PORT OF ROTTERDAM
FRONT RUNNER IN ENERGY TRANSITION

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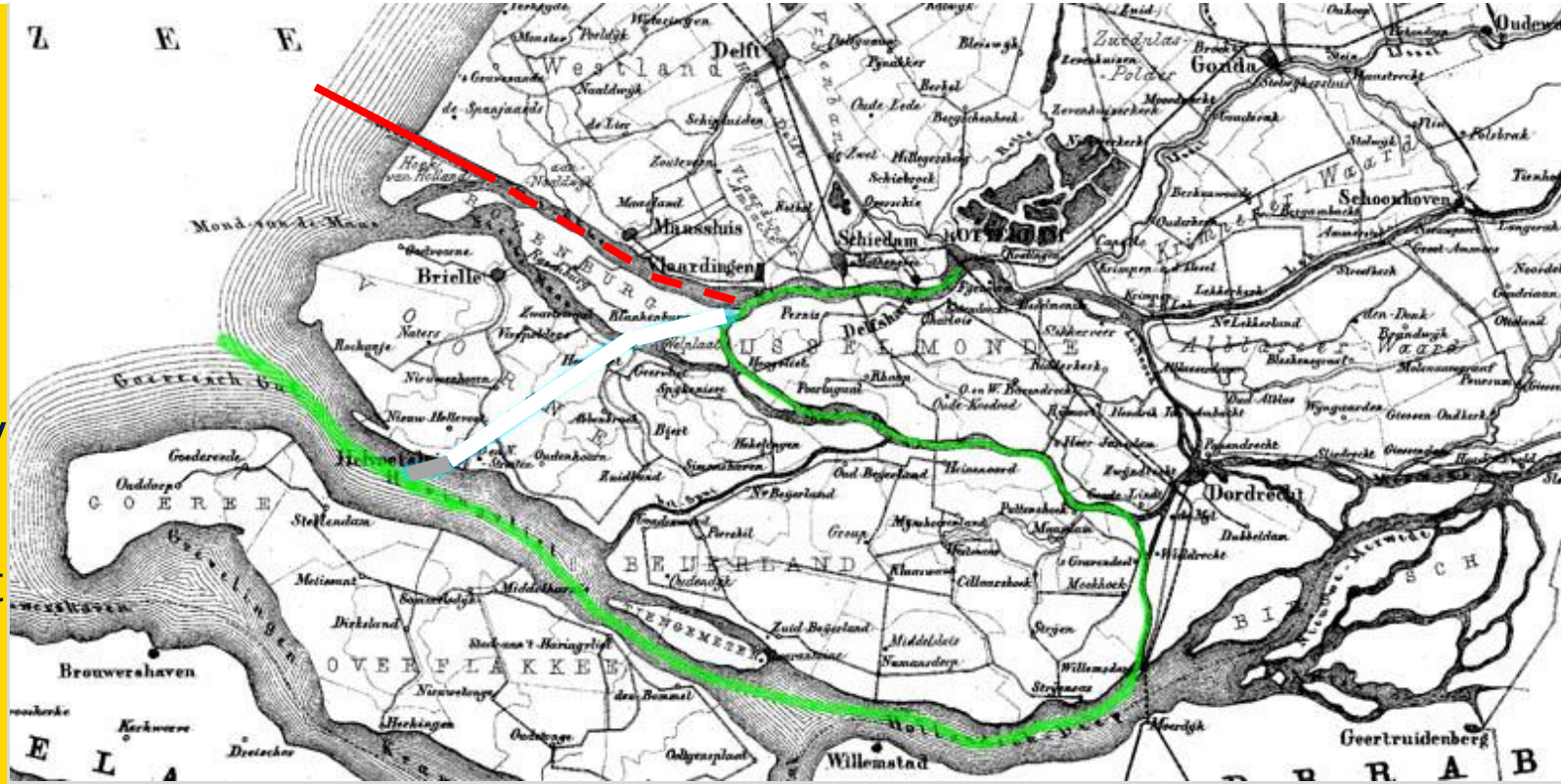
June 2018

Port of Rotterdam

Born in 1963 – The Port Year

- Celebration of the Centennial of the *Law on the New Waterway*, signed in **1863**
- Necessary in order to accommodate ever larger seagoing vessels with bulk cargo for Ruhr Area in Germany
- Short-cut to the sea was realized in 1872, and the New Waterway was at commercial depth in 1896
- Since then continuous growth of throughput, > 100 Mt in **1963 ➔** Rotterdam largest port in the world

