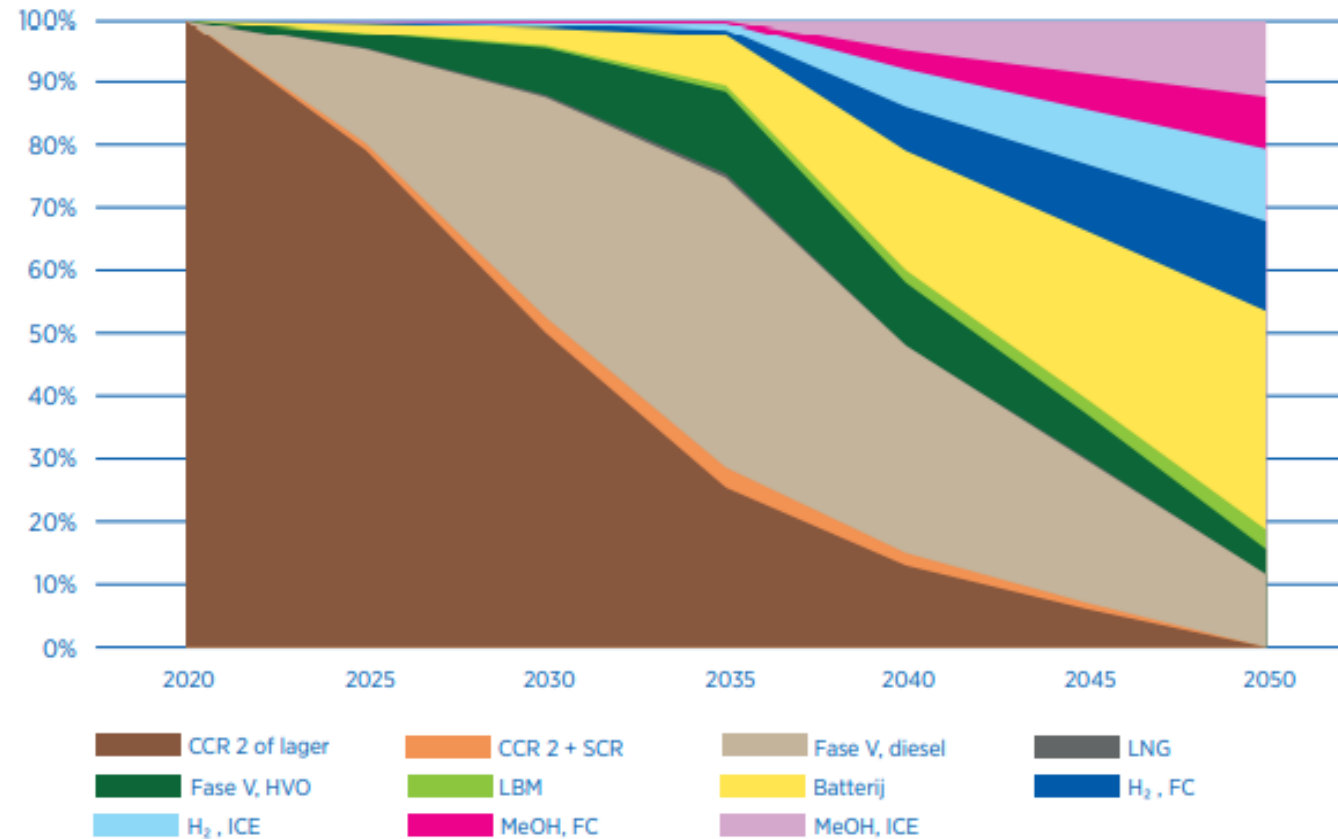


# Different Timelines

Shipping companies: “What fuels are you considering to use?”



