

ROTTERDAM:

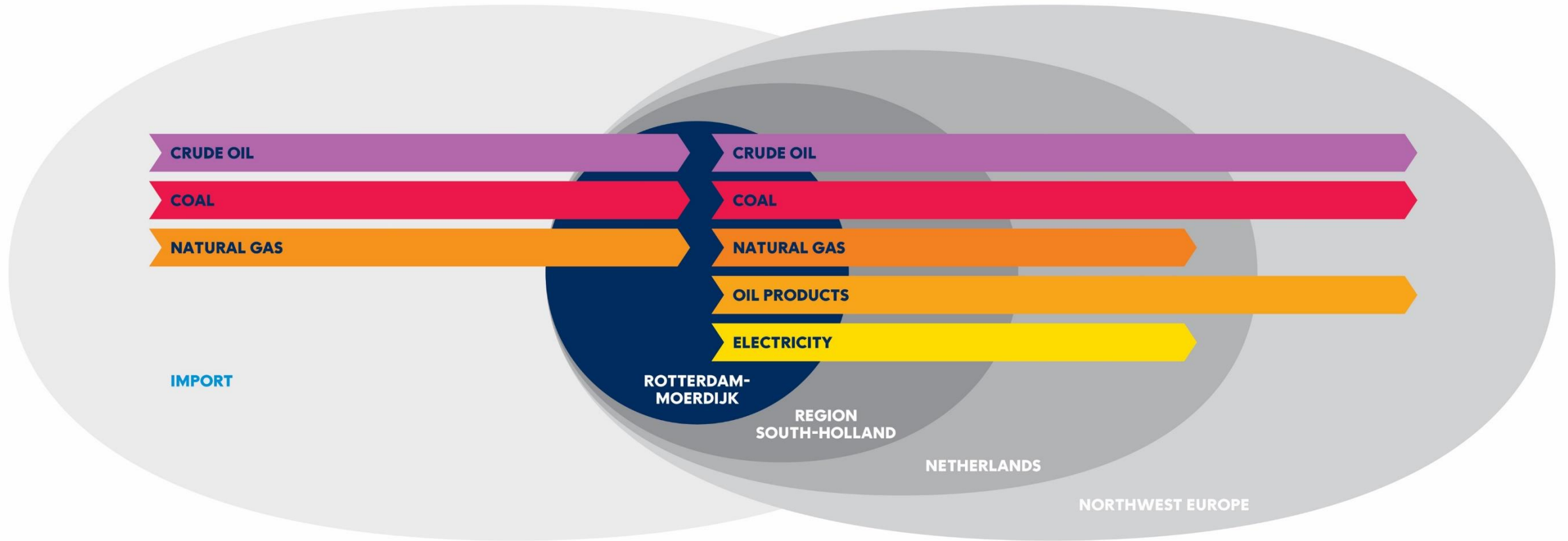
FROM FUEL HUB TO POWER-FUEL HUB



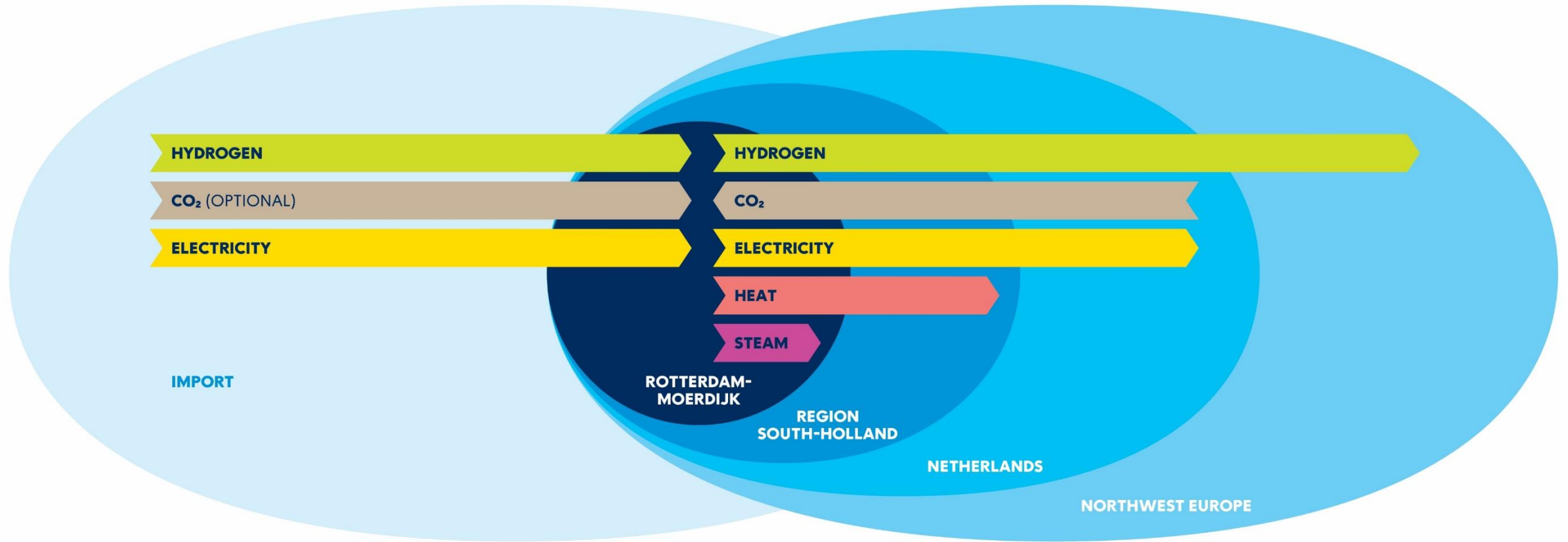
Stijn van Els, Director Commercial