



Rotterdam Opslag en Afvang Demonstratieproject (ROAD)

Introduction to the Carbon Sequestration Leadership Forum

Harry Schreurs (The Netherlands)
Beijing, September 2011

Co-operating Partners ROAD

- Maasvlakte CCS Project C.V. is a joint venture of:

- E.ON Benelux
- Electrabel Nederland (GDF SUEZ Group)



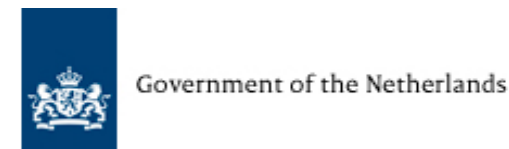
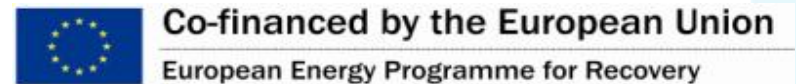
- In co-operation with intended partners:

- TAQA Energy
- GDF SUEZ E&P



- With financial support of:

- European Commission (EU)
- Government of the Netherlands
- Global CCS Institute



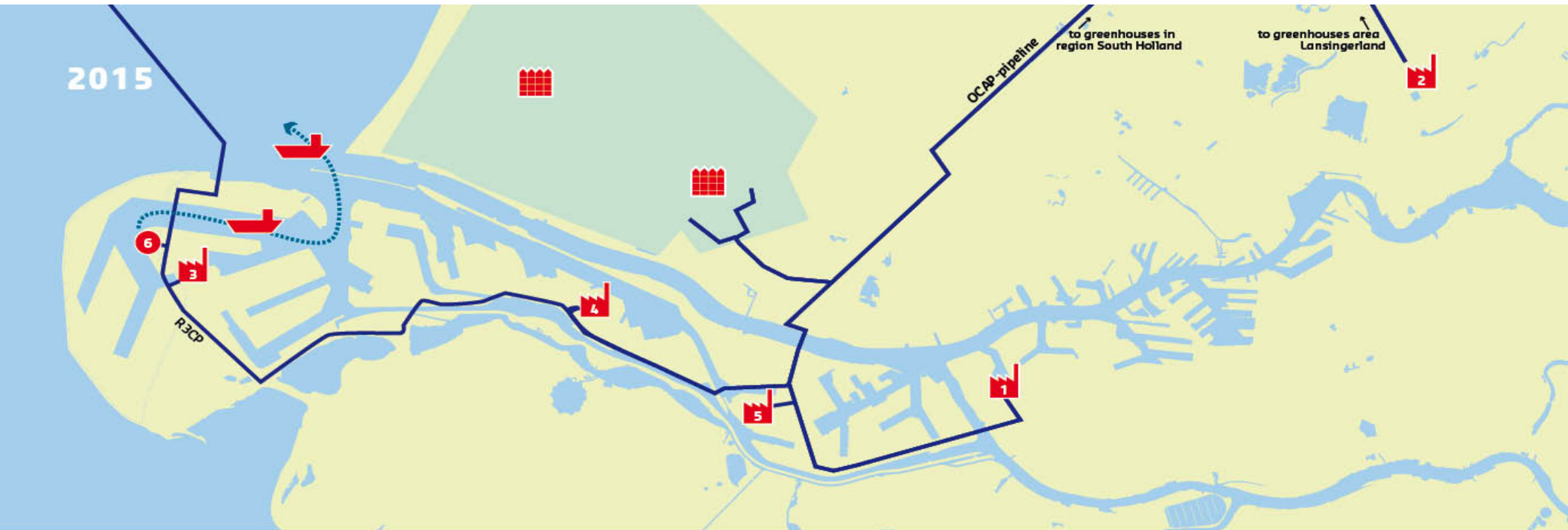
SUPPORTED BY



Project Goal

- Demonstrate feasibility (technical, economic) of large-scale, integrated CCS chain
- Capture and storage of ca. 1.1 mln tonne CO₂ per year in (nearly) depleted gas reservoirs in period of 2015 - 2020
- Acquire knowledge of and experience with deployment of large-scale, integrated CCS chain:
 - Technical
 - Legal
 - Economic
 - Organizational
 - Social




