



# Energy transition & Circular Economy in the port of Amsterdam

BPIC 2019, 08 November  
Sustainable Futures for Ports  
Henri van der Weide



# On the Map: AMSTERDAM METROPOLITAN AREA

Size - City	220 km <sup>2</sup>
Size - AMA	2,580 km <sup>2</sup>
Population - City	850.000
Population - AMA	2,4 mil
Foreign companies	3.000
Jobs at foreign companies	235.000
No. of expats in AMA	100.000



World **Netherlands**



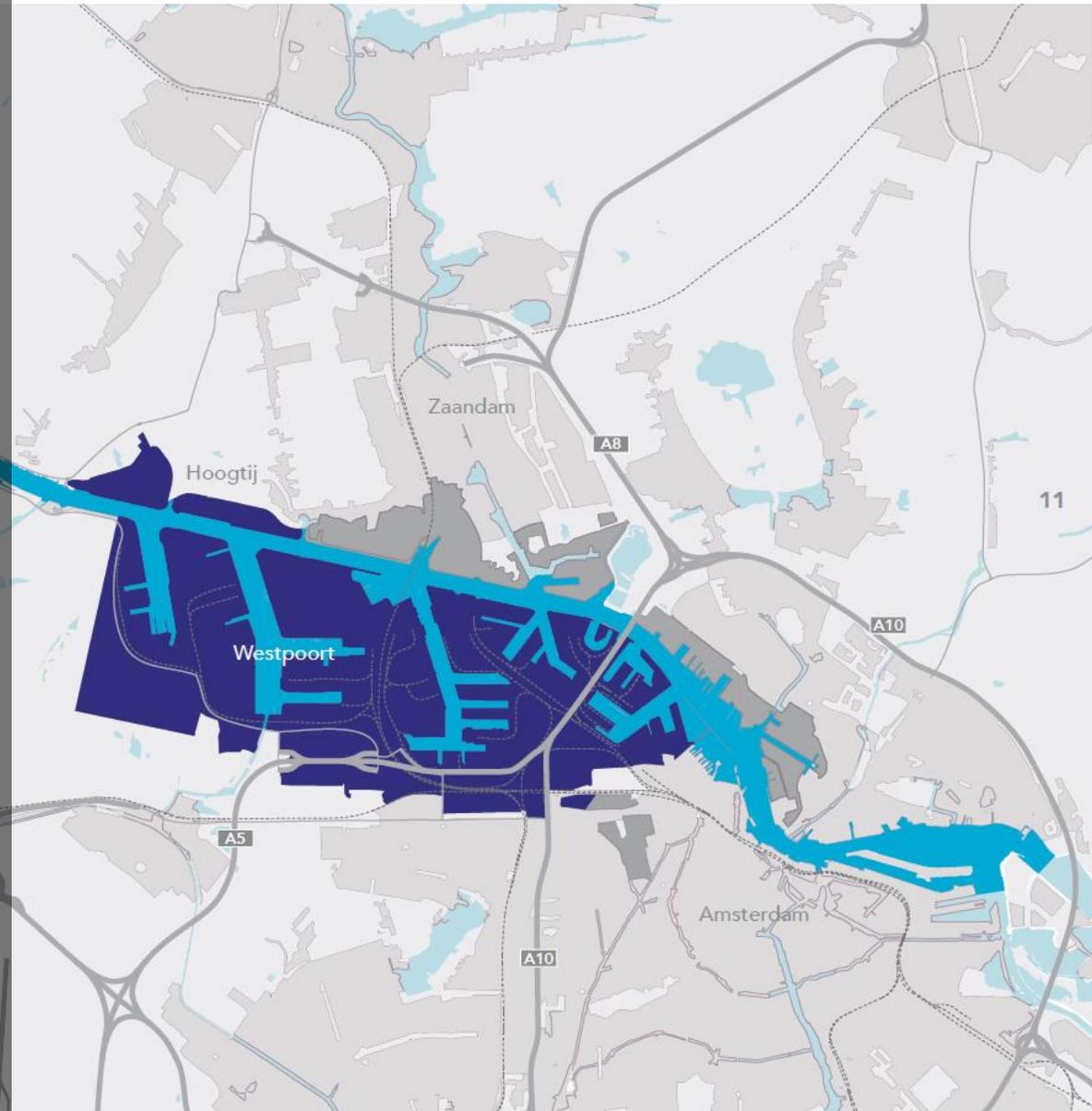
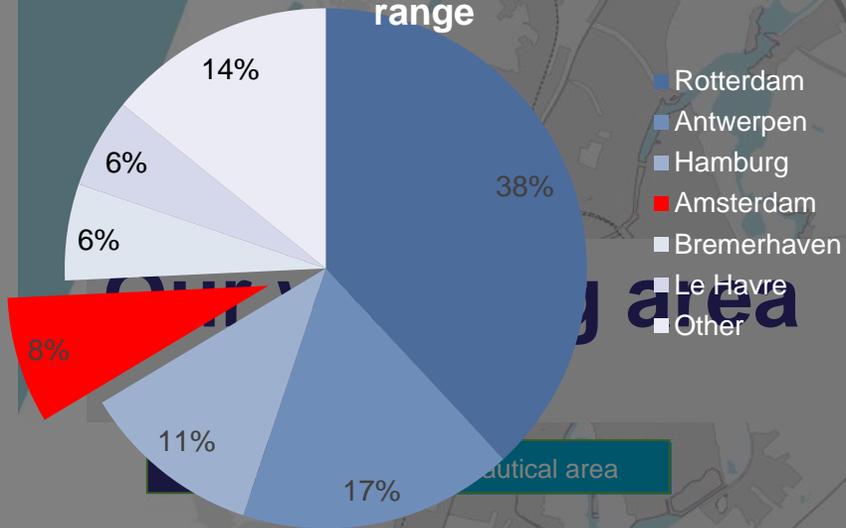
Europe **Netherlands**

