

# Regions CCS Network

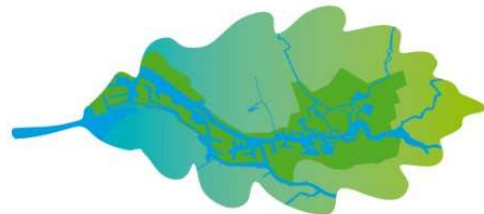
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ROTTERDAM.CLIMATE.INITIATIVE



The Scottish Government



LAND BRANDENBURG



co<sub>2</sub>sense yorkshire  
carbon sense 2 commercial sense



# Overview

## Part 1

- What do CCS projects bring to regions
- What have the 'regions' been doing?
- Why a CCS regions network?
- What will the regions network do?

## Part 2

- Key examples from the Rotterdam Climate Initiative

# “12 EU CCS demos by 2015”







European Council March 2007



A Regions perspective: CCS benefits and opportunities







- Local investment
- Long term future for key industries and local economy
- Energy security - continued use of local fossil resource/  
diversity of supply
- Future industry development – CO<sub>2</sub> transport/storage
- CO<sub>2</sub> emissions abatement

# Projects

Region	Project	Type	Technology	Company/ies	Funding
	ROAD	Coal (new)	Post-comb	E.ON	EEPR + Netherlands Gov.
	Rotterdam Hydrogen	Industrial	Cryogenic	Air Liquide	Applied NER300
	Pegasus	Gas (new)	Oxyfuel	SEQ	Applied NER300
	Eemshaven	Coal (new)	Post-comb	RWE	Applied NER300
	Nuon IGCC	Coal	Pre-comb	Nuon	Applied NER300
	Peterhead	Gas	Post-comb	Scottish and Southern Energy	Applied NER300
	Longannet	Coal	Post-comb	ScottishPower	UK CCS competition, applied NER300
	Hunterston	Coal (new)	Post-comb	Peel Energy	Applied NER300
	Hatfield IGCC	Coal (new)	Pre-comb	Powerfuel	EEPR, applied NER300
	Hatfield Endex	Gas (new)	Pre-comb	Powerfuel, Calix	Applied NER300
	Killingholme	Coal (new)	Pre-comb	C.Gen	Applied NER300
	Drax	Coal	Oxyfuel	Drax, Alstom	Applied NER300
	Jänschwalde	Coal	Oxyfuel (+ post-comb)	Vattenfall	EEPR, applied NER300
	Centrale pilot	Coal	Post-comb	EDF, Alstom, Dow	ADEME

13 candidate demonstration projects: 12 NER300, 3 EEPR, UK competition

# Current activity regions

Region	CO <sub>2</sub> policy	Projects	Public engagement	Storage assessment	Network planning	Permitting and licensing	Economic benefit
	50% by 2025	3	✓	✓	✓		✓
	20% by 2020 (EU)	2			✓		
	42% by 2020	3	✓	✓	In progress	✓	
	34% by 2020 (UK)	4			✓		✓
	20% by 2020 (EU)	1	✓				
	20% by 2020 (EU)	Pilot	✓		✓		

# Why a regions network (1)

## – CCS demonstration

- Primary responsibility for permitting

*Scottish CCS licensing test exercise – demonstration project requires 60 separate regional and national permits*

- Primary forum for citizen engagement

*Local communication contact, formal consultation processes, intermediary between industry and affected population*

- Future economic and infrastructure planning

*Role of CCS in regional economic strategy*

# Why a regions network (2)

## – CCS deployment

- Practical experience of CCS

*Streamlining and harmonisation of permitting and licensing, engagement and communication strategies*

