

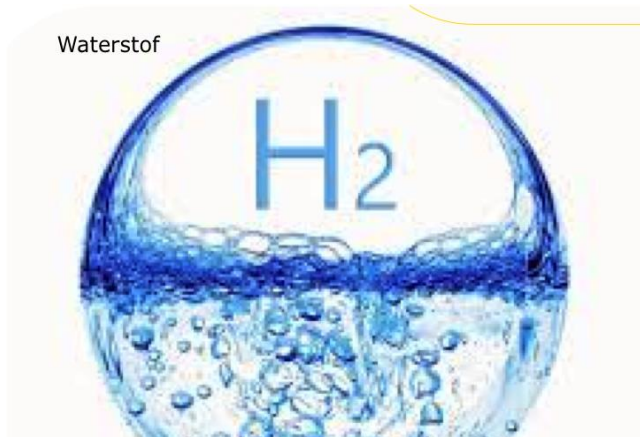
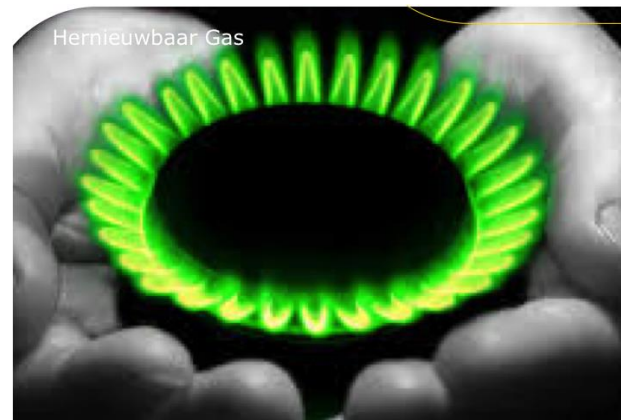
# CO2 transport and storage in the Netherlands

North Sea Energy Conference

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## Gasunie New Energy: energy transition on four tracks

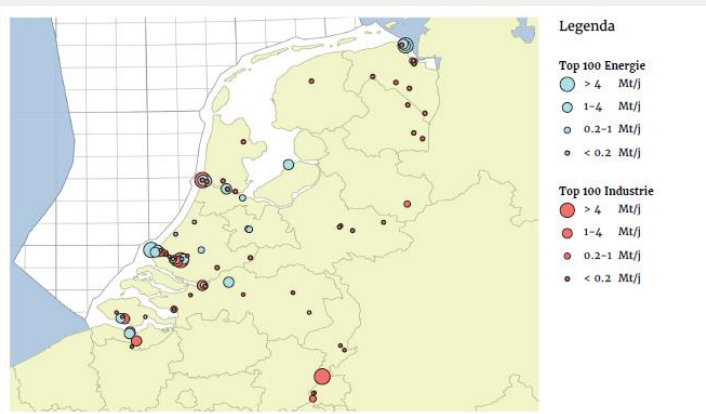


## CCUS in the Netherlands:



- 2008-2010: CCS stopped because of lack of societal support.
- Rutte III coalition agreement 18 Mton p/a in 2030.
- PBL: 7,2 Mton p/a CCS industry necessary.
- Roadmap CCS: focus on industry and offshore storage, 2-4 start up projects.
- Technology is not an issue: costs and costsharing is.

ETS-locaties met meer dan 100.000 ton CO<sub>2</sub>-uitstoot per jaar  
(blauw voor energie en rood voor industrie)



Verdeling van de grootste CO<sub>2</sub>-emissiebronnen over verschillende regio's. Bron: [6]

Regio	Energie	Industrie
Rotterdam	13,8	10,6
Moerdijk	0	2,55
IJmuiden	9,3 <sup>1</sup>	6,2
Eemshaven	10,5	0
Zeeland	1,42	8,0
<b>Totaal</b>	<b>31,5<sup>2</sup></b>	<b>27,4</b>

<sup>1</sup> Het merendeel hiervan komt vrij bij de elektriciteitscentrales in IJmuiden die restgassen van Tata Steel gebruiken