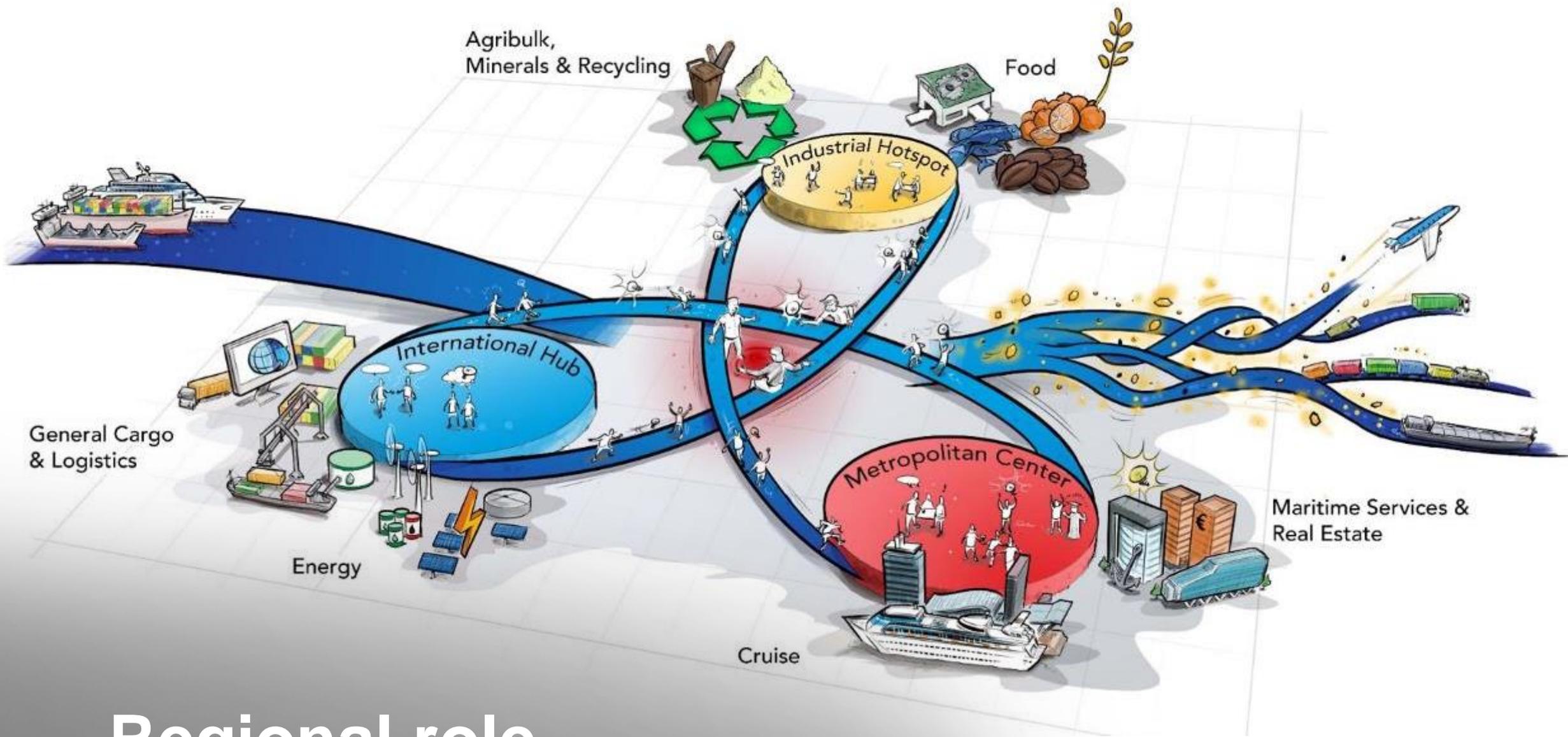


The Netherlands **AMA**

- 4th Port of Europe
- 101,8 million ton throughput of which 82,3 in Amsterdam (2018)
- € 7,2 billion added value (2017)
- 68.000 jobs

