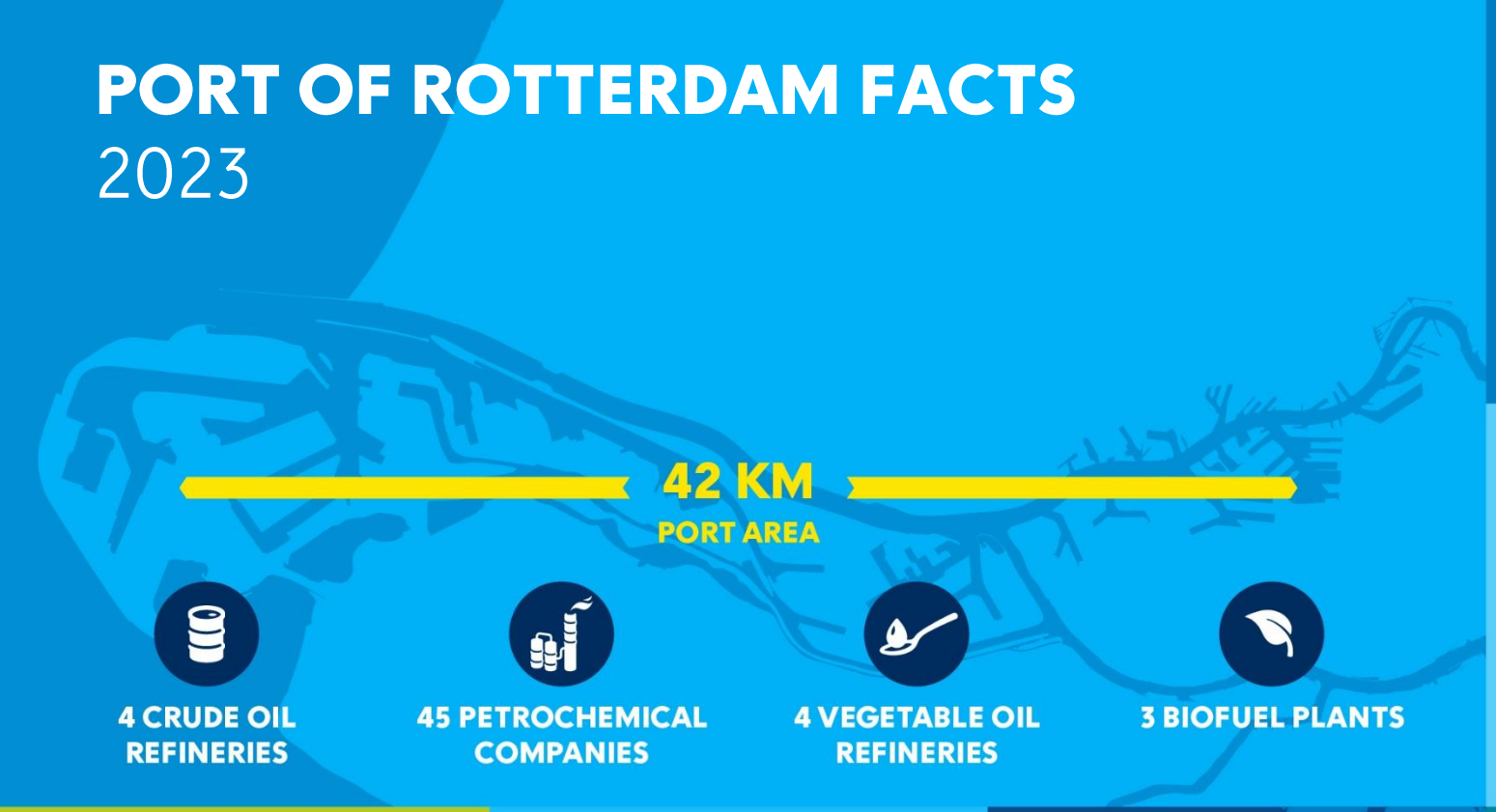
CONNECTING THE WORLD.
BUILDING TOMORROW'S SUSTAINABLE PORT.