Rotterdam CCS Network 2015







- 1 Shell Pernis
- 2 E.ON-ROCA
- 3 ROAD
- 4 Abengoa

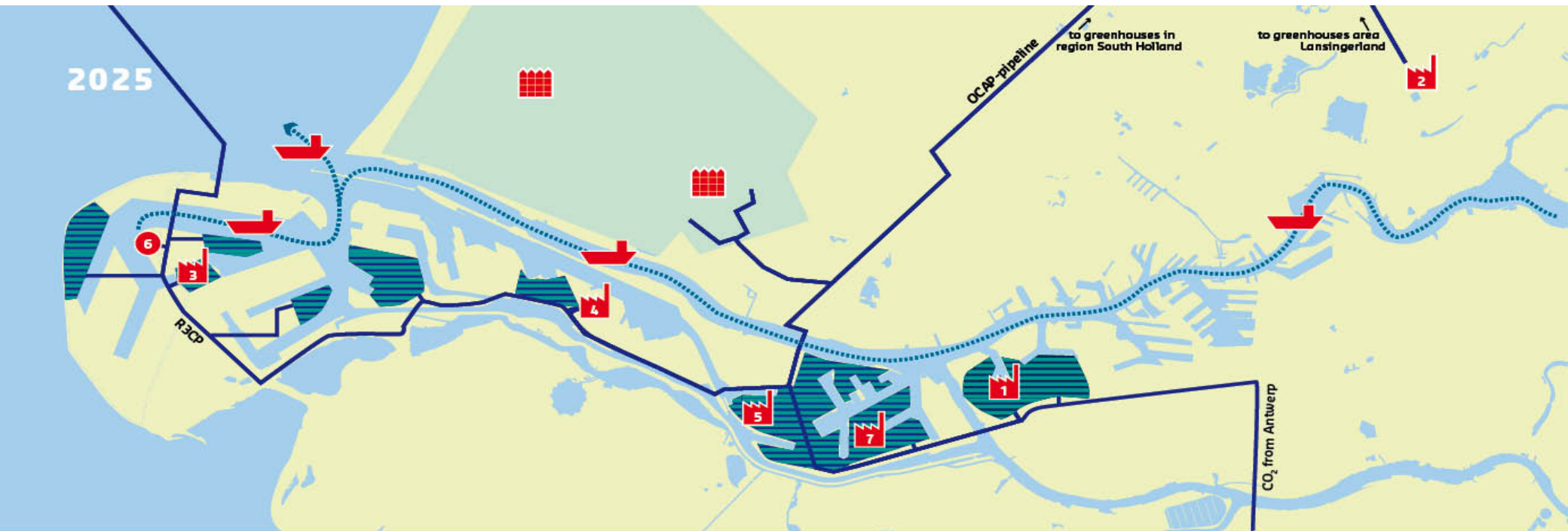
- 5 Air Liquide
- 6 CO₂ Hub CINTRA

Pegasus: location not yet determined


-  Maasvlakte II, under construction
-  Transport by pipeline
-  Transport by ship