Market shares Hamburg-Le Havre range





# Regional role

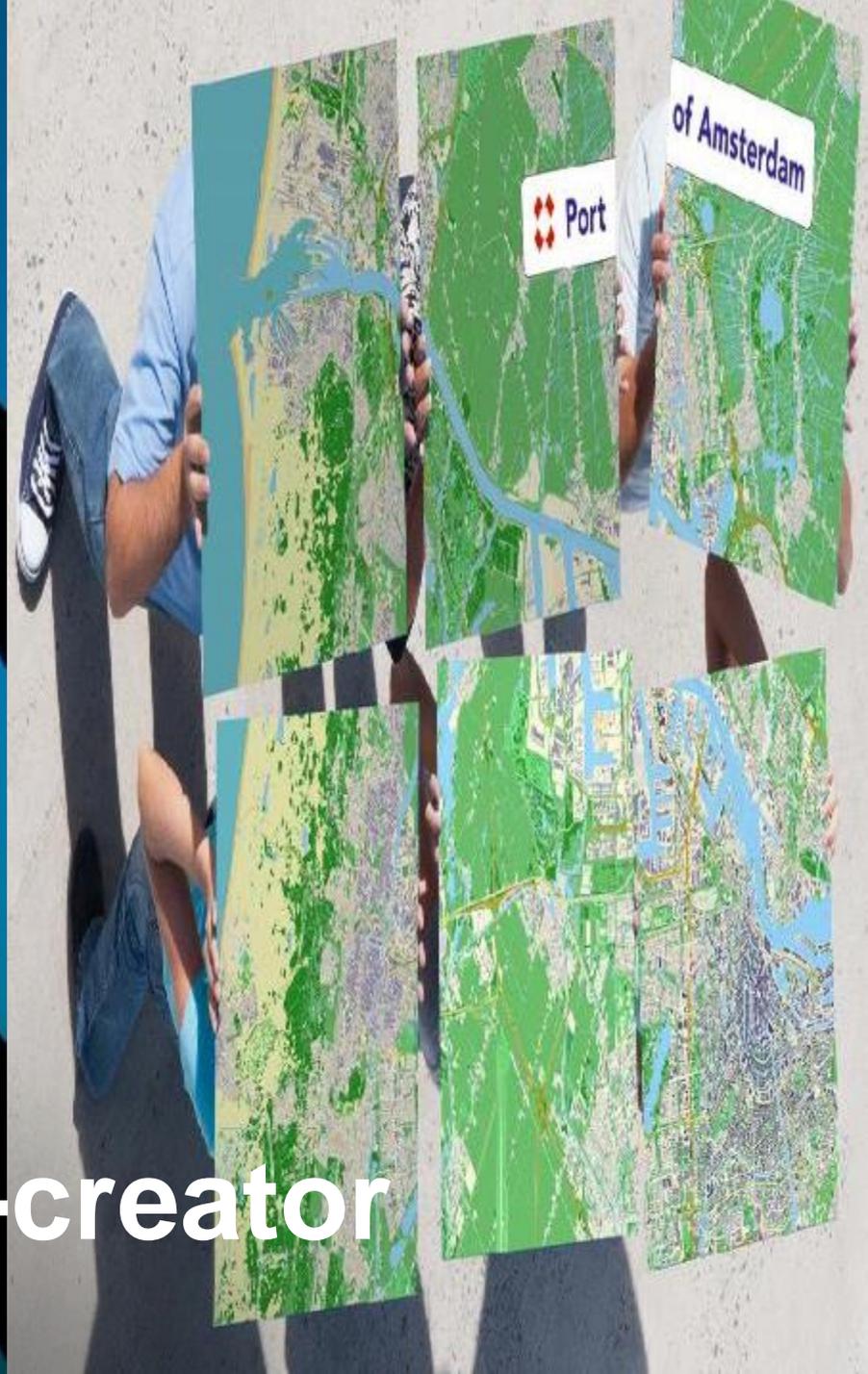
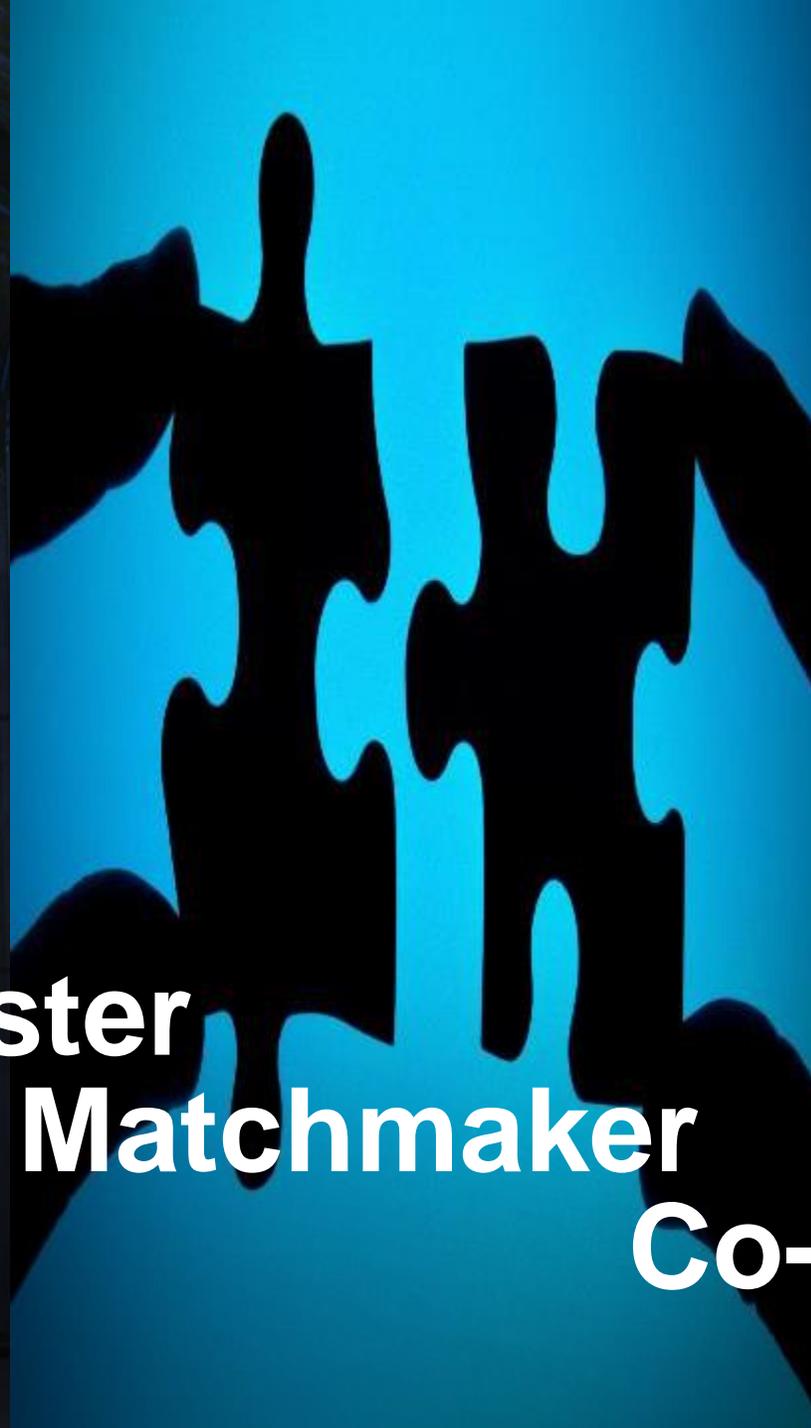




