

# CO<sub>2</sub> reduction through storage beneath the North Sea

Launching CCS in the Netherlands



Martijn van de Sande  
27 June 2022



Co-financed by the  
Connecting Europe Facility  
of the European Union



**Porthos**  
CO<sub>2</sub> TRANSPORT & STORAGE

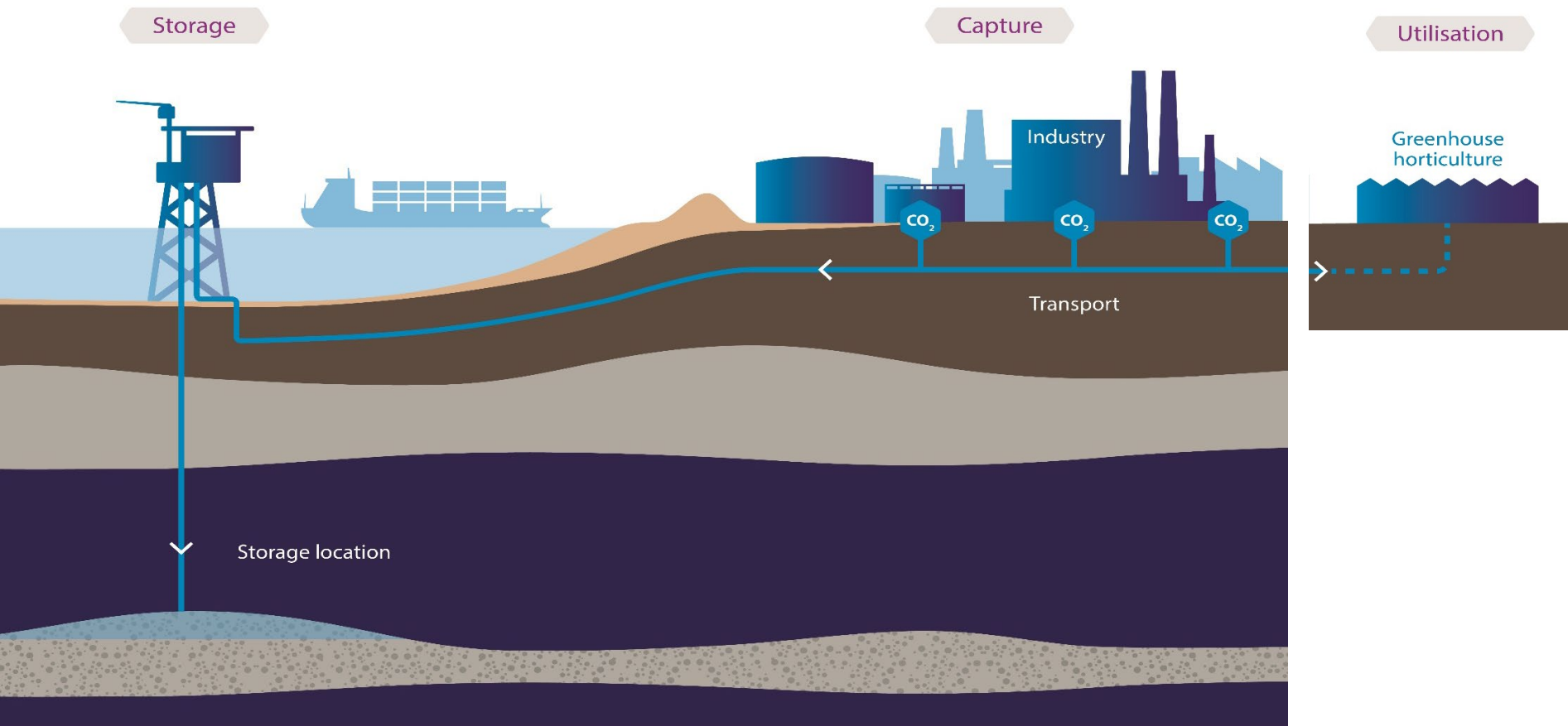
# Project overview

- Shareholders: EBN, Gasunie, Port of Rotterdam Authority
- Customers: Air Liquide, Air Products, ExxonMobil, Shell
- Capacity P18 fields: ~ 37 Mton
- Storage: ~ 2.5 Mton per year
- CAPEX: ~ € 450-500 million
- Planning: final investment decision in 2022, operational by 2024/2025