<sup>2</sup> Iets meer dan de helft hiervan kwam nog van kolencentrales in 2016



# CCS in the Netherlands: Transport and Storage

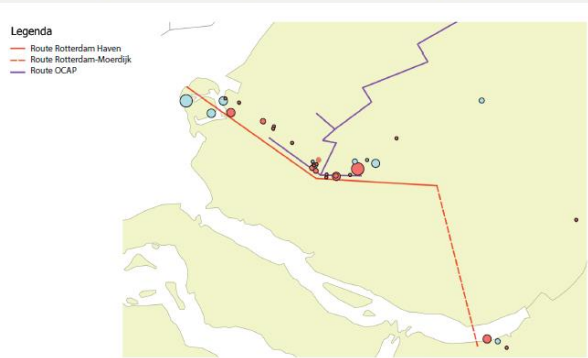
- EBN/Gasunie for Ministry of Economic Affairs and Climate will be published in June
- Some conclusions:
  - Cost efficient CCS possible due to industrial clustering at the coast.
  - 1600 MT storage capacity available offshore.
  - Technical costs T&S: ~10 EUR/ton.



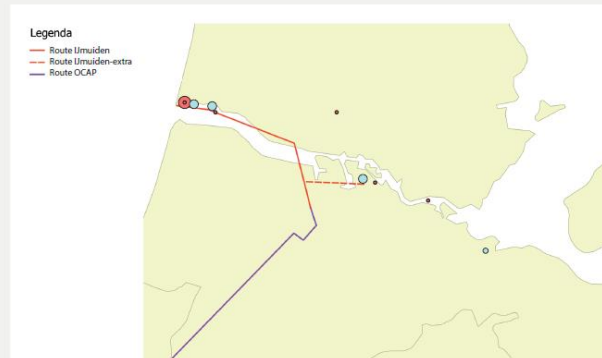
	Offshore	Aantal velden
Theoretische opslagcapaciteit	2.246 Mt	222
Praktische opslagcapaciteit	<b>1.678 Mt</b> (75%)	104 (47%)

# CCUS is a regional affair and needs cooperation

Mogelijke route Rijnmondregio (rood); bestaande OCAP-leiding in paars.



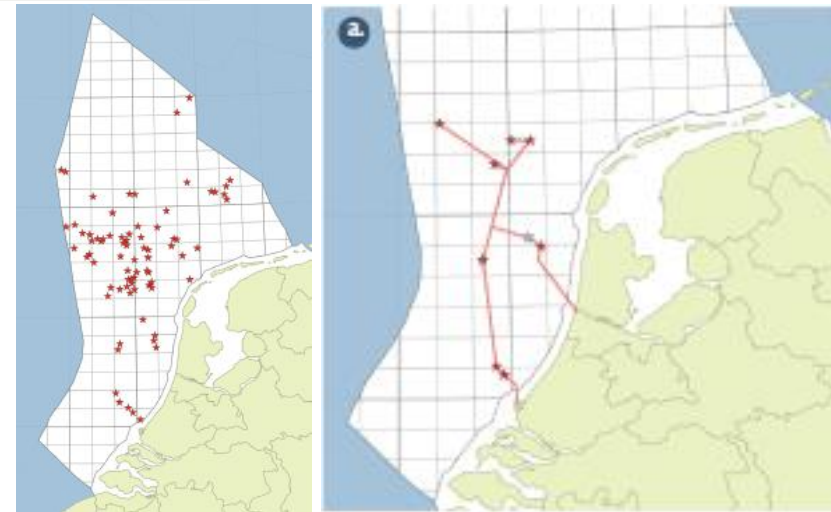
Mogelijke route regio IJmond.



Mogelijke route regio Zeeland.



- Cooperation in the value chain is necessary to develop CCS systems.
- Societal and political support needs to be high on the agenda.
- Regionalization seems favourable.
  - *Rijnmond/Moerdijk,*
  - *Noordzeekanaal*
  - *Zeeland*
  - *Chemelot and Eemshaven?*
- Gasunie can help: providing a public and open access infrastructure, EBN will focus on offshore storage.
- Role of hydrogen (blue→green).



# CCUS in Rotterdam: Porthos Project

## Rotterdam CCUS backbone – scope, ambition

### Ambition:

- A backbone running through the port area for transport and storage of CO<sub>2</sub> in (depleted) offshore oil & gas fields.
- Driven by Port of Rotterdam, Gasunie, EBN, in cooperation with several companies in the chemical industry, industrial gasproduction, and oil refining.
- From 2 → 5 Mtpa (early 2020-ies, growing towards 2030) captured and stored, further expansion feasible
- A neutral, non-discriminatory system, open for all companies in the area wishing to supply CO<sub>2</sub> captured from their industrial facilities for re-use and storage (“market-maker” concept)
- Expansion of possibilities for CCU, including in nearby greenhouses
- Potential flagship project for The Netherlands / Europe