Raquel van den Boogaard
International Business Manager

Port of Rotterdam

PORT OF ROTTERDAM FACTS
2023



42 KM
PORT AREA

4 CRUDE OIL REFINERIES

45 PETROCHEMICAL COMPANIES

4 VEGETABLE OIL REFINERIES

3 BIOFUEL PLANTS

AWARDED BEST PORT INFRASTRUCTURE

€63 BILLION
ADDED VALUE,
8.2% OF DUTCH BBP

100.000
INLAND VESSELS PER YEAR

30.000
SEA-GOING VESSELS PER YEAR

CURRENT HYDROGEN PRODUCTION 0,4-0,5 MTON

13% OF TOTAL EU ENERGY CONSUMPTION PASSES ROTTERDAM

GATEWAY TO A MARKET OF 440 MILLION CONSUMERS

LARGEST EUROPEAN PORT

565.000
DIRECT & INDIRECT JOBS

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Our governance model splits investment roles between the port authority and private sectors…

With the Port Authority investing in public infrastructure, while the private companies (clients) invest in superstructure and services

ENERGY TRANSITION BASED ON 4 PILLARS

PILLAR 1
EFFICIENCY AND INFRASTRUCTURE

PILLAR 2
A NEW ENERGY SYSTEM

PILLAR 3
A NEW FEEDSTOCK AND FUEL SYSTEM

PILLAR 4
SUSTAINABLE TRANSPORT

−55% CO_2 IN 2030
(COMPARED TO 1990)

CO_2 NEUTRAL IN 2050

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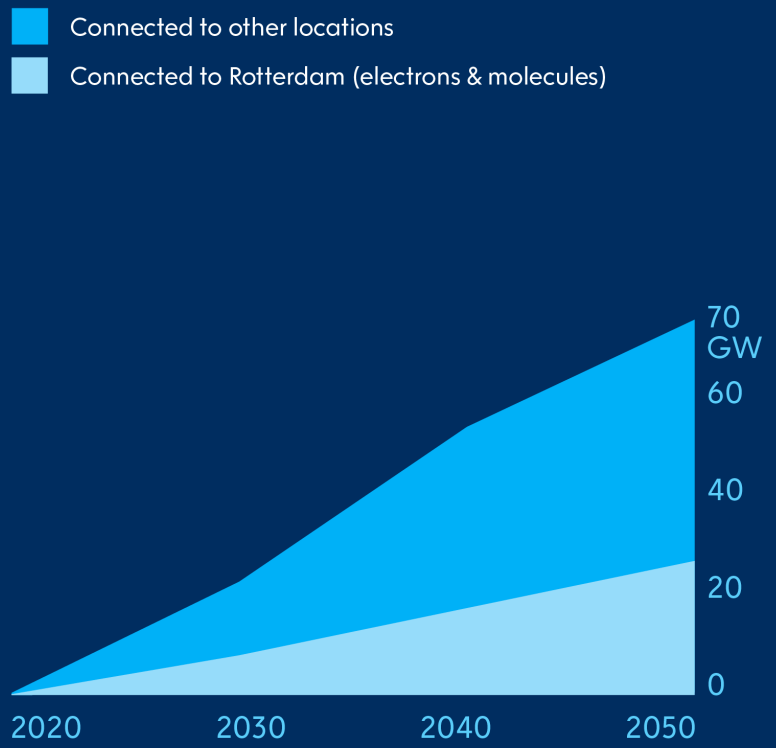
ROTTERDAM: EUROPE'S HYDROGEN HUB