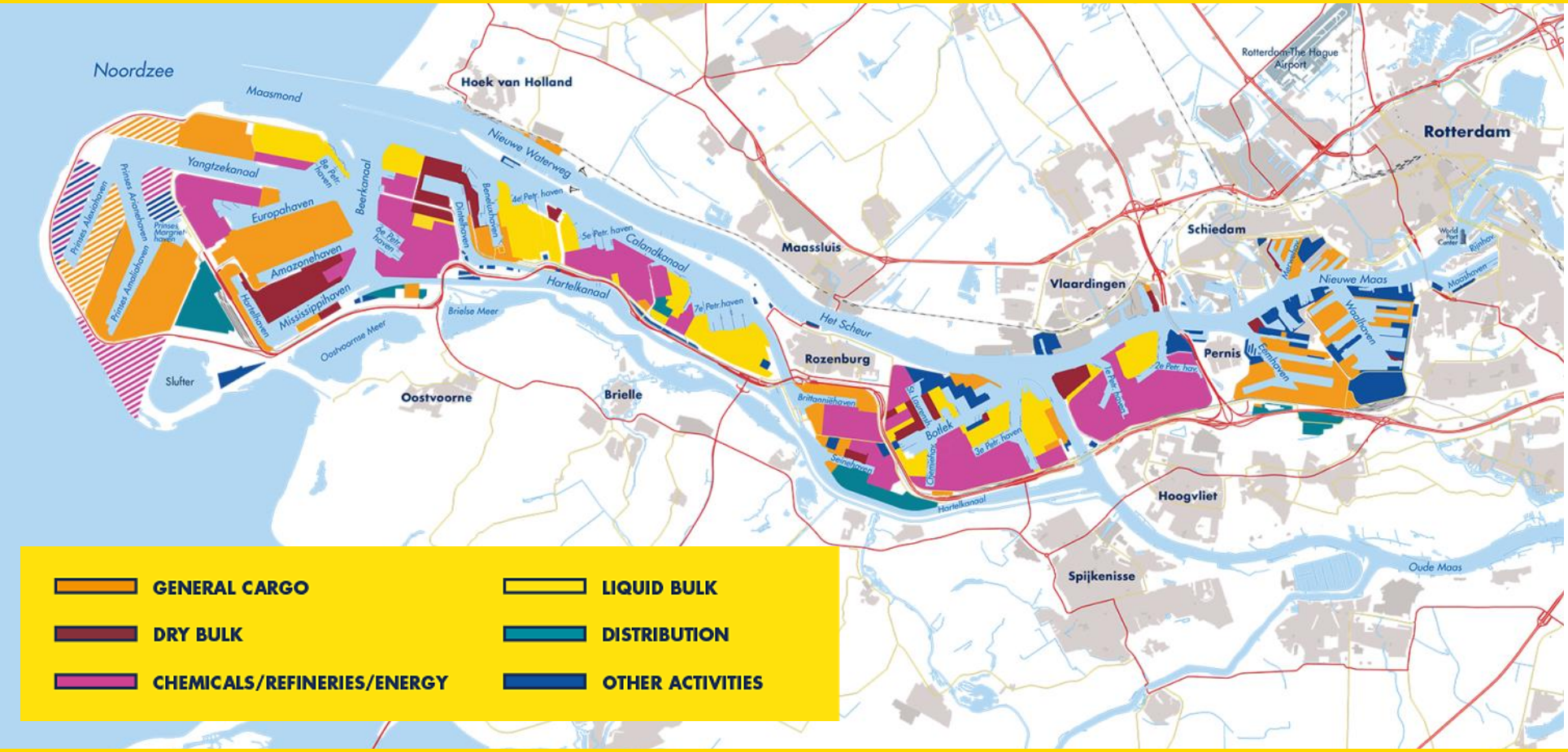


Port access mid 19th century
New Waterway end 19th century

Port of Rotterdam

The port in 2018

Half of it: industrial cluster & liquid bulk



Surface area port	12,600 ha
of which water	4,800 ha
land	7,800 ha
of which sites	6,000 ha

Companies	1,200
Value added	€ 22,3 bln
Employment	188.000

Depth up to 75 ft (= 24 m)

Seagoing vessels	30,000 p/a
Throughput	467 Mt p/a

> Largest port in Europe

> 9th port worldwide

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Rotterdam Port Industry Cluster

	Production Capacity	Share in NL
5 crude oil refineries	58 Mt	88%
30 chemical companies	17 Mt	40%
3 biofuels producers	2 Mt	56%
4 edible oil refineries	2.6 Mt	75%
6 power plants, 11 heat/power plants, 1 waste incinerator, 86 wind turbines	5.4 GW	16%