**Market Master**

**Matchmaker**

**Co-creator**



# The Sustainable Port

# Five sustainability pillars



Focus on innovation, digitization, accessibility and cooperation.

# World's largest sea lock



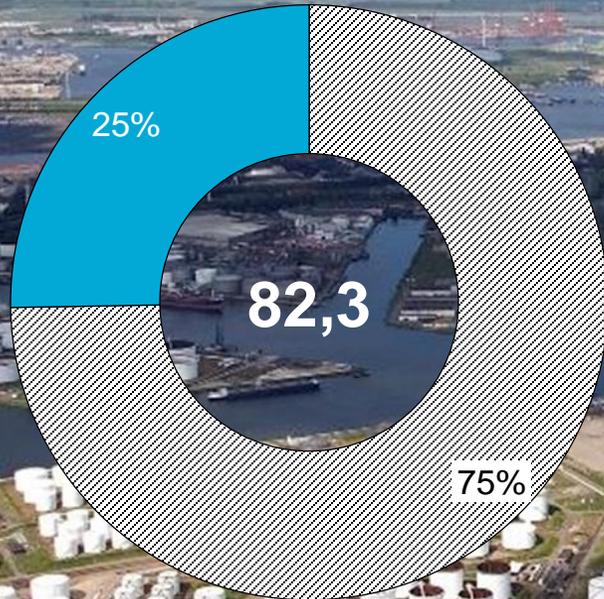


**LNG bunkerstation operational**

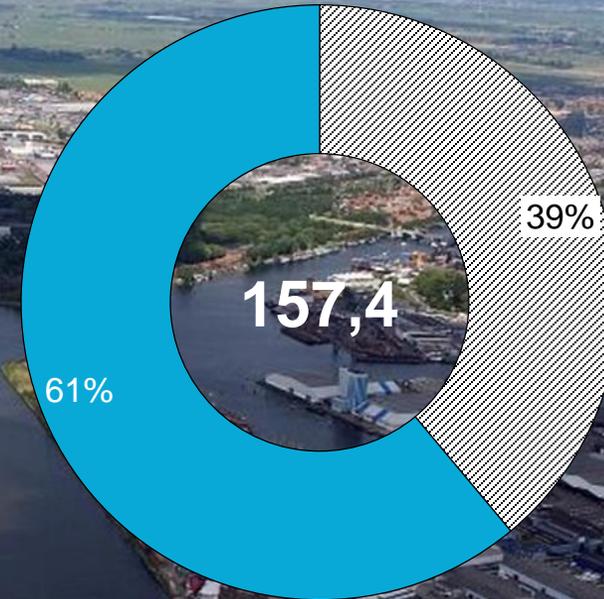
# Energy transition is needed

We're now highly dependent on fossil markets

Million tons throughput, 2018



Million € revenue (port dues & land lease), 2018



▨ Oil products and coal    ■ Other

# Coal Strategy

- No future for coal
- 2030: no coal terminals in Amsterdam
- Terminals in transition
- Farewell to cargo, not to client