Delivery, Port of Rotterdam
2nd Annual Powerfuels Conference



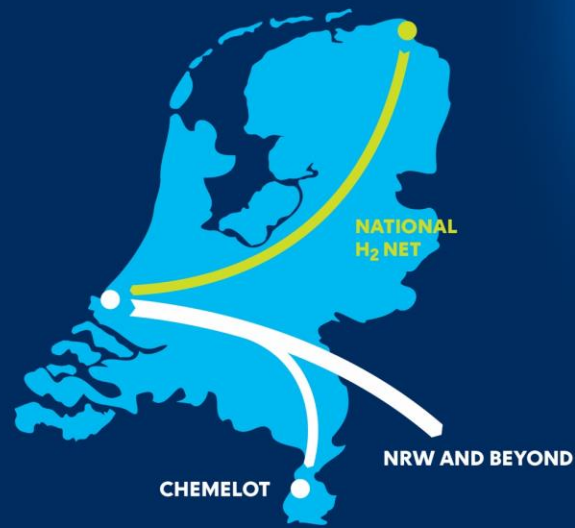
FROM...



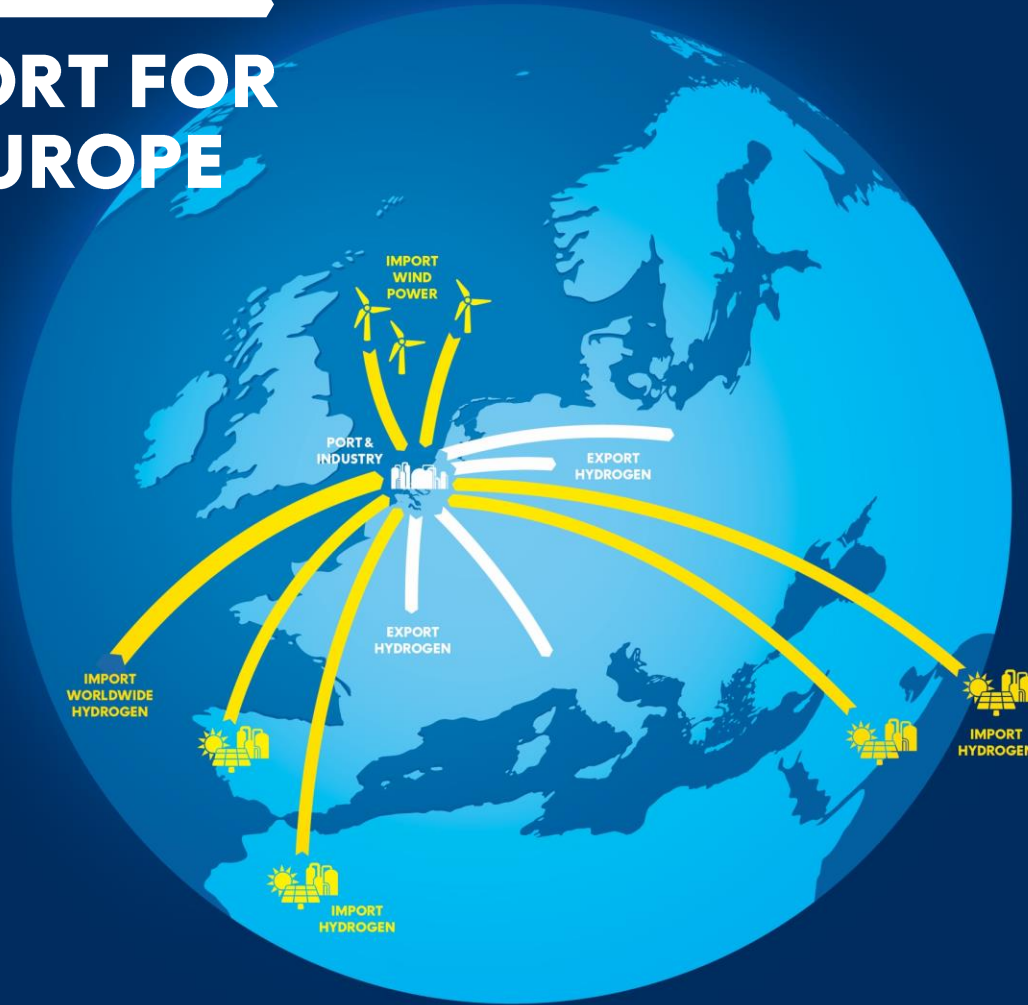
TO...