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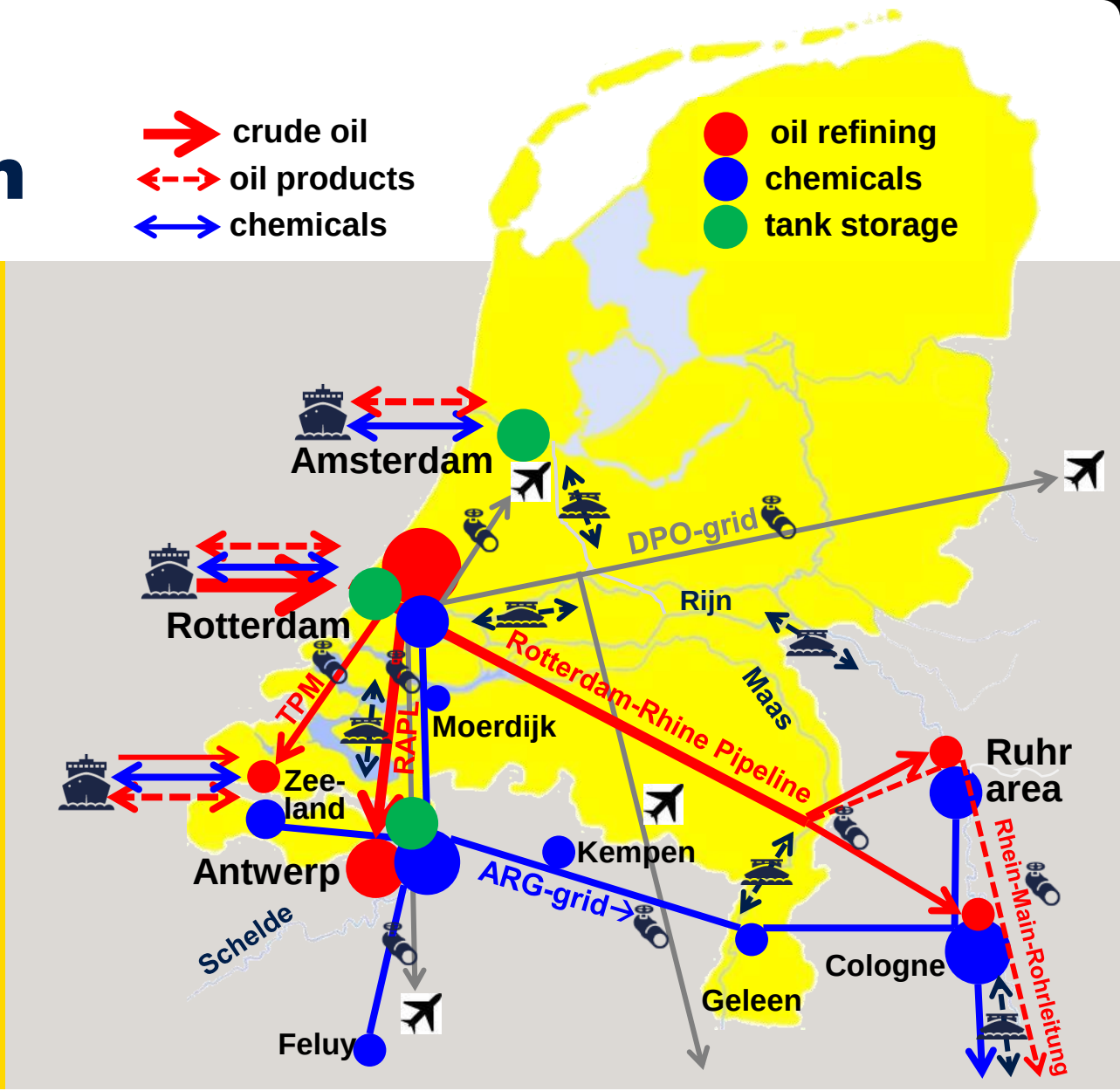
ARA-Ruhr Cluster as motor of economic growth

1. Large export centre for oil & chemical products
   - 20% of oil refining in the EU
   - 30% of base chemical production in the EU
2. unrivalled infrastructure: deep sea ports, river delta, pipeline systems
3. Efficient seaport and hinterland logistics
4. Production integration between refineries and chemical industry
5. Highly qualified labour force, education and R&D, based on more than a century of regional development in oil and chemicals



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Port of Rotterdam Authority

Mission:

The Port of Rotterdam Authority creates **economic and social value** by working together with clients and stakeholders on the realisation of **sustainable growth** in Rotterdam's world-class port.

Unlisted public limited company, with shareholders:

- Municipality of Rotterdam (70%)
- the Dutch government (30%)

Core tasks

- Development, management and operation of the port
- Maintaining the safe and smooth handling of all shipping

Key Figures 2017

- Turnover € 712 mln from land lease and port dues
- Investments € 214 mln in land and infrastructure
- 1.150 employees

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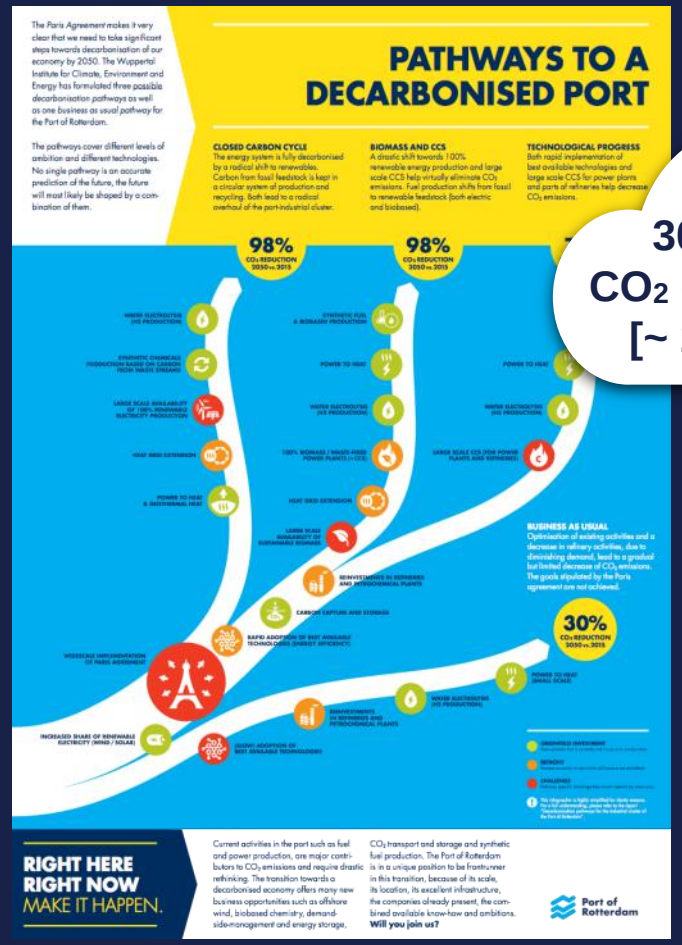
2017