-  CO₂ capture
-  Green houses
-  Energy intensive industry
-  CO₂ Hub





Rotterdam CCS Network 2025



- 1 Shell Pernis
- 2 E.ON-ROCA
- 3 ROAD
- 4 Abengoa
- 5 Air Liquide

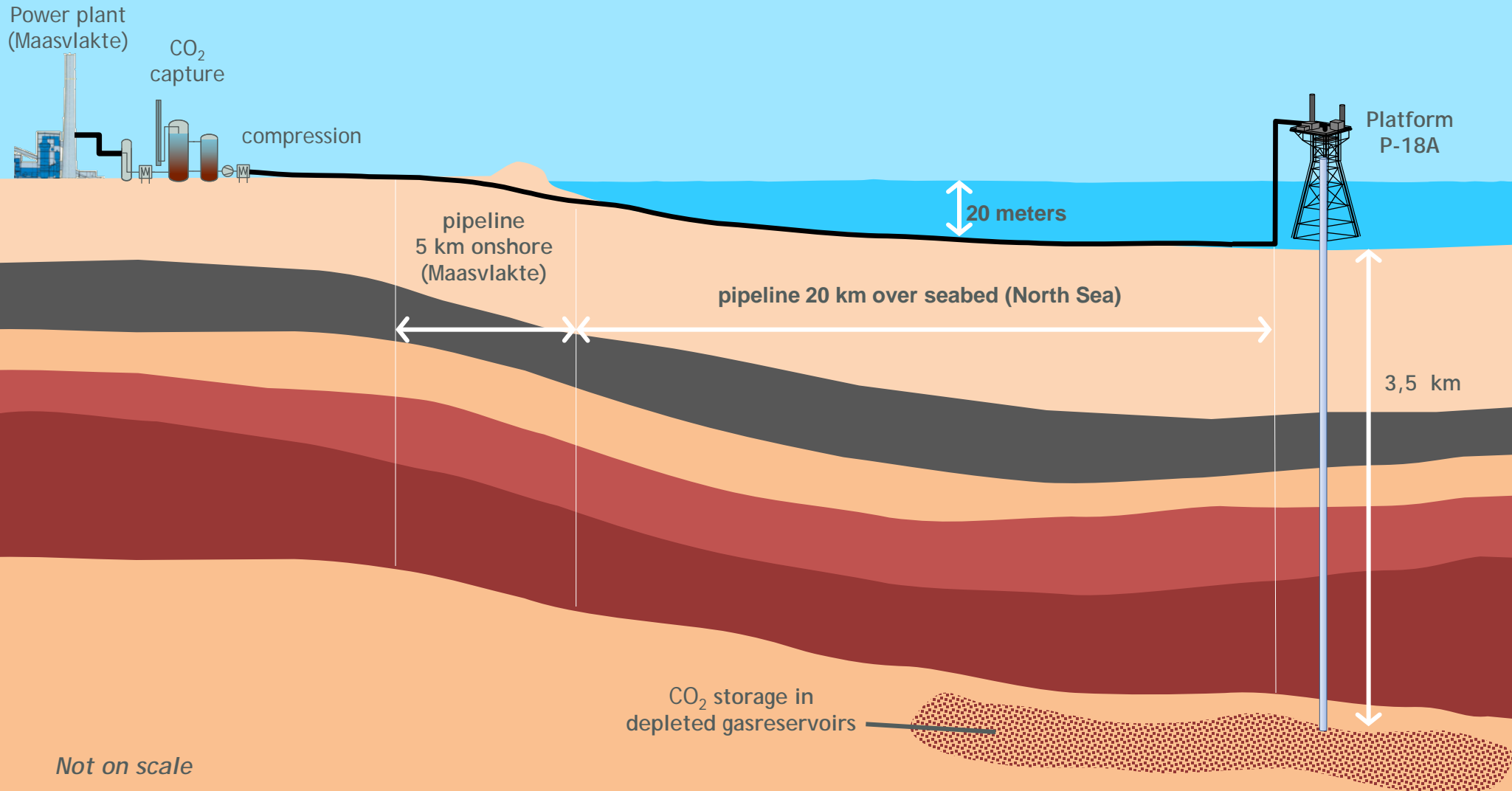
- 6 CO₂ Hub CINTRA
- 7 Air Products
-  Connecting industry to CCS network (not just large scale demo's)

-  Maasvlakte II, under construction
-  Transport by pipeline
-  Transport by ship

-  CO₂ capture
-  Green houses
-  Energy intensive industry
-  CO₂ Hub

Pegasus: location not yet determined

ROAD CO₂ Capture, Transport and Storage Chain



Capture Location: Maasvlakte Power Plant 3



- Output: 1070 MWe
- Efficiency: 46%
- Operational: end 2012
- Capture ready

CO₂ Storage Location



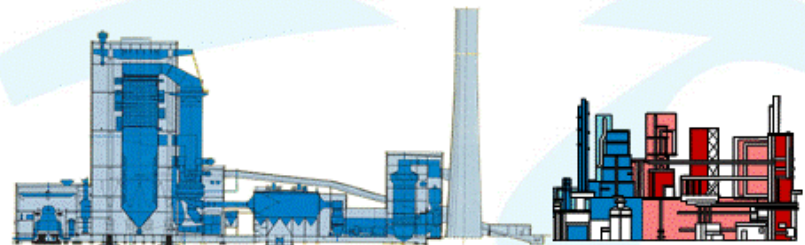
- Depleted gas reservoir P18
- Operator: TAQA
- Depth: 3,500 m
- Capacity: 35 mln tonne
- Available: 2014
- Alternatives / future expansion options are being investigated (EOR)

Knowledge Sharing

- Participation in European CCS Demonstration Project Network
Technical setup and performance, cost levels, project management, environmental impact, health and safety
- Reports for the Global CCS Institute
Capture supplier selection, capture FEED study, permitting, public engagement, risk management, execution strategy, general lessons learned
- Discussions with other parties involved in CCS
(e.g. research programs CATO-2, ECN/NEARCO2, CO2Europipe)
- Conferences, presentations, documentation, website, Regional CCS Advisory Committee, E.ON visitor's centre

Time Path and Milestones

- 14 July 2009 : EU project proposal submission
- September 2009 : Project selection by EU
- May 2010 : Grant decision by Government of the Netherlands
- September 2010 : Publication starting note Environmental Impact Assessment
- Q2 2011 : EIA and permit procedures
- Q4 2011 : Final Investment Decision
- 2014 : CCS chain mechanically complete
- 2015 : Integrated CCS chain operational
- 2015-2019 : Demonstration phase CCS chain
- 2020 : Start commercial operation



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Government of the Netherlands



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