THE ENERGY PORT FOR NORTHWEST EUROPE



Connection with national H₂ Grid, Chemelot and North Rhine–Westphalia (NRW).



Strong growth in hydrogen flow though Rotterdam due to imports.

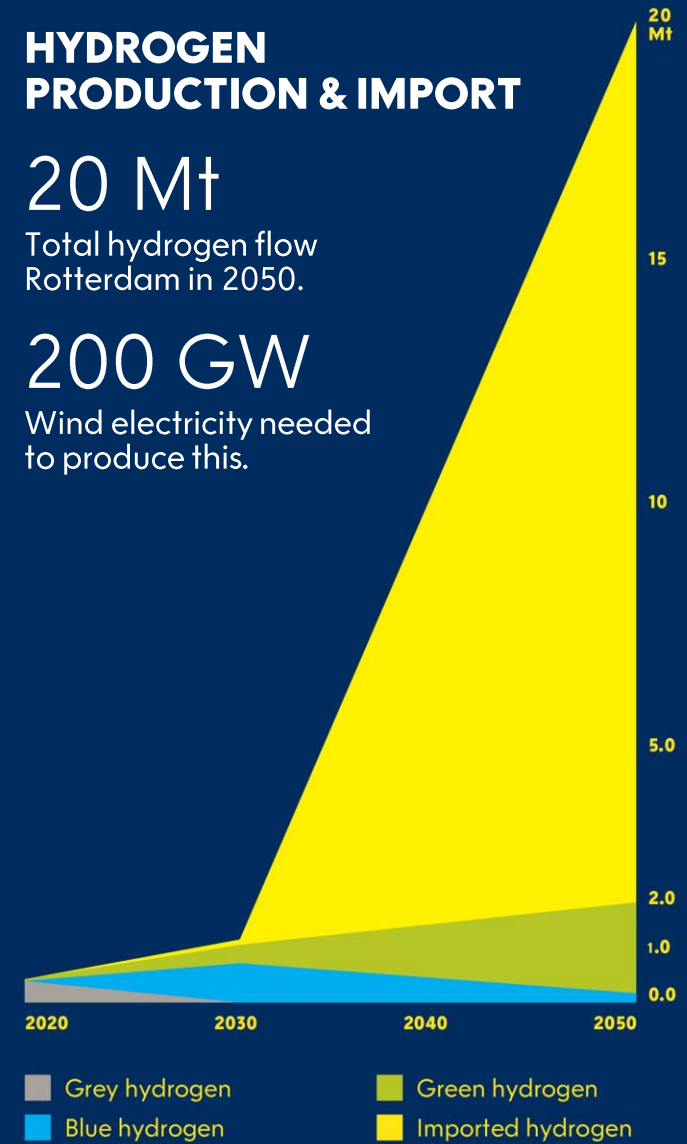
HYDROGEN PRODUCTION & IMPORT

20 Mt

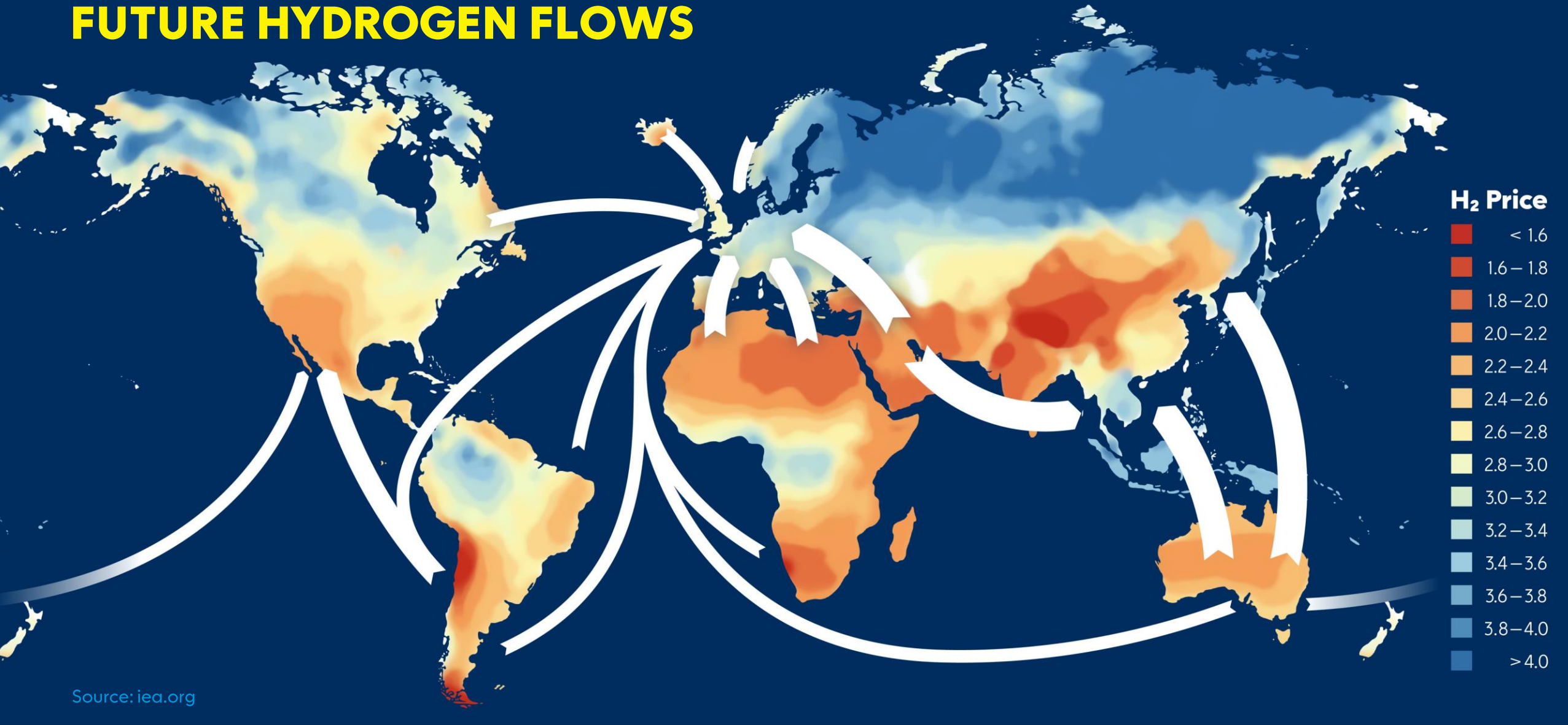
Total hydrogen flow Rotterdam in 2050.

200 GW

Wind electricity needed to produce this.