30 Mton
CO_2 emissions
[~ 20% NL]

DECARBONISE PORT INDUSTRY

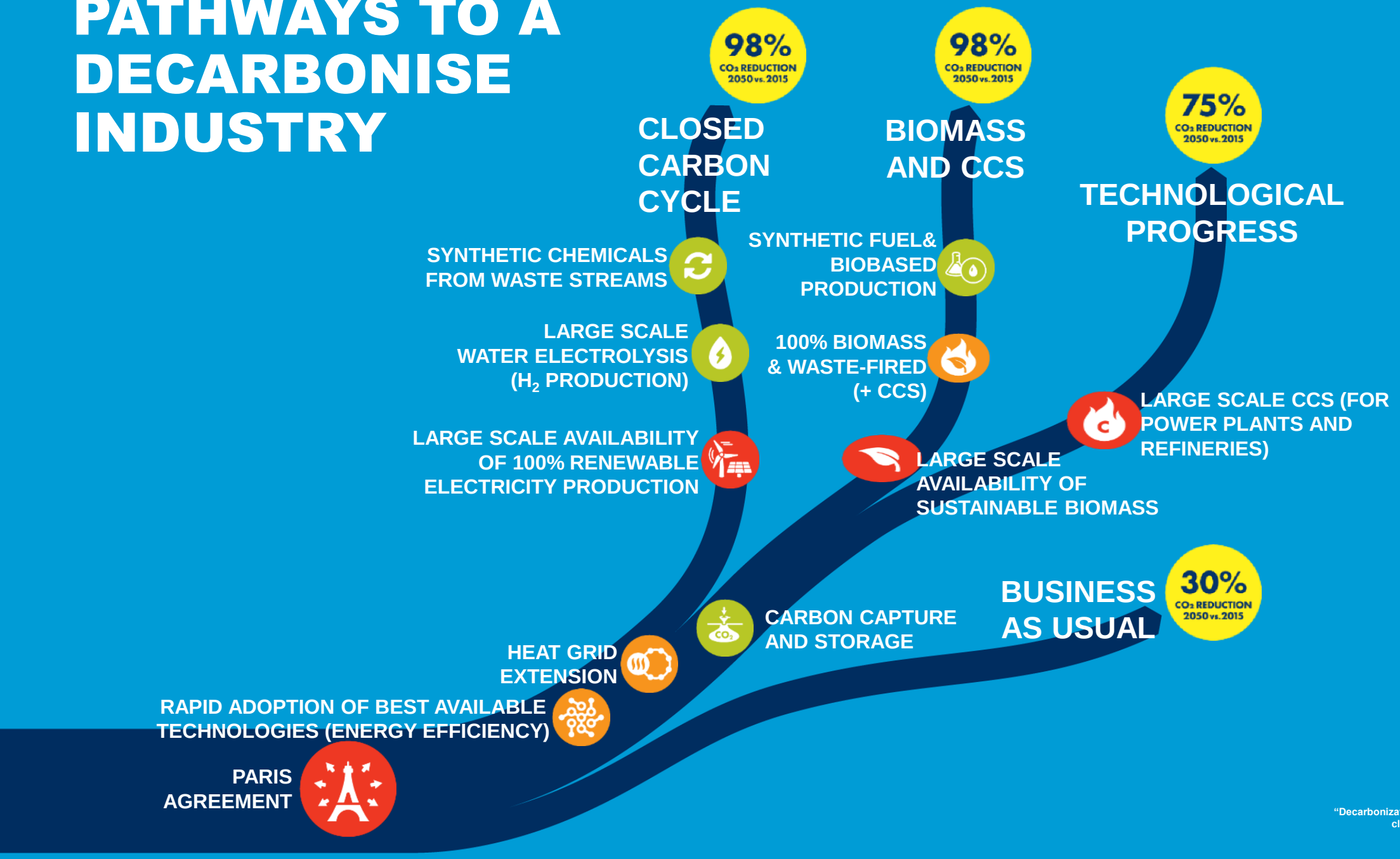
+

2018

25 Mton
CO_2 emissions

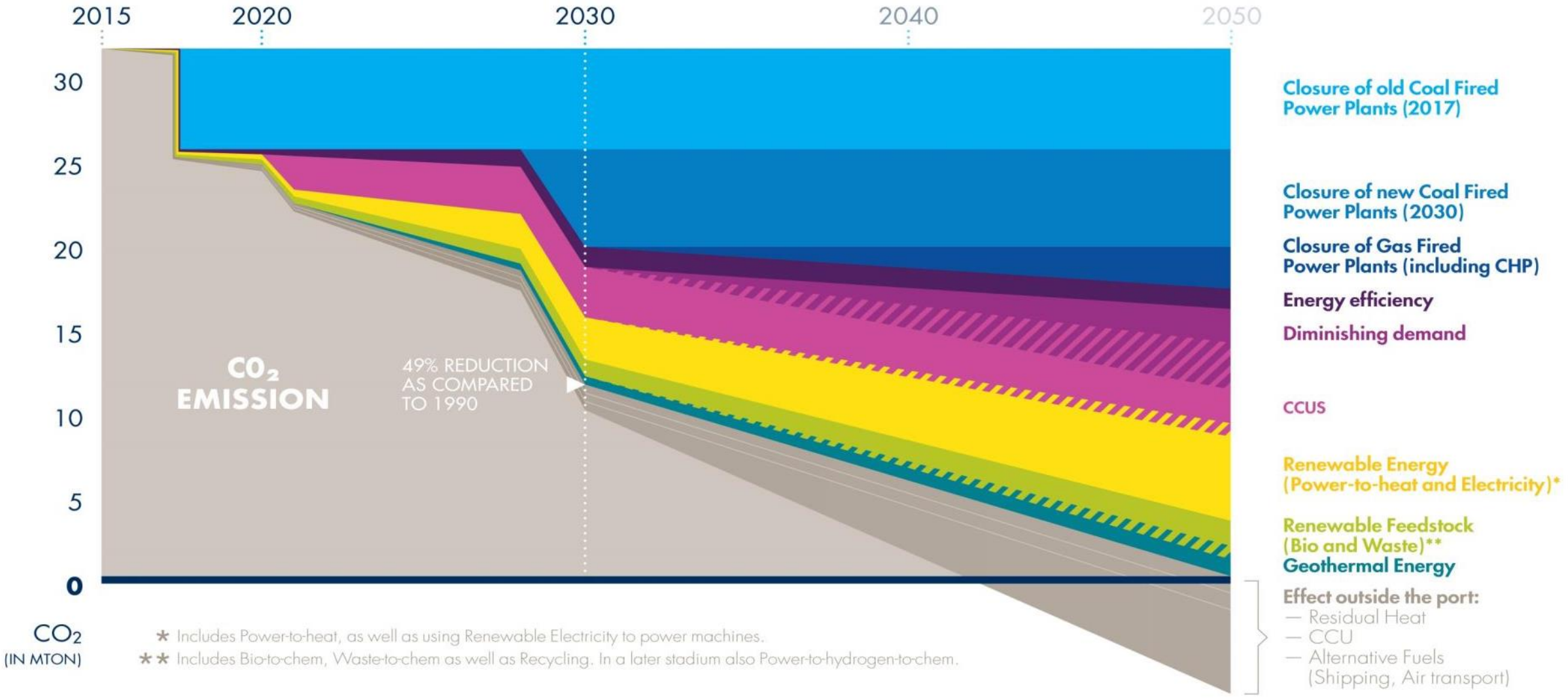
DECARBONISE PORT TRANSPORT

PATHWAYS TO A DECARBONISE INDUSTRY



"Decarbonization pathways for the industrial cluster of the Port of Rotterdam"
Wuppertal Institute
Simplified for clarity reasons.