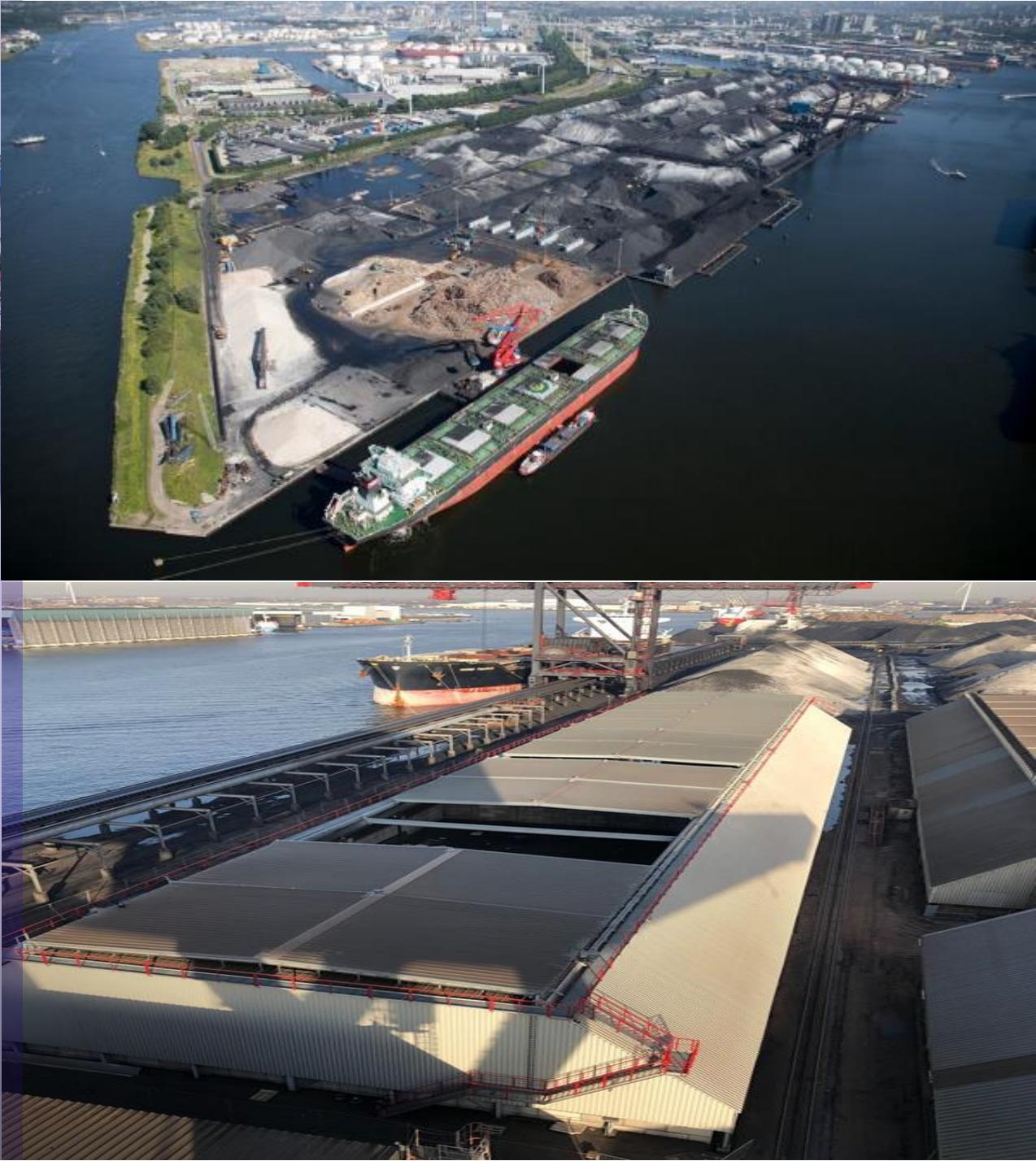
**Pro-active approach**



# OBA multipurpose terminal

- Process
- Letter of Intent
- Development Terminal

OBA & PoA  
partners in the  
energy transition





# Redevelopment Power Plant

- Closing 31-12-2019
- Redevelopment Framework
- Planning

Hemweg

# Roadmap Energy Transition

Research

Haalbaarheid  
Golflagednergie

Systeemstudie E-  
infra

Green methanol

Port of Amsterdam

H<sub>2</sub>

100 MW  
elektrolyser +  
infra

Testing



Transitie  
Nuon

Large battery  
storage



Pilot syn kero

Doing



Offshore  
Wind &  
Energiehaven



100 k zon



Marktplaats  
duurzame  
energie



H<sub>2</sub>  
Tankstation



LNG  
bunkering