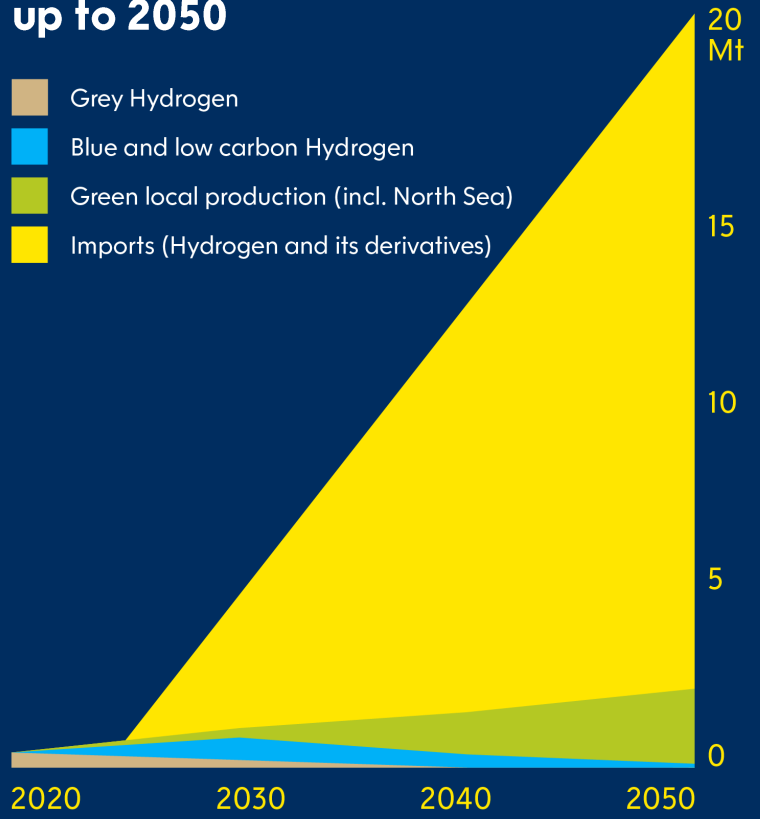
CO_2-reduction through offshore wind, hydrogen and its derivatives

NL offshore renewable energy up to 2050



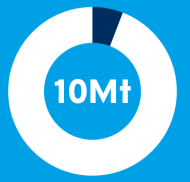
Source: Min. EZK, Kamerbrief windenergie op zee 20302050 (2022)

Hydrogen in Rotterdam up to 2050



13% of total energy consumption EU goes via Rotterdam, Europe's largest energy port.

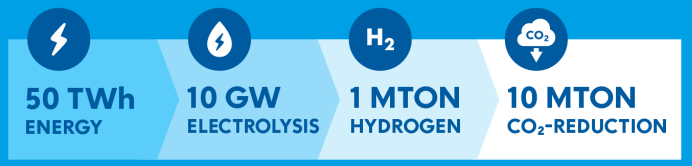
Rotterdam plays a huge role in fulfilling EU ambitions 2030 (RePowerEU)



EU green hydrogen production
0.6 Mton Rotterdam green & low carbon hydrogen production

EU hydrogen import
4.0 Mton Rotterdam green hydrogen import

Rule of thumb:



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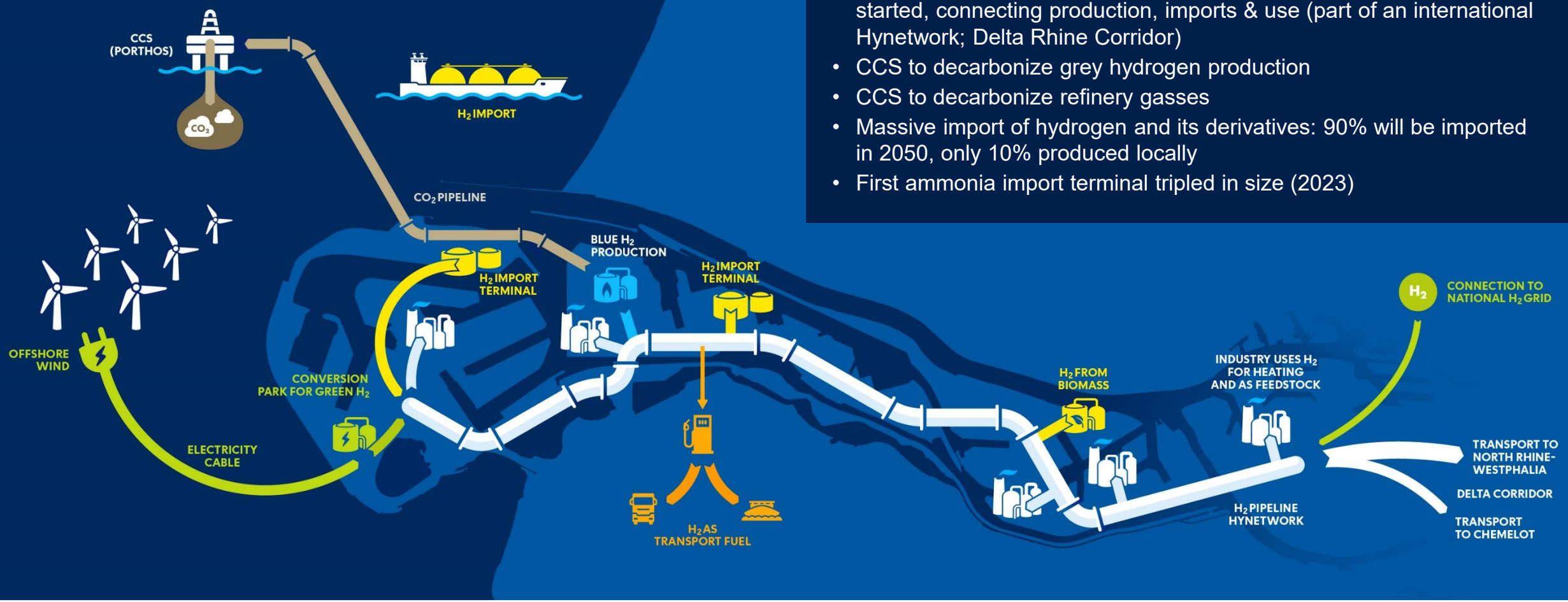
ROTTERDAM'S HYDROGEN ECOSYSTEM IS BEING BUILT RIGHT NOW