# Inland navigation



Source: CCNR

# Initiatives and projects in the port



Port of  
Antwerp  
Bruges



# Hydrogen in inland navigation

H2 as a fuel



# H2 Bunkering Scenario's

## Most Feasible Scenario's



Mid term (5-10 years)

Present



2022

2025



Short term (1-5 years)



2030

2040



Long term (10-20 years)



# RH2INE

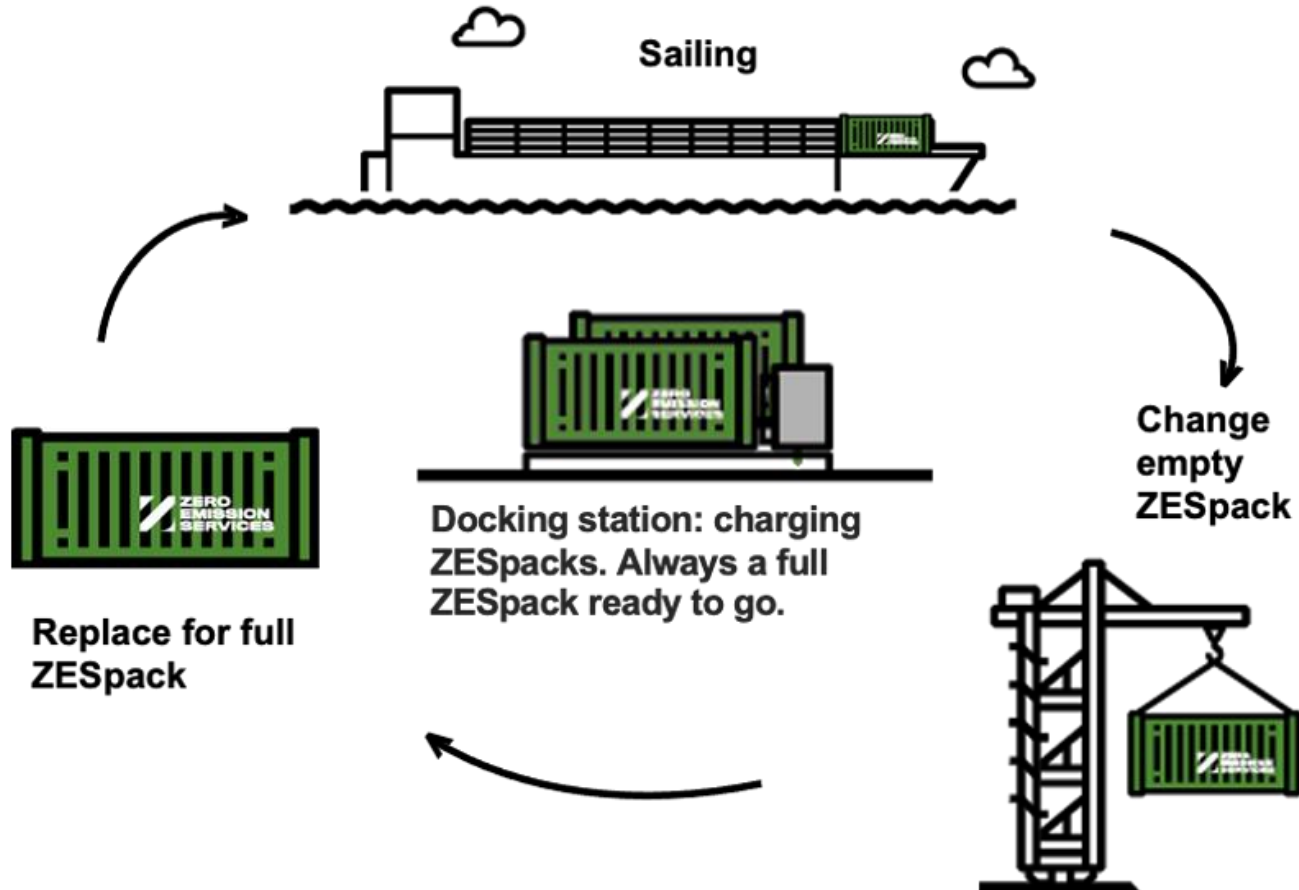
## Strategic Roll-out plan

- **Corridor** focused approach
- Facilitation of **market initiatives**:
  - Condor project as spin-off container concept
  - Port of Antwerp-Bruges is primary partner
- **Cooperation along the value chain**
- **Policy measures** needed to improve business case



# Electric Inland Navigation

## Battery loading station



Source: ZES (Zero Emission Services)

# First movers

## Future Proof Shipping, bunkering hydrogen in Antwerp

- Containerized H2 storage
- Fuel cell & electric propulsion
- 500 kg H2 / container @350 bar
- Swapping 1 or 2 containers in Antwerp
- Fixed route  
(Rotterdam – Antwerp – Meerhout)