Renewable power production & storage

Smart energy networks

Sustainable fuels & biochemicals

## Investments offshore wind

Total of 7000 MW in 2030 just in front of our shores

Impact on long term energy transition

Chances for electrolysis, synthetic fuels, biochemistry



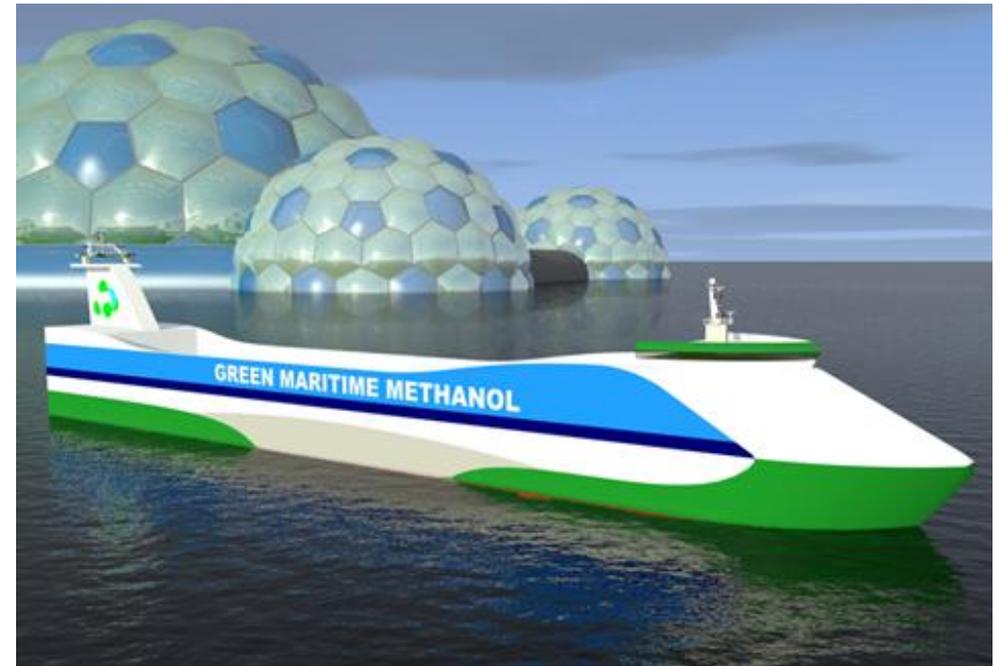
# Opportunities for energy





## GREEN MARITIME METHANOL

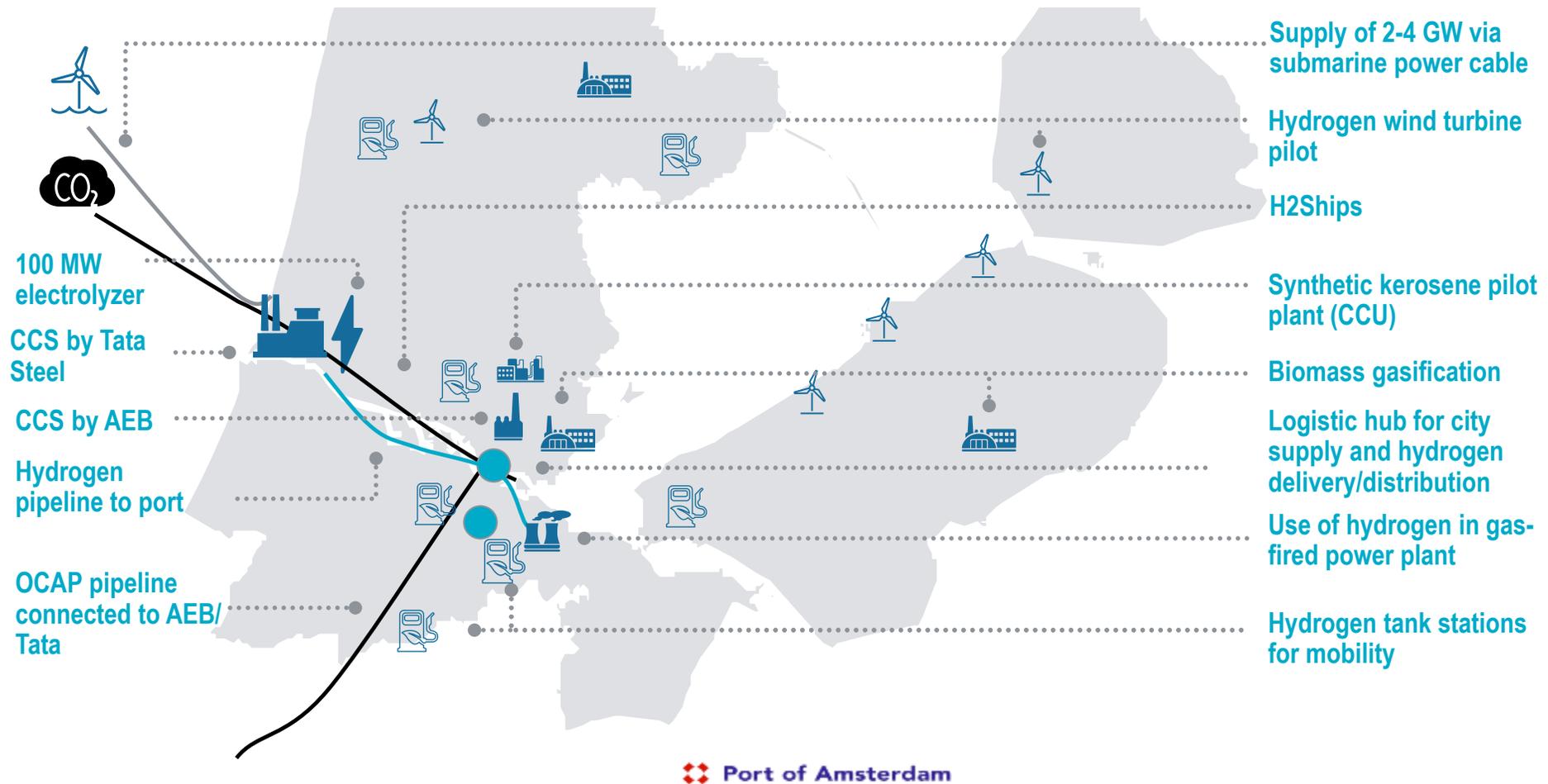
- Partners: TNO, University Delft, several ship builders and ship owners, Ports of Amsterdam and Rotterdam
- Workpackages:
  - development long term strategy green methanol as bunker fuel
  - development green methanol supply chain
  - (short sea) ship design (6 pilots)