WE ARE MAKING THIS HAPPEN

- Offshore wind farms connected to Rotterdam: 7.4 GW in 2030
- Production of green hydrogen (first 200 MW electrolyser under construction): 2-2.5 GW in 2030
- Construction of open access Hydrogen pipeline across the port has started, connecting production, imports & use (part of an international Hynetwork; Delta Rhine Corridor)
- CCS to decarbonize grey hydrogen production
- CCS to decarbonize refinery gasses
- Massive import of hydrogen and its derivatives: 90% will be imported in 2050, only 10% produced locally
- First ammonia import terminal tripled in size (2023)



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Imported H_2 to decarbonize German industry and transport: 3 projects

DELTA RHINE CORRIDOR
Direct pipeline connection between the Port of Rotterdam and industrial clusters in the Netherlands, Germany and Belgium

RH2INE / CONDOR H_2
Barges sailing on H_2 in Europe

AMMONIA
Shipping clean ammonia and methanol Texas – Rotterdam – Duisport – Worms

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GREEN HYDROGEN PRODUCTION STARTS AT DEDICATED SITES FOR ELECTROLYSIS

Ambition Rotterdam
2030: 2.5GW (onshore)
2050: 20GW (onshore & offshore)

Conversion park 1

PROJECT (COMPANY)	CAPACITY	PLANNED FID	OPERATIONAL
H2-Fifty (bp&HyCC)	250MW	2024	2027
Holland Hydrogen I (Shell)	200MW	**2022** ✓	2025
CurtHyl (Air Liquide)	200MW	2024	2027
Confidential	200MW	2025	2028

Conversion park 2

IJmuiden Ver GW-scale project	1000MW	2025	2029

Local developments

PROJECT (COMPANY)	CAPACITY	PLANNED FID	OPERATIONAL
H2Maasvlakte (Uniper)	500MW	2025-2026	2029-2030
Eneco Electrolyser (Eneco)	800MW	2025	2029