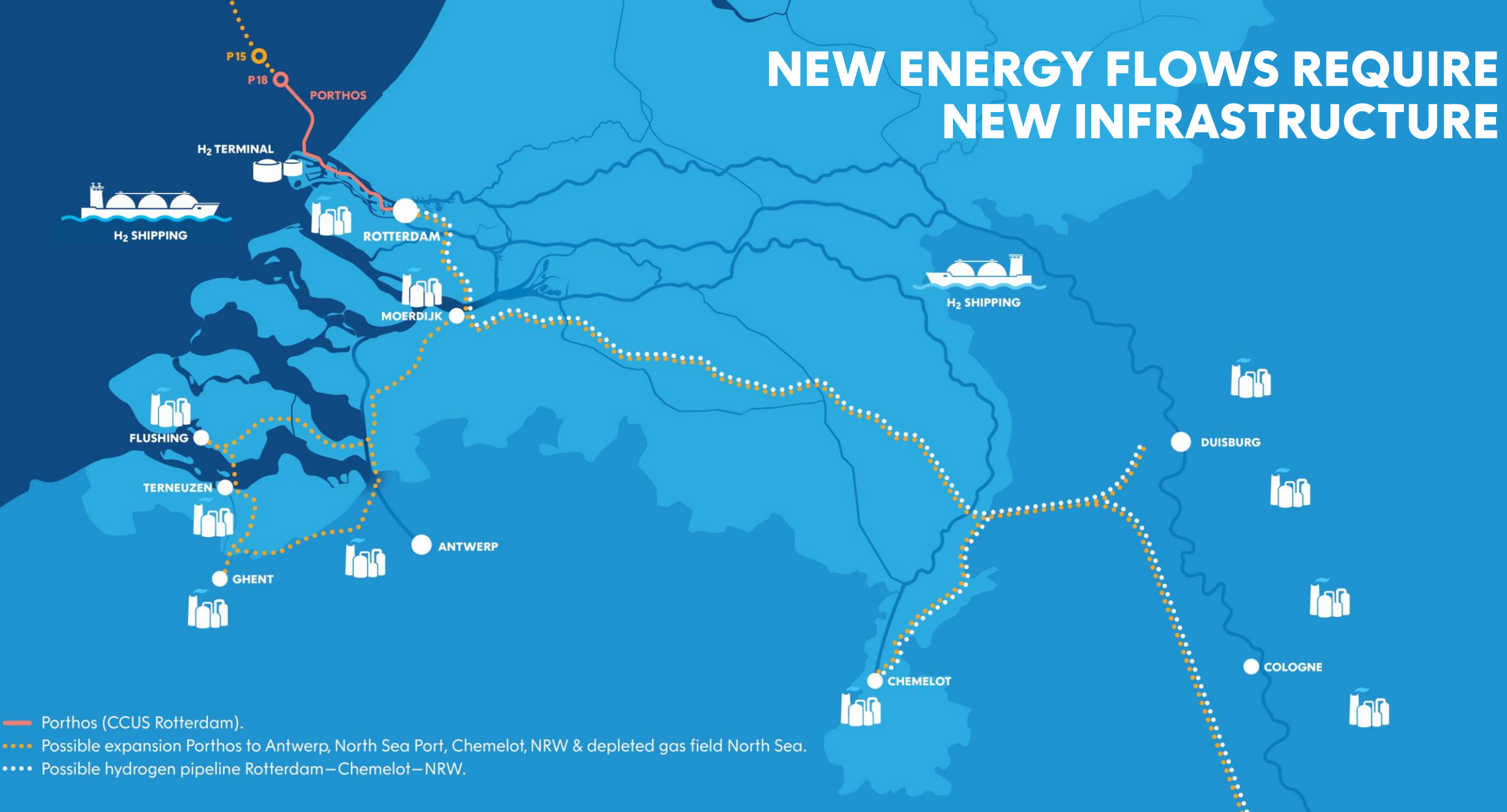


FUTURE HYDROGEN FLOWS

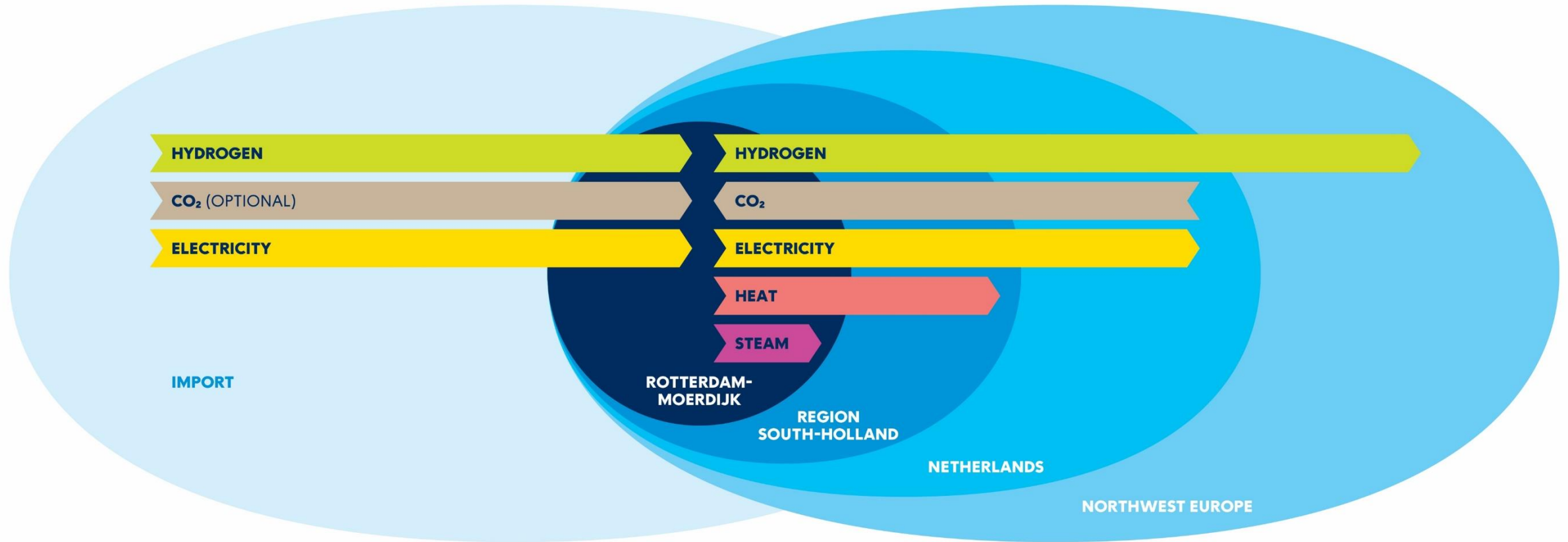