Reduction CO_2 emissions 2015 - 2030 - 2050



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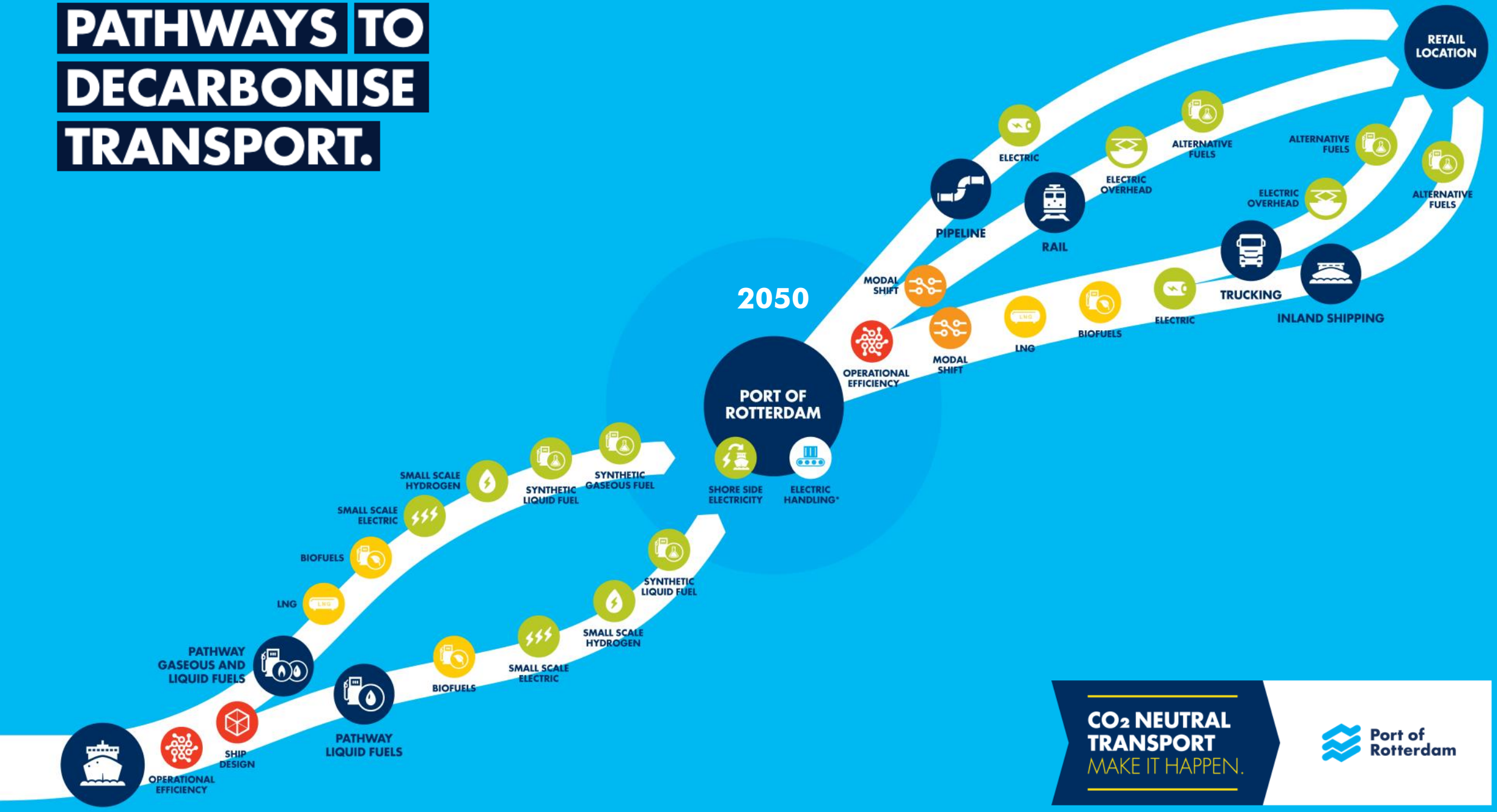
PATHWAYS TO DECARBONISE TRANSPORT.



CO_2 NEUTRAL TRANSPORT
MAKE IT HAPPEN.