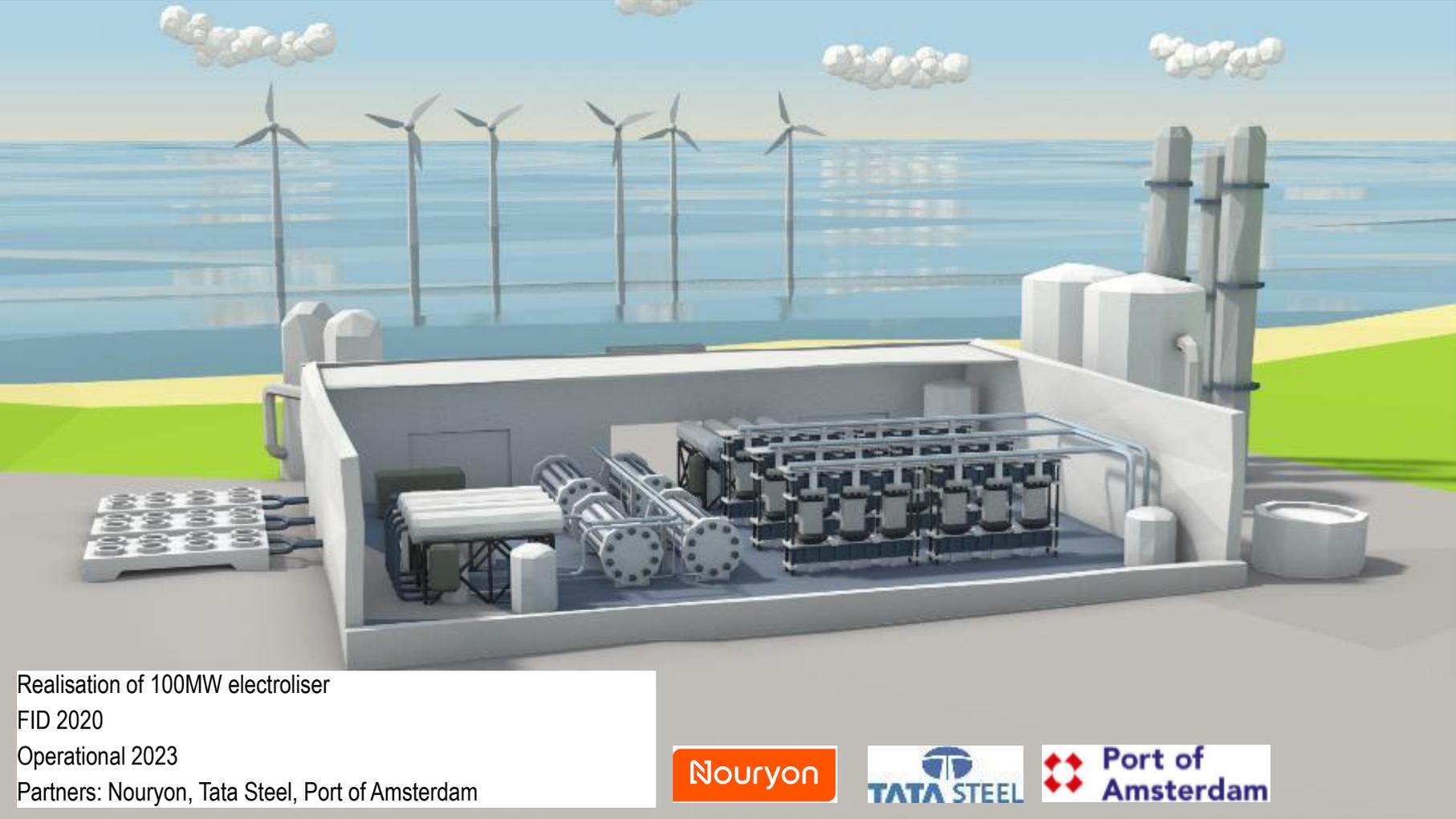
<http://greenmaritimemethanol.nl/>

# Significant infrastructure for the hydrogen cluster will be in place by the year 2030 to create the “Amsterdam hydrogen society”

## Infrastructure for hydrogen cluster in 2030 – ongoing projects



# Project Hermes: 100MW electrolyzer



# Project H2Ships: hydrogen propulsion port vessel



Realisation of H2-propulsion in vessel

FID 2020

Operational 2021

Partners: Port of Amsterdam, TU Delft, et.al.