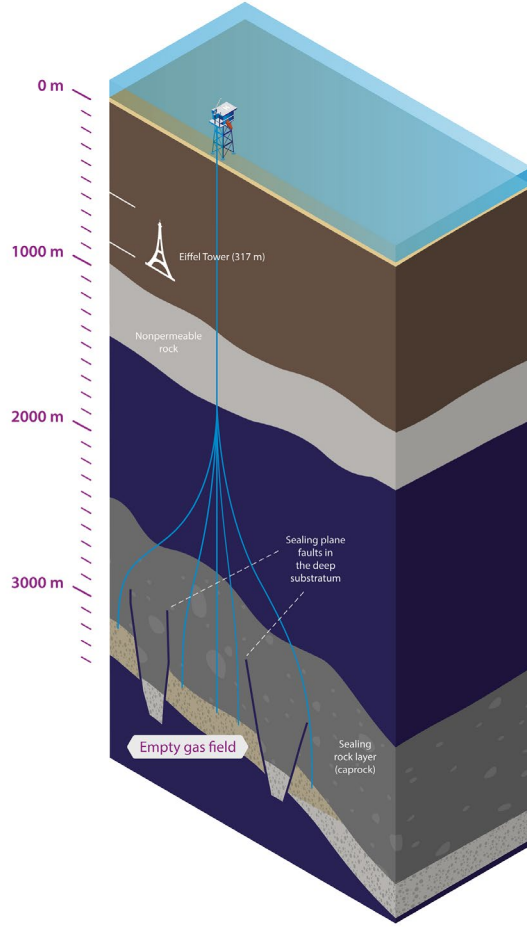




# How will Porthos store CO<sub>2</sub>?



# Permanent storage



# Public-private partnership for a successful project

## State owned companies

Lead role,  
invest in infrastructure



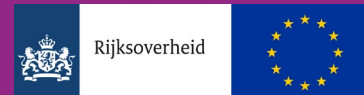
## Private companies

Invest in capture,  
pay for storage



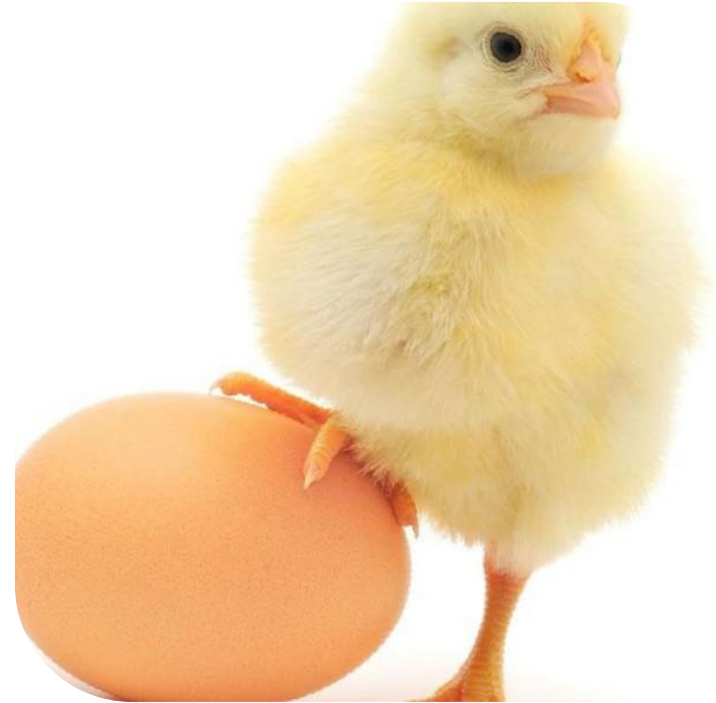
## Public authorities

Funding, mandate,  
responsibility



# Commercial process

- Capture – transport/storage
- Alignment necessary
- SDE++ Dutch subsidy scheme
- Funnel approach
  - ✓ Expression of Interest
  - ✓ Joint Development Agreement 1
  - ✓ Joint Development Agreement 2
  - ✓ Transport and Storage contracts