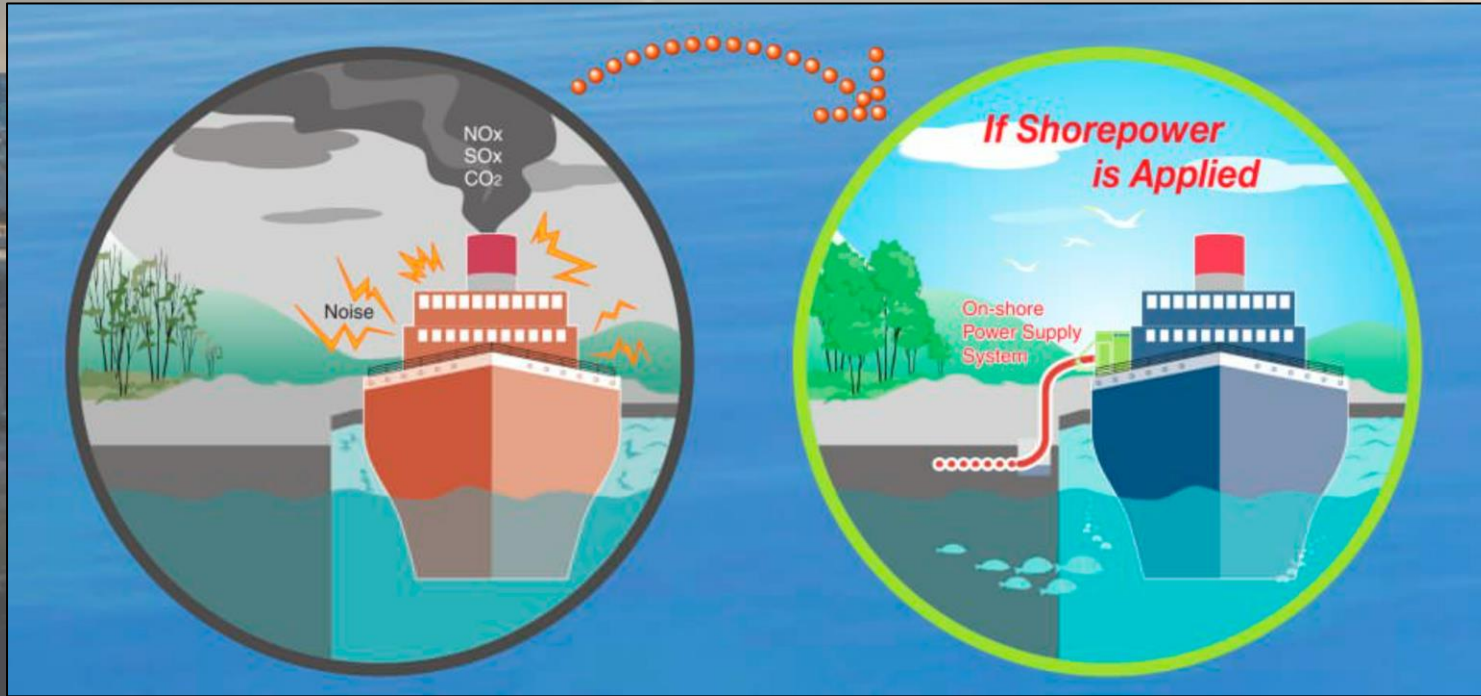
Source: Future Proof Shipping

# Flemish Green Deal Inland Shipping



- As a **path for the greening** of Flemish inland navigation until 2030, with a look ahead to 2050
  - With supported objectives
  - With realistic actions that remove barriers and bring change to the field
- As a **reference framework** for future initiatives
- As a **guidance** for short- and medium-term policies
- As a **movement** that makes efforts more visible

# On shore Power Supply



# Multi Fuel Port



Port of  
Antwerp  
Bruges



# The Port Authority different roles

*Pioneer in four roles*

Driving force for Port of Antwerp - Bruges  
with consideration for daily operations