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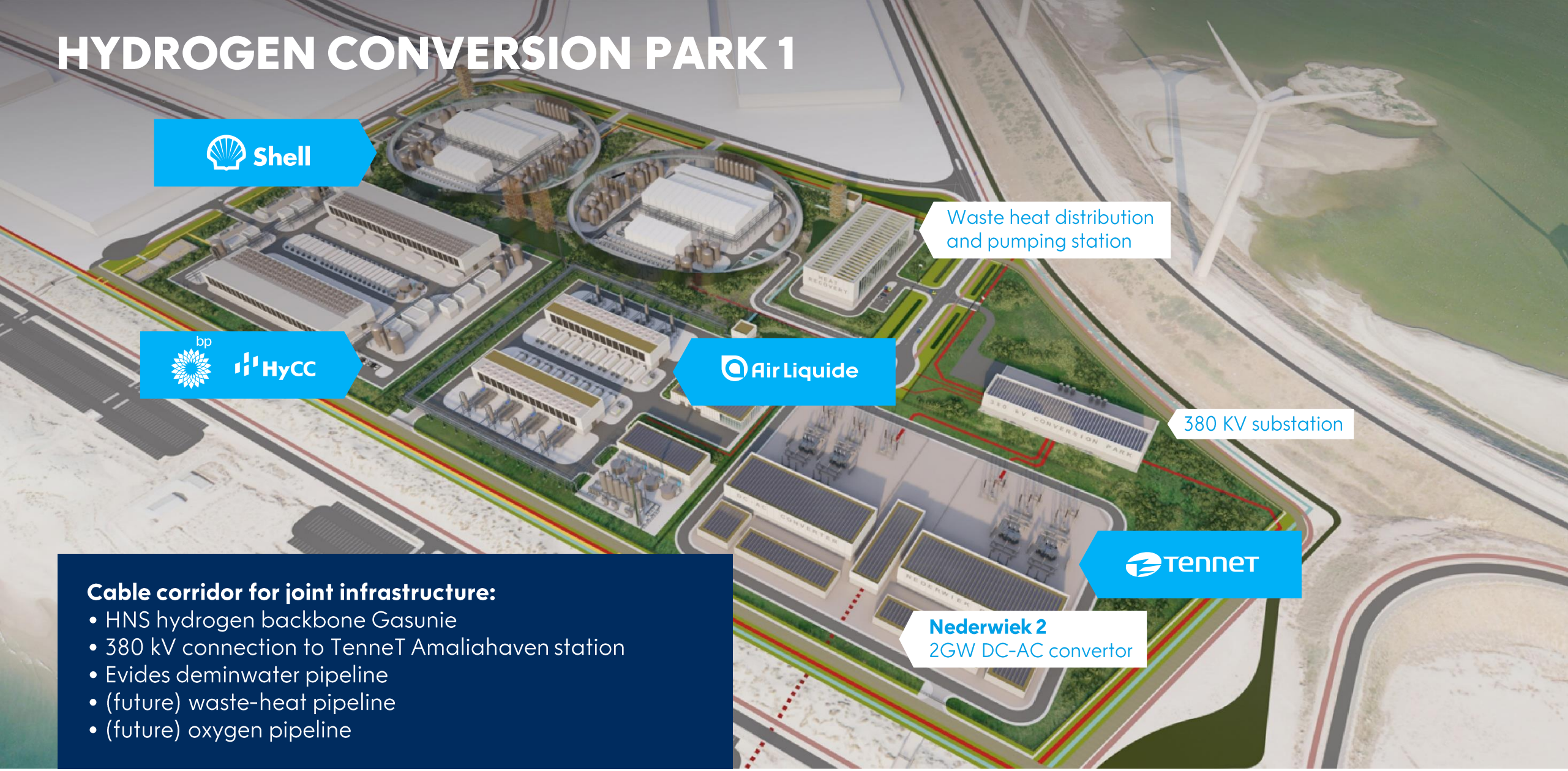
HYDROGEN CONVERSION PARK 1



Cable corridor for joint infrastructure:

- HNS hydrogen backbone Gasunie
- 380 kV connection to TenneT Amaliahaven station
- Evides deminwater pipeline
- (future) waste-heat pipeline
- (future) oxygen pipeline

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IT'S HAPPENING!

Shell Holland Hydrogen 1

Porthos & HyNetwork

Offshore wind landfall

Building site Conversion Park

Rotterdam, Europe's Hydrogen Hub | #PortOfRotterdam - YouTube

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IMPORTS ARE ESSENTIAL FOR EUROPE, AS IT USES MORE ENERGY THAN IT CAN PRODUCE

High potential areas for green hydrogen export

PROGRESS AND PLANNING

- Expected import Hydrogen and its derivatives in Rotterdam:
  4 Mtpa in 2030, 18 Mtpa in 2050
- Huge potential for production in many areas worldwide
- Imports Rotterdam are expected to start around 2025
- 9 terminals have announced plans for import facilities
- Rotterdam is preparing itself for Ammonia, Methanol and LOHC, Liquid Hydrogen
- Multiple MoU's in place

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PORT OF ROTTERDAM IS READY TO RECEIVE ALL TYPES OF CARRIERS

Green ammonia
One existing terminal.
4 new ammonia terminals announced.

LOHC
Conversion of 2 existing terminals, first pilot in 2023.