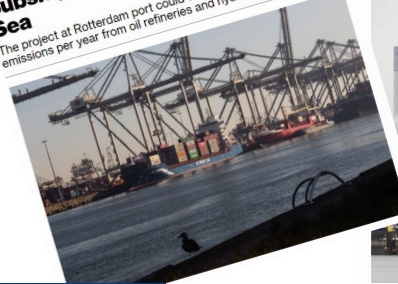
# SDE++ subsidy scheme

- Subsidy for companies and (non-profit) organisations that
  - (will) produce renewable energy or
  - apply CO<sub>2</sub> reducing techniques, e.g. CCS
- Grant duration 15 years for CCS
- Covers entire chain: amount for CCS limited to sum of capture, transport and storage costs as determined by PBL
- Subsidy related to ETS
- €4.5 billion SDE paid between 2008 and 2019; 42 Mton CO<sub>2</sub> reduced over this period

REUTERS

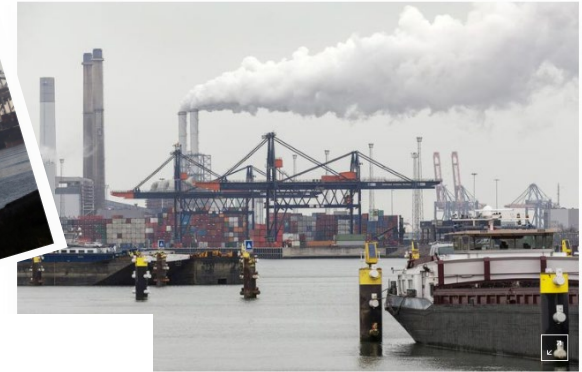
Dutch gov't grants \$2.4 billion in subsidies to huge carbon storage project

Bloomberg Green  
Energy & Science  
**Netherlands Pledges \$2.6 Billion Subsidy to Bury CO<sub>2</sub> Under the Sea**  
The project at Rotterdam port could capture 2.5 million tons of emissions per year from oil refineries and hydrogen plants



**World Oil**

Dutch government invites Shell, Exxon to join \$2.6B subsea carbon storage plan



NOS

Miljardensubsidie voor CO<sub>2</sub>-opslag onder Noordzee is rond

ICIS  
Dutch government to provide €2.1bn Porthos CCS subsidy





# CEF funding

## The World News Monitor

Business Information for Sustainable Development

### 102 million euros in funding on the horizon for Porthos carbon storage project

Hellenic Shipping News | Oct 6, 2020 at 2:00 AM



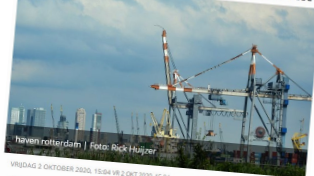
- The European Commission has proposed awarding 102 million euros in funding to the Porthos project.
- The European Commission wants to financially support the construction of Porthos because the capture and sequestration of CO2 (known as Carbon Capture and Storage, CCS) is widely seen as a necessary measure to keep global warming below 2 degrees Celsius.
- The precise amount of this fee is determined by the costs incurred by Porthos for the system's construction and exploitation (including the energy costs for the pressurised injection of CO2 in the deeper substrate).

### EC proposes €102 million funding for Porthos carbon capture project

ship.energy  
The project will store CO2 supplied by the Rotterdam operations of Air Liquide, Air Products, ExxonMobil and Shell in the North Sea seabed

Rijnmond

### 100 miljoen subsidie voor opslaan CO2 in de Noordzee



VRIDAG 2 OKTOBER 2020, 15:54 W 3:207 2020, 15:54

De Europese Commissie wil 102 miljoen euro uittrekken aan subsidie voor de ondergrondse opslag van CO2 onder de Noordzee. Dat zou moeten gebeuren in lege gasvelden voor de kust van Hoek van Holland.

## UTILITIES



### Porthos krijgt mogelijk 102 miljoen euro EU-subsidie

Publicatie 5 Okt 2020  
Categorie Utilities  
Soort Nieuws  
Tags CCUS, Porthos

gasworld

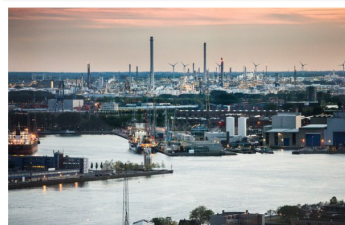
### €102m proposed for Porthos CCS project

By Molly Burgess | 12 October 2020

The European Commission has proposed a €102m award to a Netherlands-based carbon capture and storage project, as part of a necessary measure to keep global warming below 2 degrees Celsius.