Regulator



Operator



Landlord



Community builder

# Frontrunner energy transition

More sustainable fleet and vessels Port Authority

Hybrid  
Patrol vessels

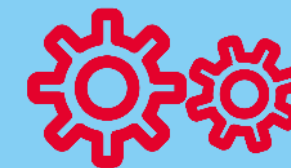


Methatug

Hydrotug



RSD energy-efficient  
tugs



Operator

# Multi Fuel Port – Bunkering Infrastructure

Middle small bunker ship (2000 m<sup>3</sup>)



LNG bunkerstation Fluxys

Homeport FlexFueler 002  
(from Q1 2021)

Hydrogen fueling  
station CMB  
(from Q2 2021)

- LNG-bunkering not allowed
- Max 1 operation per week
- Max 1 operation per day
- Max 5 operations per day



Landlord

# Ammonia, methanol and hydrogen bunker map

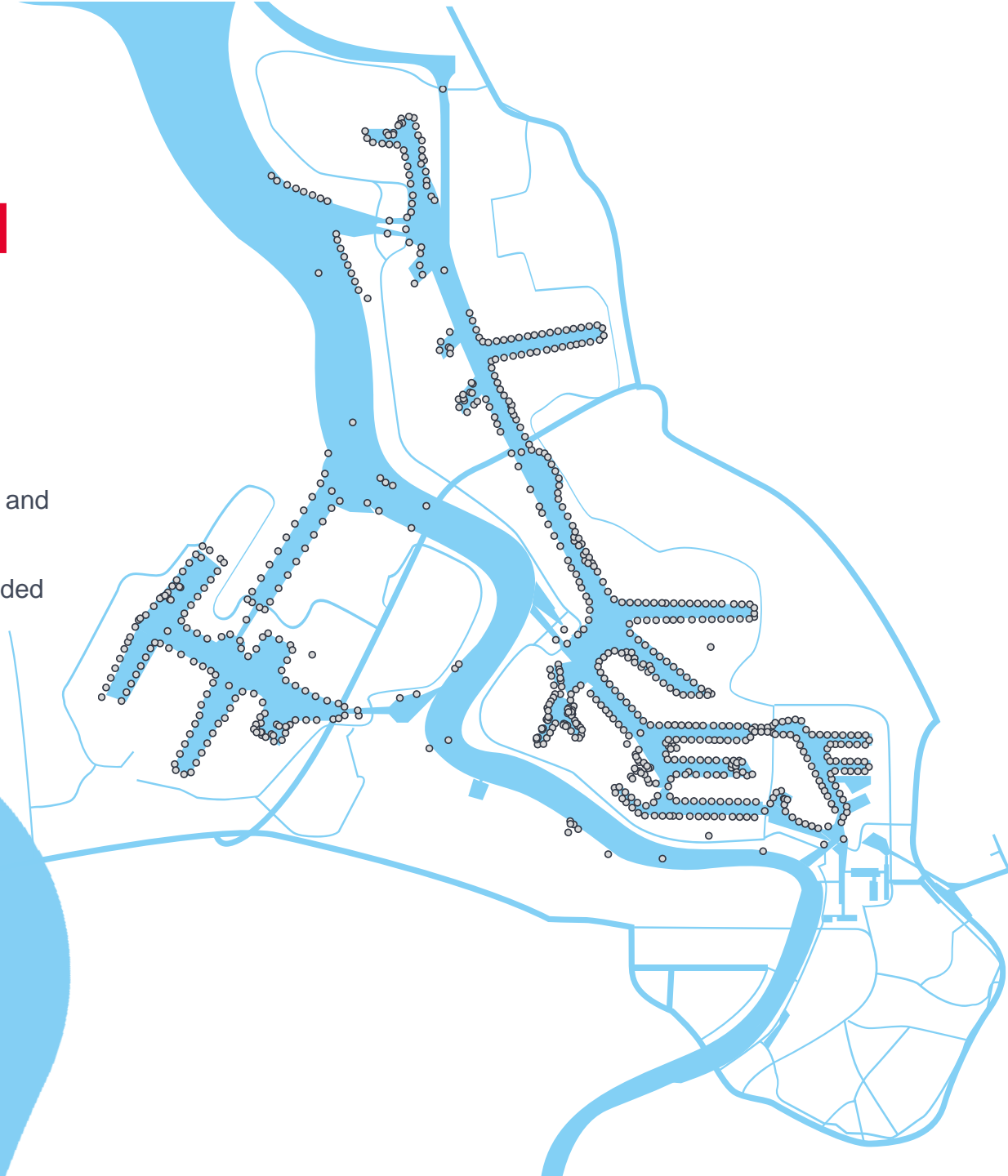
- Risk Analysis between now and 2024
- Procedures in place as needed