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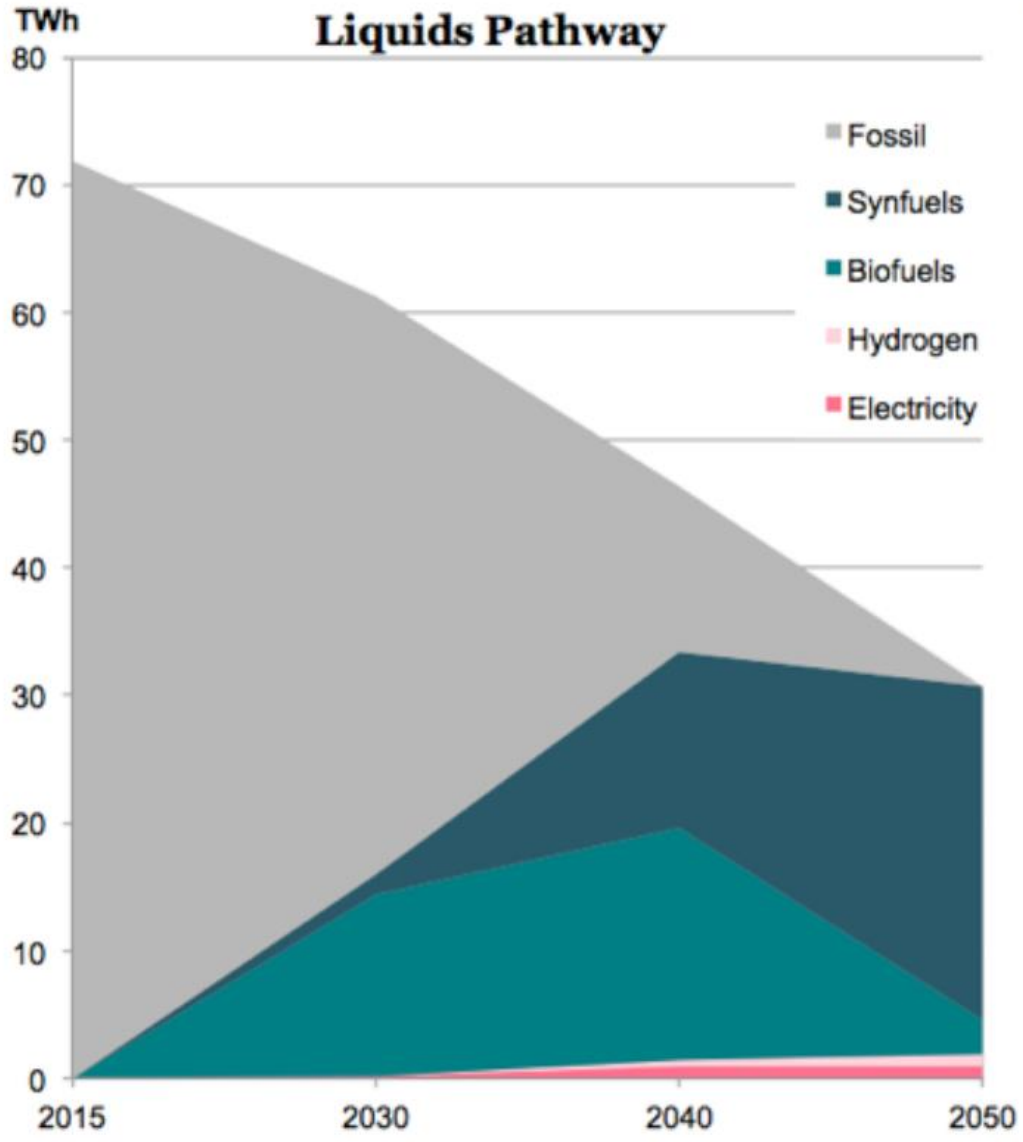
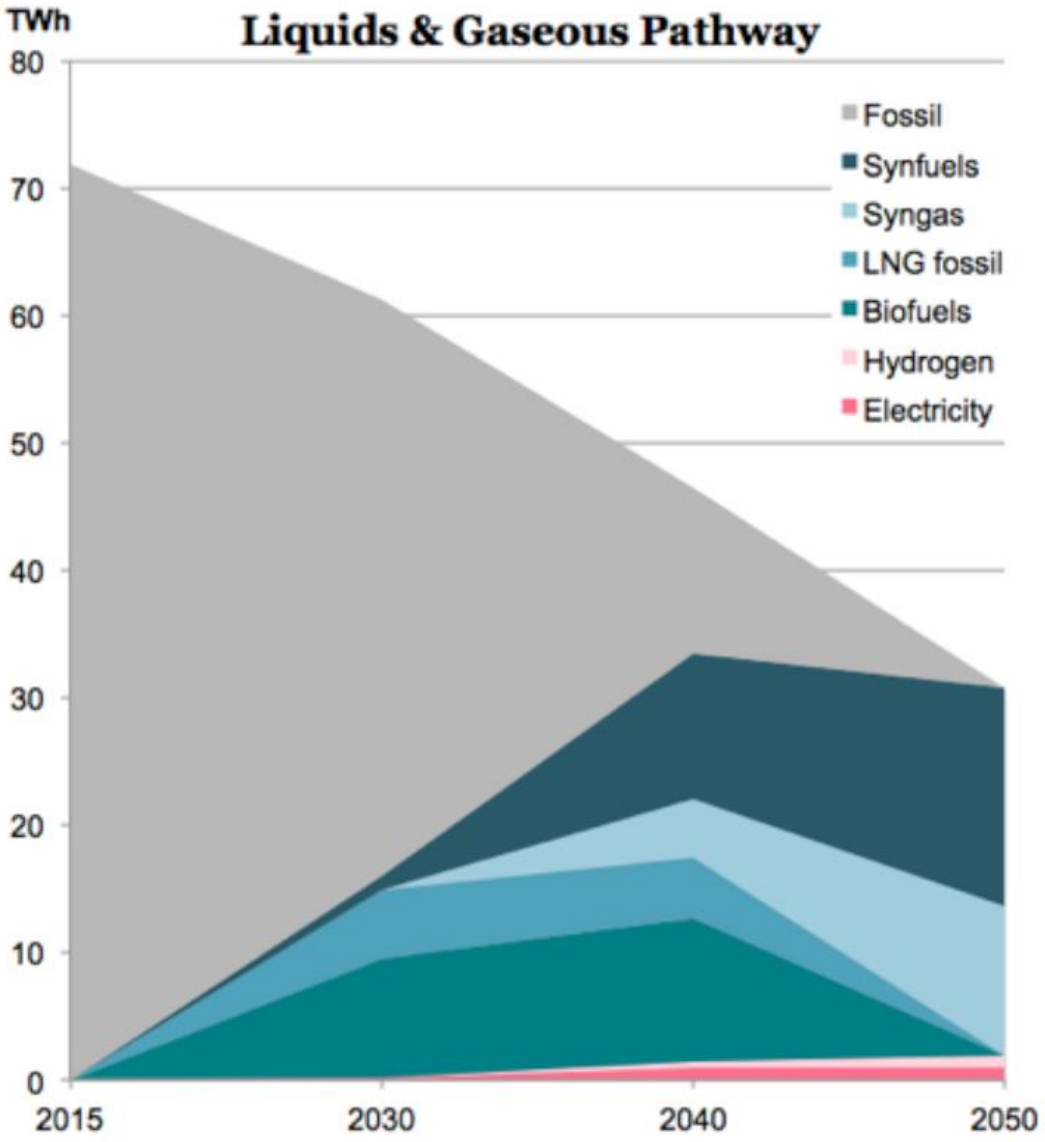
2 pathways for sea-going vessels





New energy infrastructure for LT-Heat and CCUS

- 40 PJ heat transport network in South-Holland for potentially 500.000 households, greenhouses and enterprises
- Joint venture Gasunie – Port of Rotterdam, FID in 2018
- Natural gas avoided: 1.3 bcm; CO_2-reduction: 2 Mt p/a

- Back bone for transport and storage of CO_2 in empty offshore gas fields
- Feasability study EBN - Gasunie - Port of Rotterdam, in consultation with companies and ministery of EZK
- CO_2-reduction: 2-5 Mt p/a