- Demonstrate benefits of CCS

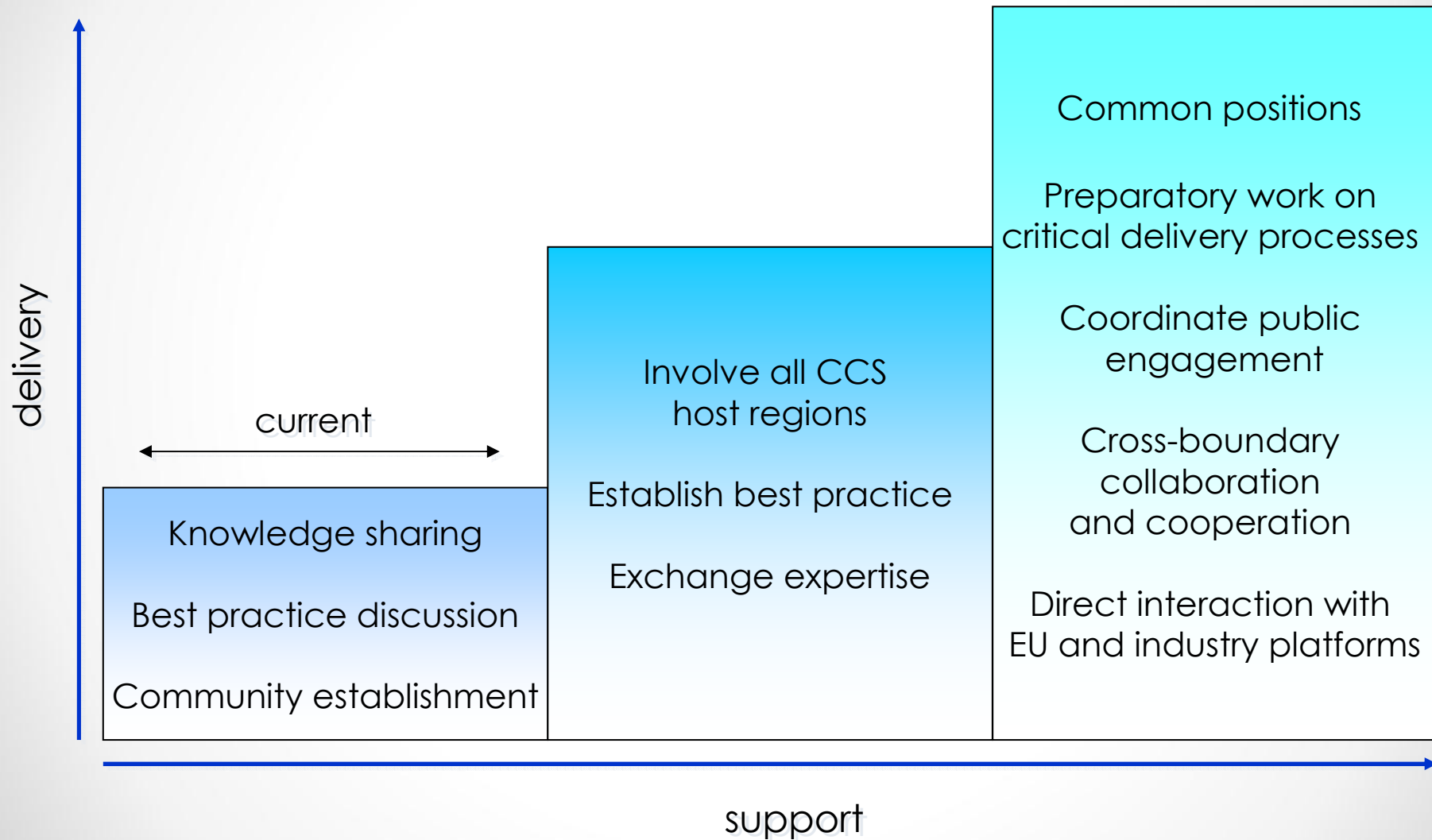
*CO<sub>2</sub> reduction, local investment, economic/industry certainty*

- Form basis for CO<sub>2</sub> transport and storage hubs

*Focal point for development of national/EU networks*

**Regional government, authorities and stakeholders are critical to successful demonstration and delivery of CCS**

# What will regions network deliver?





# Issues and questions

- Regions involvement in EU, national government, industry platform CCS strategy discussions?

*Interaction with CCS project network, ZEP, North Sea Basin Task Force*

- Timing of project selection – funding award and investment decisions

*Preparation lead time for actions required to deliver confirmed projects to timetable*



# Issues and questions

- Post-demonstration deployment and mandating of CCS

*Regional emissions reductions targets = effective mandating of CCS. Further incentives for National and EU deployment: ETS reform, CCS on gas and industry*