Landlord

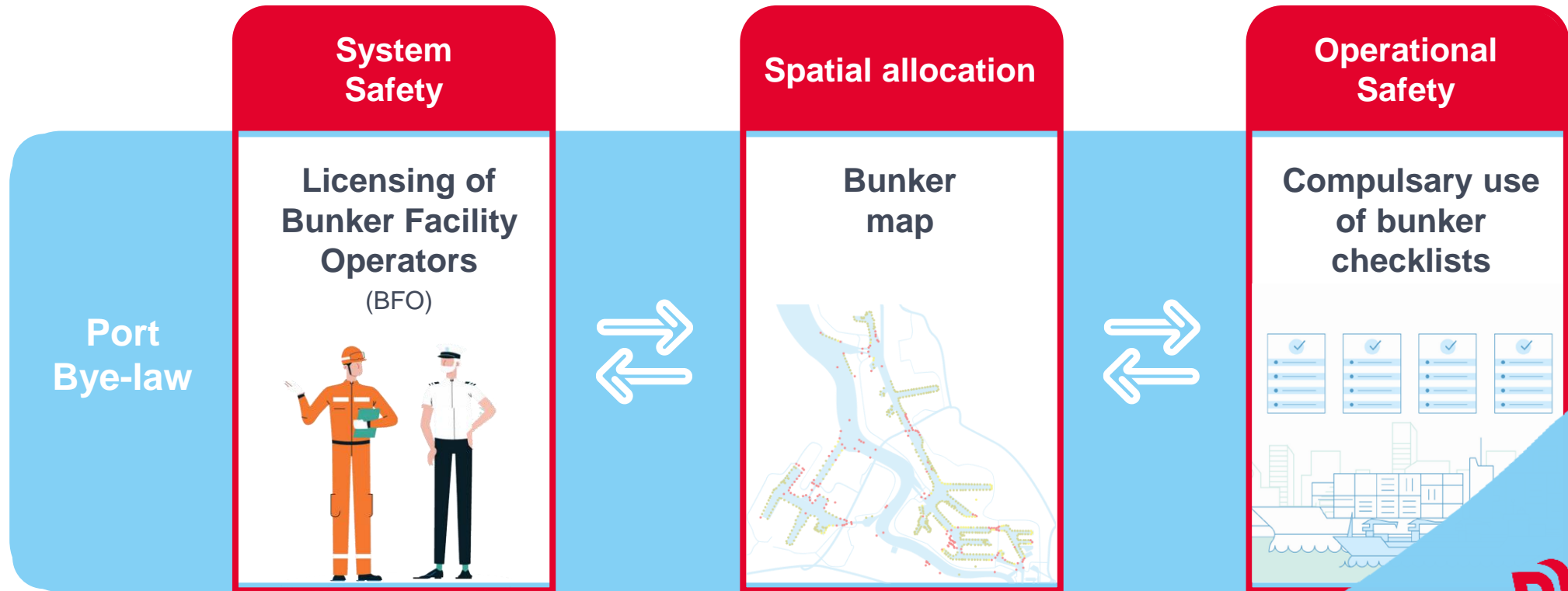


Port of  
Antwerp  
Bruges



# Port of Antwerp as Regulator

## Port safety management framework on marine fuel bunker operations





WORLD PORTS SUSTAINABILITY PROGRAM

Montreal

Vancouver

Gothenburg

Hamburg

Amsterdam

Bremen

Rotterdam

Antwerp

Bruges

Le Havre

Marseille



Los Angeles

# Joint licensing of bunker fuel operators



Yokohama



Regulator

# Multi Fuel Ready Terminal



Community Builder



Figure adopted from: Steenken D., Voss S. & Stahlbock R. (2004). Container terminal operation and operations research - A classification and literature review. OR Spectrum. 26. 3-49.

# In tune with the world



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