

ROTTERDAM.**CLIMATE**.INITIATIVE

October 9th

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Introduction

Early demonstration storage project Shell

Current situation Dutch legislation

Approach storage project Shell

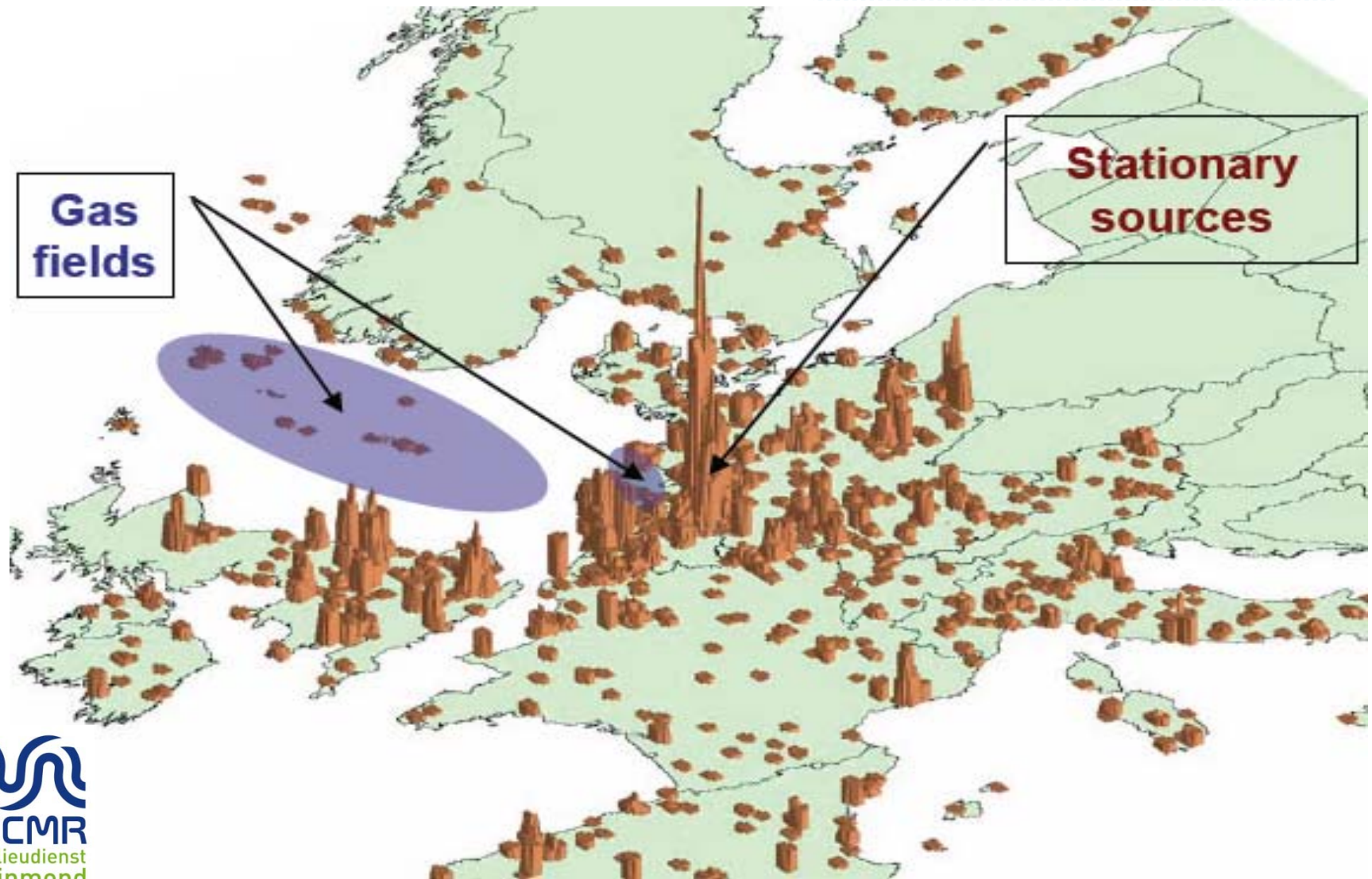
Appendix: RCI report on CCS



Introduction

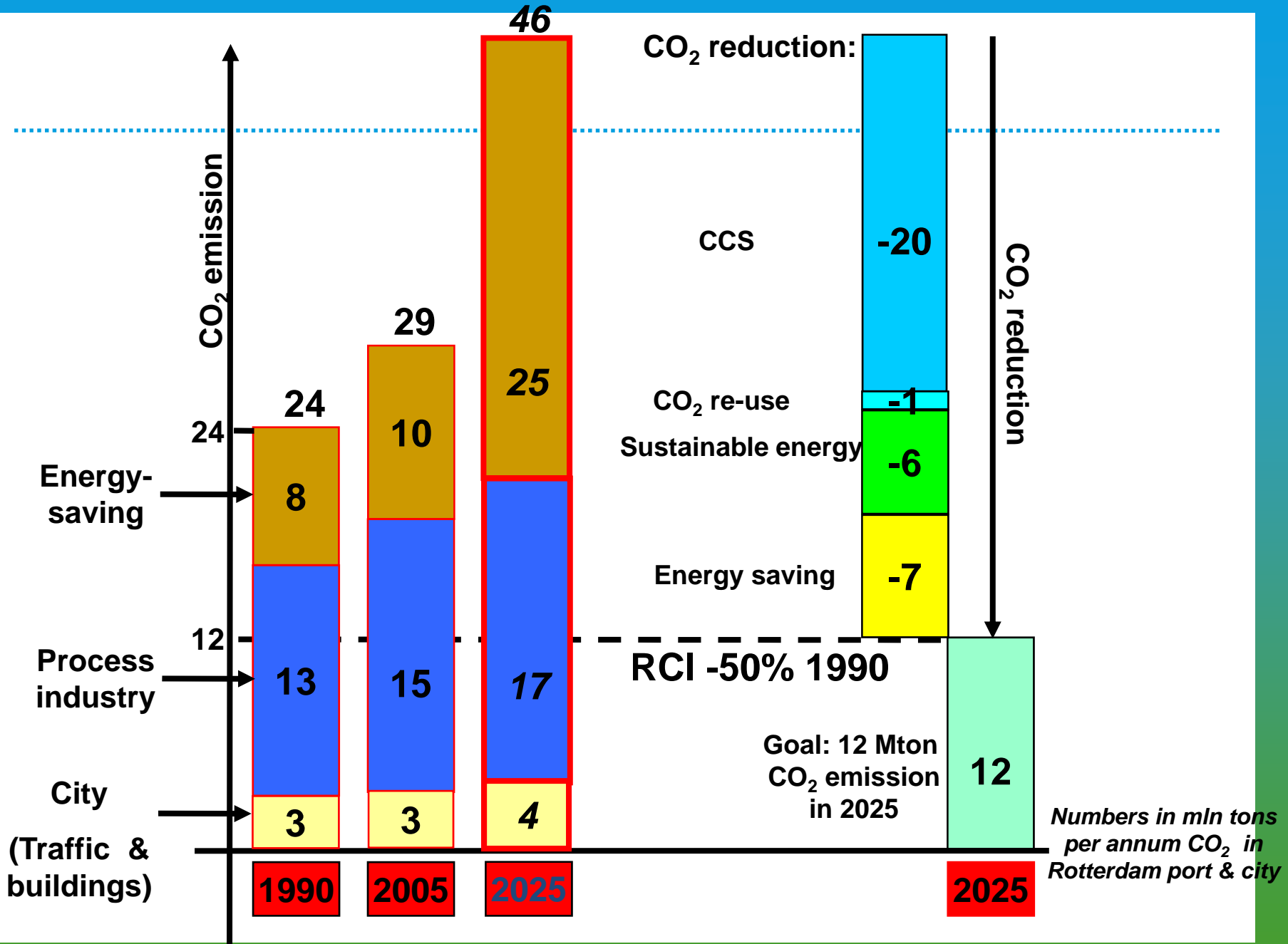


CO₂ sources in Europe



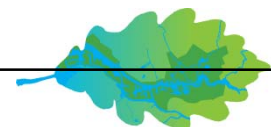
Rotterdam energy port



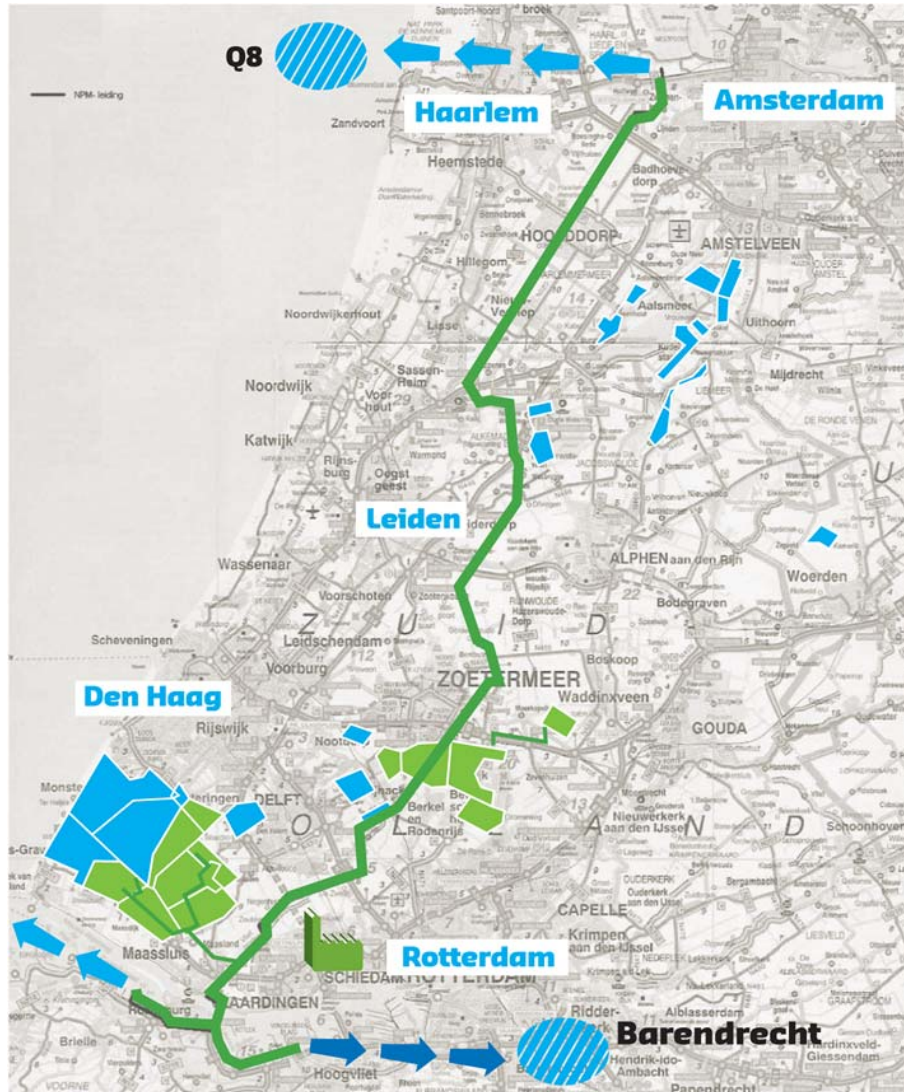


CCS development path Rotterdam





Year	Amount of CO ₂	Sources
2010	1 Mton	<ul style="list-style-type: none">• Shell Netherlands Refinery (SNR)• Abengoa
2015	5 Mton	<ul style="list-style-type: none">• Shell Netherlands Refinery (SNR)• Abengoa• Other pure CO₂ sources (New hydrogen production capacity and biofuel companies)• Demonstrationprojects (a.o. energy production companies)
2020	15 Mton	<ul style="list-style-type: none">• All pure CO₂ sources (2,9 Mton)• Full scale capture power plants (12 Mton)
2025	20 Mton	<ul style="list-style-type: none">• All pure CO₂ sources• Full scale capture power plants• Other sources (capture in existing industry like refineries and chemical industry)



Phase 1 RCI: Capture 5 Mton in 2013



