



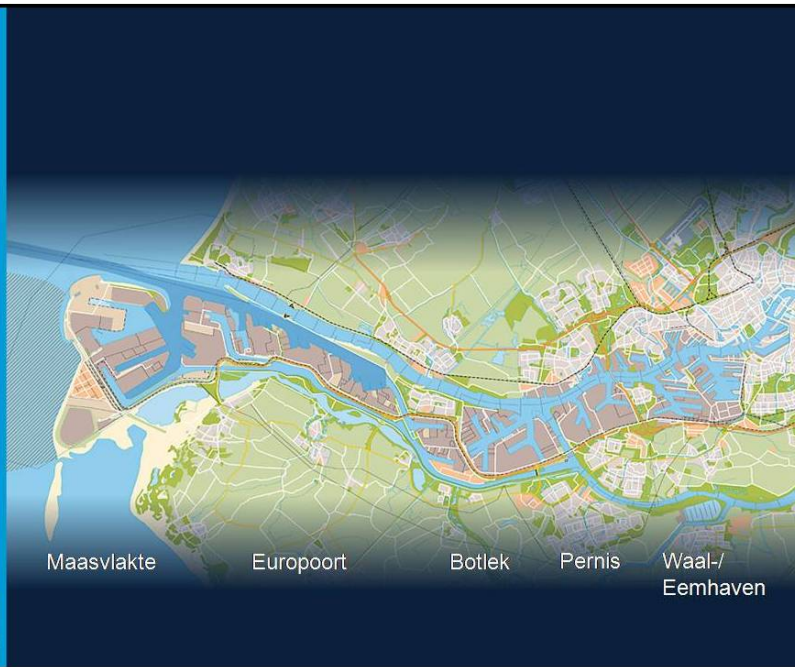
Agentschap NL  
*Ministerie van Economische Zaken*

# CSLF Gaps Analysis Transport

Where are we now?

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# Checklist as we have



## **General**

- Cost benefit analysis and modeling of CO<sub>2</sub> pipeline and transport systems
- Tanker transport of liquid CO<sub>2</sub>
- Specifications for impurities from various processes
- Dispersion modeling and safety analysis for incidental release of large quantities of CO<sub>2</sub>
- Safety and mitigation of pipelines through urban areas
- Safety protocols to protect CO<sub>2</sub> pipelines, including response and remediation
- Identify regulations and standards for CO<sub>2</sub> transport

## **Integration**

- Identify reliable sources of information and data related to the design, cost, and space requirements, operation, and integration of CCS with energy facilities
- Conduct periodic technical reviews of all aspects of recognized large-scale CCS demonstration projects and report on the “lessons learned”
- On a periodic basis, update the Technology Roadmap to include technology gaps identified during the technical assessment of demonstration projects
- Integrate with existing infrastructure

## **Cross-Cutting Issues**

- Energy price issues would encourage the take-up of CCS



## What is also in the CSLF Technical RoadMap?

### Suggested new items in the checklist

- Acquire experimental thermodynamic data for CO<sub>2</sub> with impurities
- Understand effects of impurities on compression, transport, corrosion
- Understand the effects of supercritical CO<sub>2</sub> on sealing materials
- Develop flow models for dense CO<sub>2</sub> streams in pipelines
- Understand effects and impacts of pipeline leaks



Only a few CSLF- and non-CSLF projects have Transport as a serious item → knowledge is poor, but:

- item is easy and well know from NG transport
- or nobody wants to disclose himself as uncertain

If any chance to succes, we do have to:

- discuss what is appropriate as checklist items; 'our' list, the TRM list, IEA thoughts, GCCSI-studies??
- get insight in transport items of CSLF projects; what about the gaps analysis to deliver by the projects?

This leads to the conclusion we have to go to work seriously and data from existing projects are needed urgently!