Source: iea.org

NEW ENERGY FLOWS REQUIRE NEW INFRASTRUCTURE



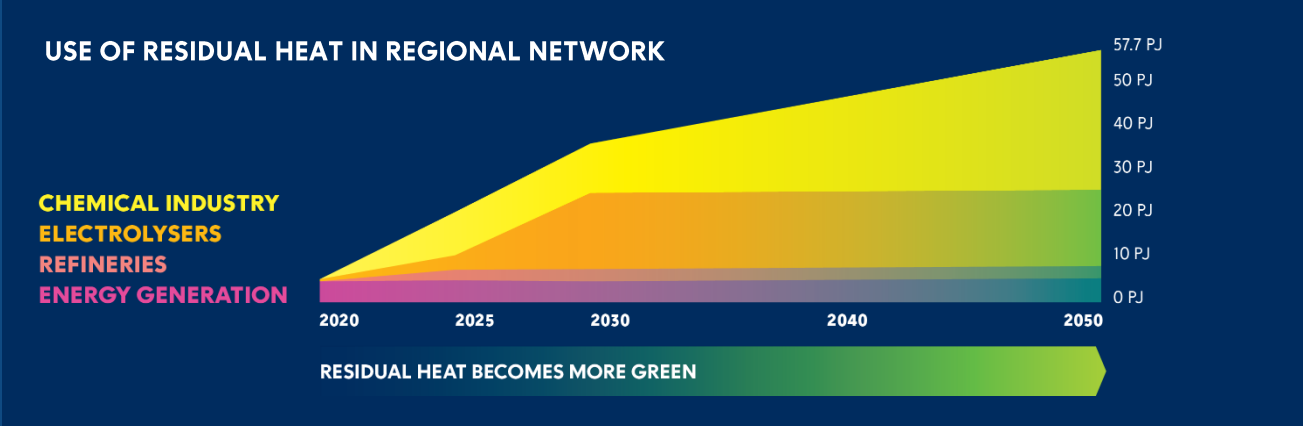