If endorsed by the European Parliament, Project Porthos will benefit from the new capital that will help to push forward its goals and contribute to the Netherlands' achievement of its climate targets.

AD NIEUWS REGIO SPORT  
Almelo Alphen Amersfoort Amsterdam Apeldoorn Meer..



▲ De raffinaderij van Shell Pernis. © Aris Kijnt

### Europese subsidie in aantocht voor belangrijk milieuproject van de Rotterdamse haven

Een groot milieuproject in de Rotterdamse haven staat op de nominatie voor meer dan 100 miljoen euro Europese subsidie. Dat is ongeveer een vijfde van de totale kosten van het Porthos-plan.

Leon van Heel 02-10-20, 15:12

rtl.nieuws

Pijpleiding voor CO2

### EC wil Rotterdam's CO2-opslagproject 102 miljoen euro subsidie geven



De haven van Rotterdam vanuit de lucht met onder meer industriegebied Vondelingenplaat, de Tweede Petroleumhaven en de raffinaderij van Shell.

Het grootste klimaatproject in de haven van Rotterdam is een grote stap dichterbij gekomen. De Europese Commissie wil 102 miljoen subsidie geven voor de aanleg van een systeem voor de afvang en opslag van CO2 van de zwaar vervuulende industrie in de haven.

NT Nieuwsblad Transport

### Europa wil Porthos 102 miljoen euro subsidie geven

CO2-OPSLAG

De Europese Commissie heeft voorgesteld het CO2-opslagproject Porthos 102 miljoen euro subsidie te geven. Het is een project om CO2 van de industrie op te slaan onder de Noordzee. Als het Europees Parlement akkoord gaat, draagt Europa een flink deel van de investering van Porthos van in totaal 450 tot 500 miljoen euro.

NATHALIE VAN HERK 5 oktober 2020 12:04



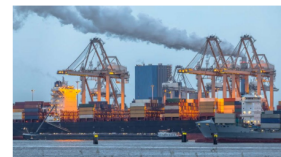
Porthos  
CO2 TRANSPORT & STORAGE

Sea Wanderer

### 102 million euros in funding on the horizon for Porthos carbon storage project

The European Commission has proposed awarding 102 million euros in funding to the Porthos project

On 5, 2020 - 06:50



The Porthos project centres on the capture and storage of CO2 in the North Sea floor. If the European Parliament endorses this proposal, Europe will bear a substantial share of the investment in Porthos, which totals 450 to 500 million euros.

SCHUTTEVAER

### 102 miljoen EU-geld voor Porthos project (opslag CO2 in Noordzee)

ROTTERDAM - 03 OKTOBER 2020, 18:10

# Porthos is ready for FID

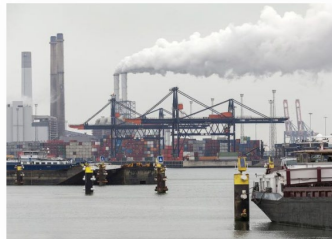
## Client contracts

have been signed,  
subsidies have been  
granted

Air Liquide, Air Products,  
ExxonMobil, Shell

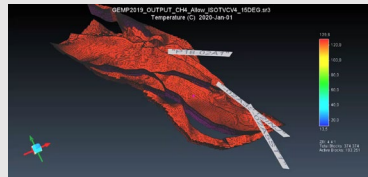
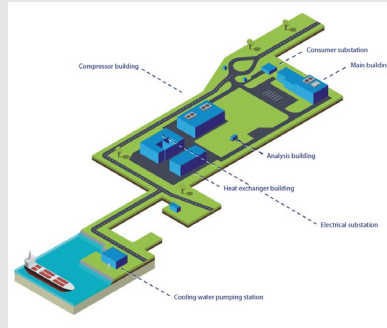
REUTERS