CO₂ Infrastructure

-  Existing CO₂ network OCAP
-  New network to offshore gas fields (2008-2010-2015)
-  New network to onshore gas field (2008-2012))
-  Connected greenhouses
-  Potential connection greenhouses
-  CO₂emitters
-  Storage in gas fields (10.000 ha)



Early demonstration storage project Shell



Shell CO₂ storage project

Pure CO₂ from Shell refinery in Pernis (port of R'dam):

- Partly transported to greenhouses
- Stored in empty gasfields in Barendrecht

Injection planned for 2010

First on-shore CO₂ storage project in the NL

Participating in a national tender for financial support (€ 60 mln; results of tender announced in Nov. 08)



Current situation Dutch legislation



Current situation legislation

Dutch legislation (mining act): possibility to apply for a storage permit

However, additional arrangements needed: Ministry of Economic Affairs now working on Mining Act

Negotiation process on Directive CO₂ storage in Brussels

Projects in tender: projectspecific contract between projectinitiator and State



Contract specific arrangements in tender

Project initiator obtains all permits needed for safe storage

Responsibility throughout the storage process

Monitoring requirements



What is needed from national government?

Long term Emission Trading System on a European (world) scale

Uniform legal framework for monitoring, cross boundary CO₂-transport and liability

Longterm responsibility stored CO₂ transferred to State

Direction on use of small empty gas fields



Approach storage project Shell



Authorities involved in Shell project

Ministry of Economic Affairs:

- Environmental permit (Mining Act)
- Storage permit, storage- and closure plan

Regional authority (DCMR EPA):

- Environmental permit: CO₂ is wasteproduct

Local authorities (Rotterdam, Barendrecht, Albrandswaard):

- Building and maintenance permits pipelines and storage location

Procedure of decision making and permitting is complex!

DCMR initiated consultation between authorities



Intergovernmental consultation

All authorities involved have access to the same information

All authorities are aware of deadlines in procedure

Exclude omissions in requirements regarding safe storage

Authorities learn from the process and from each other

Additional: through consultation local authorities can express questions and concerns

Authorities remain responsible for final decision in their part of the procedure !!



Consultation: 2 working groups

Working group procedures:

- detailed inventory of required decisions
- facilitate authorities to take necessary decisions

Working group communication (incl Shell):

- common strategy on communication to stakeholders
- define communication moments, message and messengers

Consultation: combination of decision making and social acceptance!



More information

www.rotterdamclimateinitiative.nl

report:

“CO₂-capture, -transport and storage in the Rijnmond, report 2008”

soon available in English.

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Appendix: RCI report CCS



Conclusions CCS report RCI

Large scale CCS is unavoidable to realize national and EU climate goals.

In Rotterdam all conditions are present to become a CO₂ hub for NW Europe

Rotterdam can realise infrastructure and storage capacity up to 5 Mton CO₂ between 2010 - 2015.

Rotterdam is working on a financial arrangement between companies, financial institutions and the Government for realizing infrastructure.

Financial support from government for large scale demo's is needed.

ETS price 45 €/ton creates market incentives for 20 Mton CCS