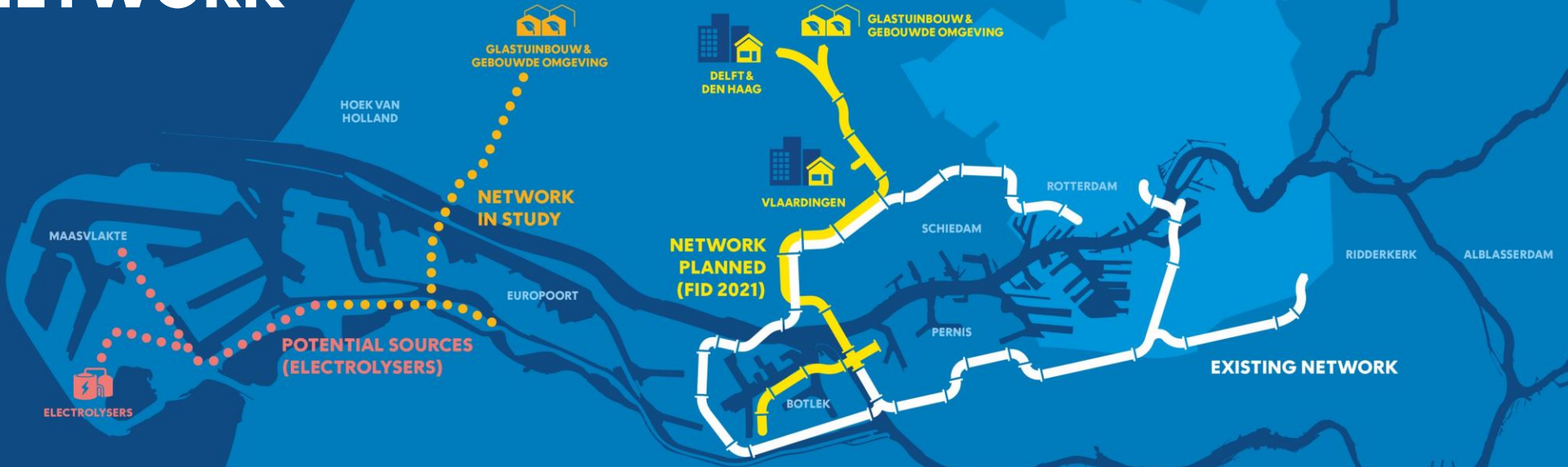
... BUT IT'S NOT ONLY ABOUT HYDROGEN