# Promotion of Green Hydrogen during Olympic Games 2020 in Japan



## NEDERLAND WATERSTOFLAND

Missie H2 is supported by



Port of  
Amsterdam

gasunie



remeha



GRONINGEN SEAPORTS



**Why circular economy?**





**Strong recycling cluster**



# Plastic Ecosystem Amsterdam



# 80

M ton/jr  
=  
1 Million  
plastic items  
every second



5% closed loop recycling

14%  
collected for recycling

4%  
process  
losses

8%  
cascaded  
recycling



32%  
leakage

=  
1 garbage truck  
every minute



37%  
landfill

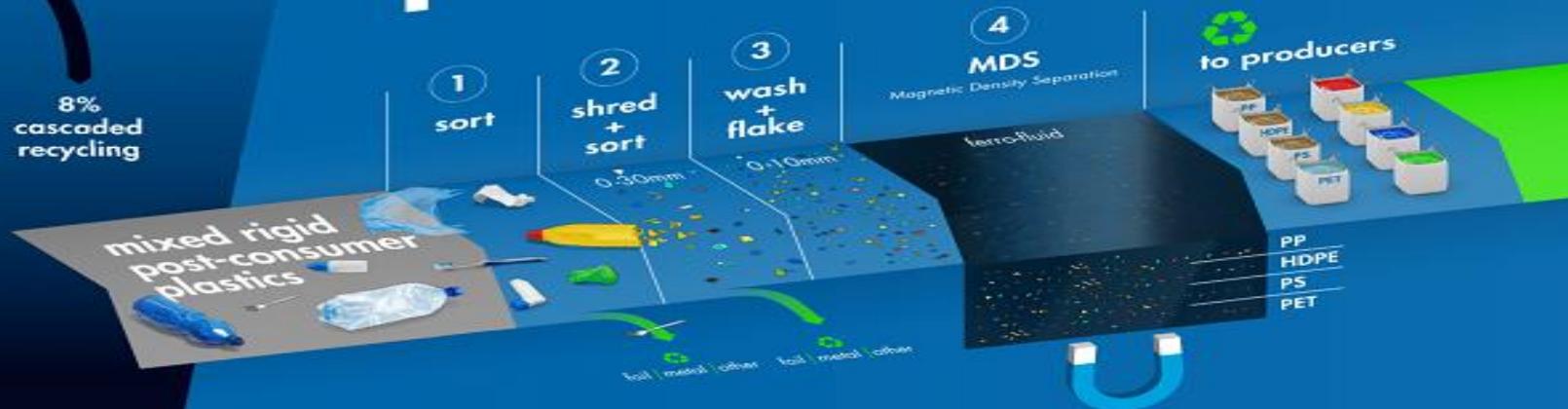


14%  
incinerated



# Umincorp process

lowest cost  
low CO2 footprint  
highest output quality  
world wide applicable



## we have to recycle better...

## we can!

[video](#)





**Umincorp**



# How The IGES Technology Works

## Conversion of EOL plastic into fuel

### Step 1



#### End of Life Plastic Delivered

IGES is the only system that can accept and process a wide range of plastics

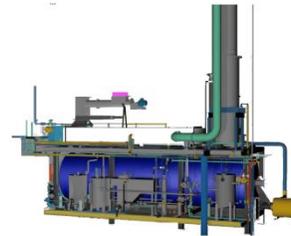
### 2



#### Shredding/ Mixing

All plastic is sorted, shredded and then mixed so it can be ready for use in the plant

### 3



#### Patented Technology

IGES patented technology is commercially sustainable as compared to other competitors. Reduction of approx. 80% CO2 emissions when compared to conventional diesel

### Step 4



#### End Product

Meet fuel standards EN590 and EN228. Clean fuel, low emissions. NAPHTHA output used to make new plastics

[video](#)



# Sustainable Benefits

57,000 tons of CO2  
reduction per year

Contribute to circular economy  
Rethink plastics as a valuable  
resource, extract its maximum value  
to reduce leakage into natural  
environments

Use wide range of end of life,  
unrecyclable plastics destined for  
landfill and incineration

Lower carbon footprint,  
cleaner fuel

Winner of IAPH World Ports Sustainability Award  
Validation that IGES's technology can tackle global crisis of plastic pollution



# PLASTIC2FUEL PROJECT

COLLECTION OF OCEAN WASTE BY FISHERS  
PICK-UP AND SORTING OF NON-RECYCLABLE WASTE PLASTIC  
TRANSFER PLASTIC INTO TRANSPORTATION FUEL  
DELIVERY LOW CARBON FUEL TO FISHERS

THIS PROJECT IS AN INITIATIVE OF:



THIS PROJECT IS SUPPORTED BY:





**Thank you  
for your attention**

**[henri.van.der.weide@portofamsterdam.com](mailto:henri.van.der.weide@portofamsterdam.com)**