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Closed carbon cycle with renewable energy

- 360 kt waste transfered into 220 kt green methanol
- Consortium Enerkem, Air Liquide, AkzoNobel & Port of Rotterdam Authority, FID in 2018
- CO_2-reduction: 0,3 Mt p/a

- Opportunity: internationally coordinated, large scale development of far-shore wind energy at the North Sea, producing renewable energy at competitive prices from 2030
- Feasibility study on hub-and-spoke energy infrastructure for electrons and molecules (hydrogen) by a consortium of Tennet (NL and Germany), Energinet (Denmark), Gasunie & Port of Rotterdam

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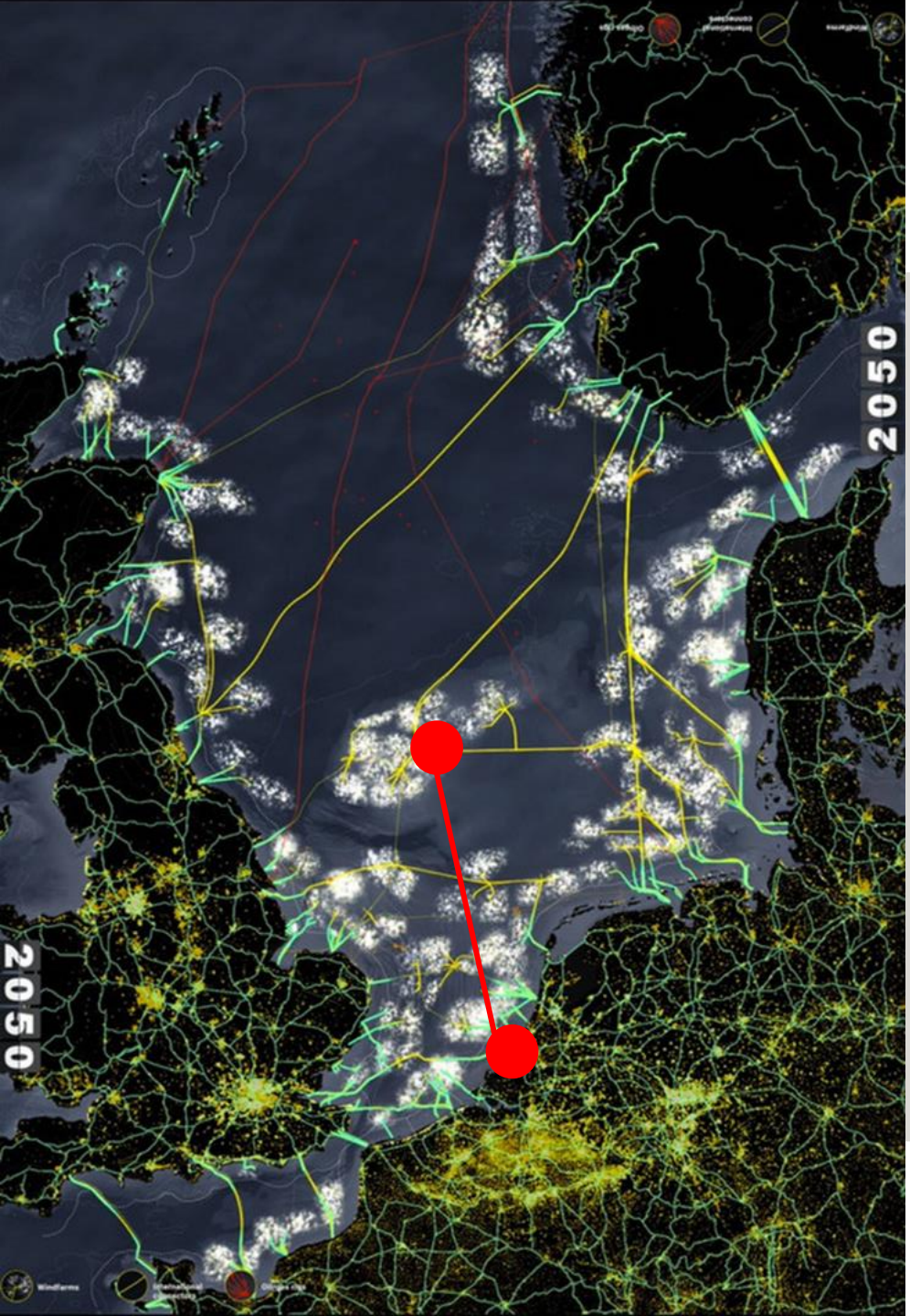

Port Year 2032

Centennial Port of Rotterdam Authority

- **Exhibition: 15 years energy transition in the port**

1. 250.000 households on port heat
2. CCS: 1st field filled and sealed, 2nd in operation
3. After start in 2020, extension waste-to-chemicals capacity
4. Bio refinery attracts new customers in bio-chemicals
5. Refineries start co-processing synthetic fuels from renewables
6. Use of natural gas in industry declined because of electrification
7. First sea-going vessels on synfuels and syngas
8. Rotterdam connected to the North Sea Wind Power Hub

- **World Port Days: first excursion to Doggerbank**

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