Dutch gov't grants \$2.4 billion in subsidies to  
huge carbon storage project



## FEED engineering

has been completed



## Storage permits

concept received from  
Ministry



## Successful decommissioning of complex well



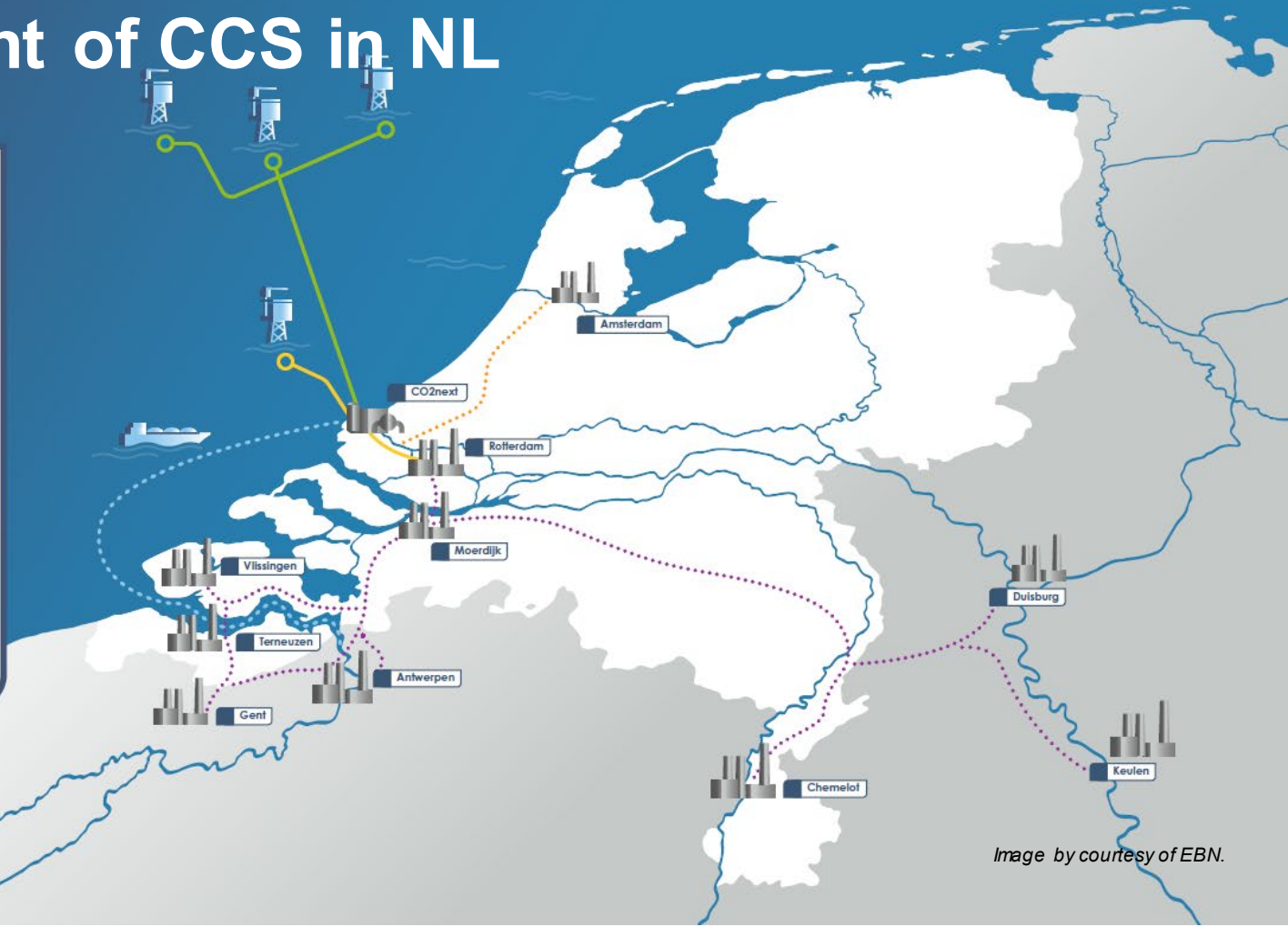
# Awaiting conditions

1. Council of State ruling on environmental permits
2. Final storage permits (expected in July)
3. Shareholder approval FID

When fulfilled ...  
start of construction works  
(2023-2024)



# Development of CCS in NL



# Thank you for your attention!

For more information, please visit:  
[www.porthosCO2.nl](http://www.porthosCO2.nl)



*The contents of this presentation are the sole responsibility of Porthos and do not necessarily reflect the opinion of the European Union.*



Co-financed by the  
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**Porthos**  
CO<sub>2</sub> TRANSPORT & STORAGE