LH2
2 Feasibility studies for new terminal completed.
Possible before 2030.

Green methanol
Multiple existing terminals.
Already a European methanol hub.

Powders
Other technologies are also being explored (e.g. NaBH2).

Cracking facilities in study.

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MULTIPLE HYDROGEN PROJECTS THROUGHOUT THE VALUE CHAIN

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WANT TO LEARN MORE?

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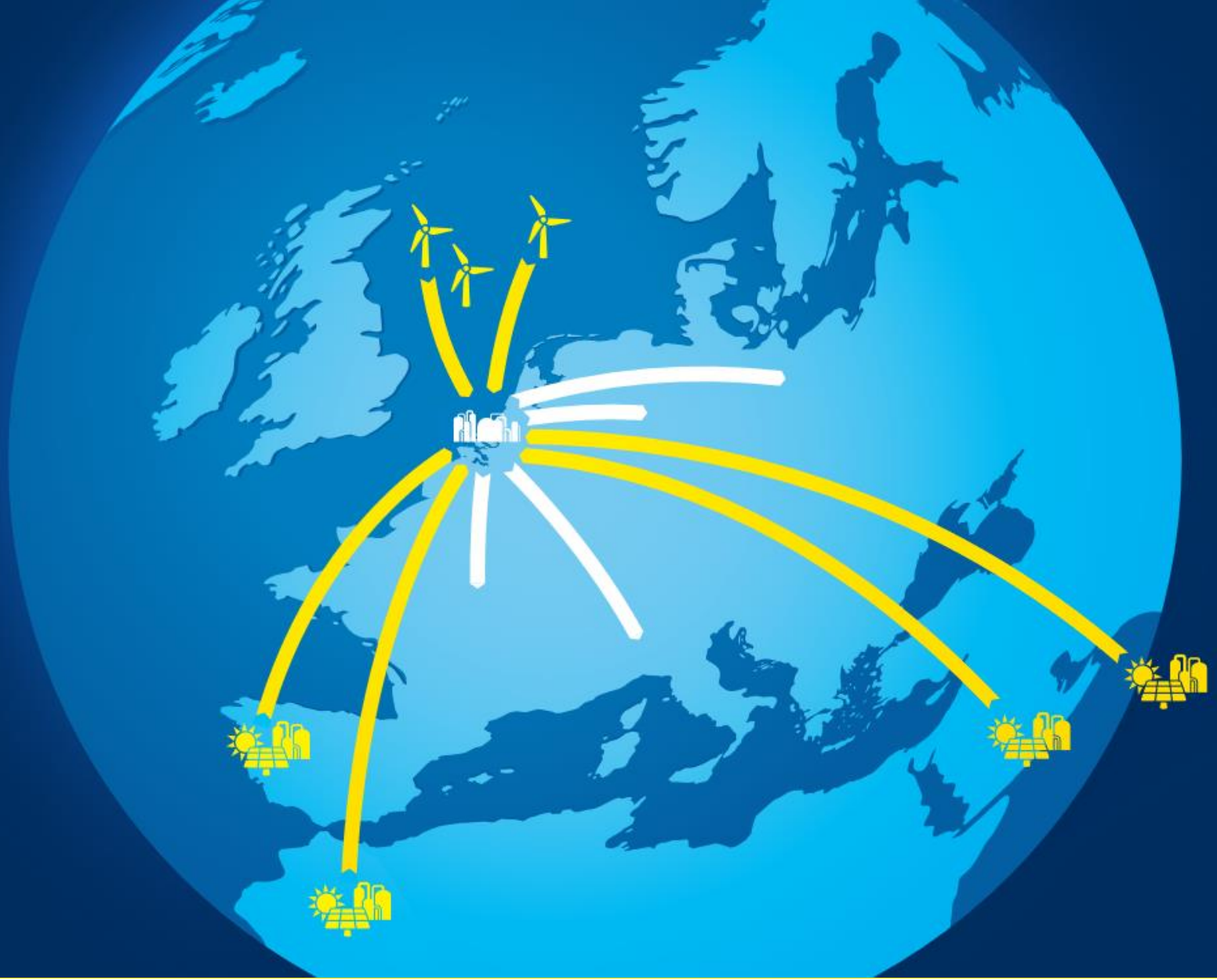

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