3 STEP STRATEGY



HEAT NETWORK



CCUS & PORTHOS



EXPECTED CO₂ REDUCTION IN 2030
 ± 3–13 million tonnes a year

TOTAL AMOUNT OF CO₂

2020	0.6 MTON P.A.
2025	3.0 MTON P.A.
2030	9.0 MTON P.A.

ELECTRICITY GRID

AANLANDING 1,4 GW
HOLLANDE KUST ZUID
GEPLAND 2022



AC

EXTRA AANLANDING
VOOR 2030



AC/DC

AANLANDING 2 GW
IJMUIDEN VER BETA
+ 2 GW EXTRA
GEPLAND 2029



DC

EXPECTED CO₂ REDUCTION IN 2030

± 2.5 million tonnes a year

TOTAL ELECTRICITY PRODUCTION / USE

2020 5,791 / 1,188 MW

2025 5,971 / 1,870 MW

2030 4,140 / 5,362 MW

TOTAL OFFSHORE WIND

0 MW

1,400 MW

5,400–7,400 MW

LEGEND

- Existing sub-station
- Existing high voltage station
- Expansion
- 380 KV grid
- 150 KV grid

HYDROGEN NETWORK



EXPECTED CO₂ REDUCTION IN 2030

± 3 million tonnes a year, when the 2 GW conversion park is in full use.

TOTAL PRODUCTION

2020	52 PJ
2025	74 PJ
2030	186 PJ

Aassname factor 120MJ/kg H₂

5 KEY PROJECTS

FOR CLIMATE, INDUSTRY & SOCIETY

CO₂ reduction in 2030: 17,1 Mton

H₂

Open access **HYDROGEN BACKBONE** will connect local production, local use, import terminals (and somewhat later in time other industrial hot spots)

3.0 Mton



New **EAST-WEST CONNECTIONS** (Rotterdam – Moerdijk – Chemelot – Nord Rhine-Westfalia) for new energy carriers (hydrogen), DC electricity, CO₂ etc.



At least **2 GW EXTRA OFFSHORE WIND** coming to Rotterdam before 2030 for electrification and green hydrogen

2.5 Mton



Enlarging the **PORTHOS CCS PROJECT** (more CO₂, sources outside Rotterdam, new depleted gas fields, extra infrastructure)

9.0 Mton



Expanding the **RESIDUAL HEAT NETWORK** to The Hague, other towns and green houses.

2.6 Mton

THANK YOU