- European CO<sub>2</sub> transport and storage network planning

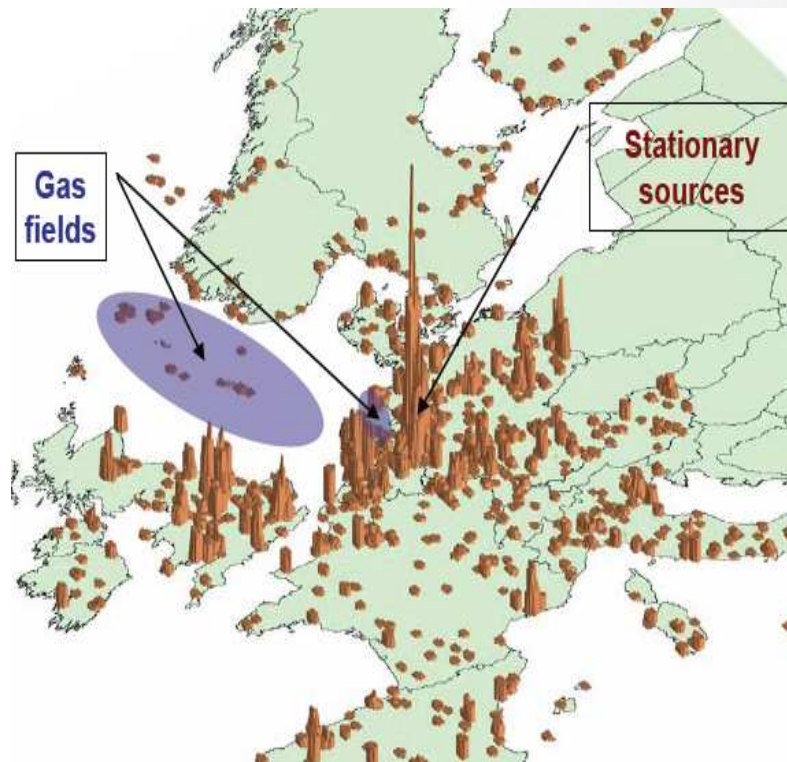
*Trans-boundary project permitting, EU pipeline corridors, infrastructure financing, long term storage strategy*

# Part 1 - Conclusions

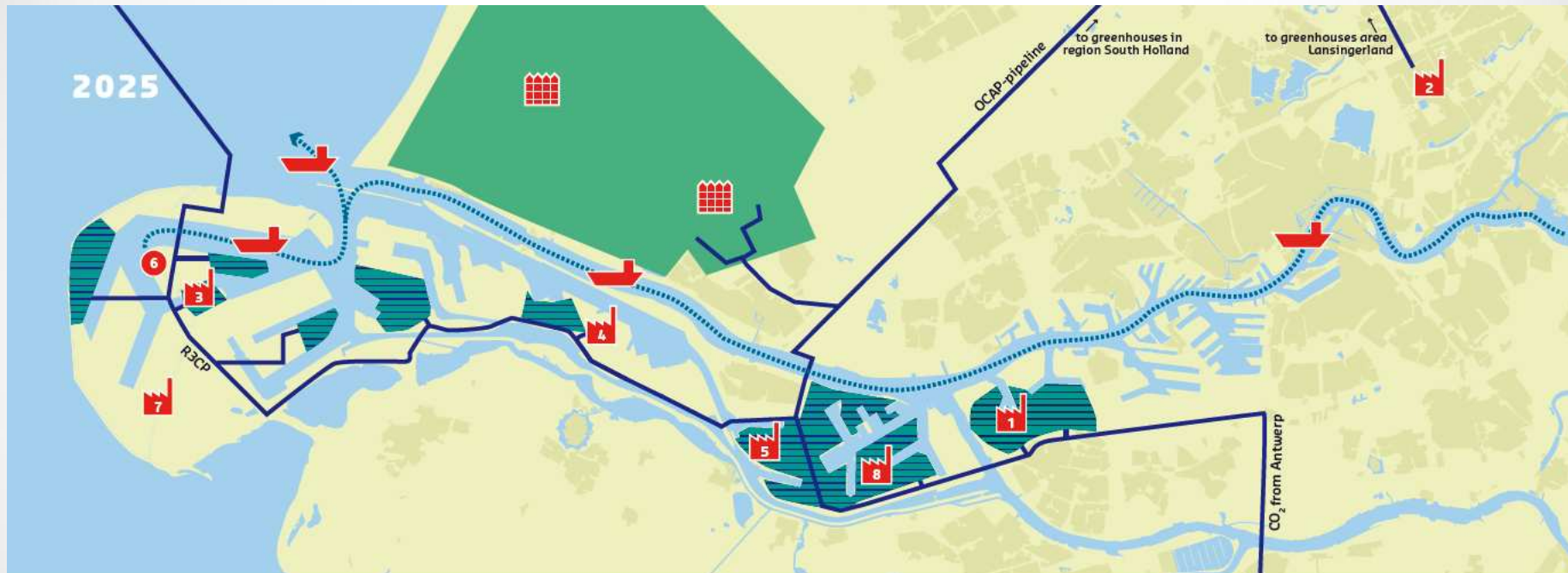
- Regions critical to CCS success
- Regions can support and learn from each other
- Important to involve regions' voice in EU strategy
- Supported regions network will help deliver demonstrations and deployment

# Rotterdam Climate Initiative

- Partnership between regional government and industry
- Major industrial area and transport hub ~ 30 Mt CO<sub>2</sub> per year
- 50% CO<sub>2</sub> reduction by 2025
- CCS critical to delivery
- Strategically sited for connection to offshore storage
- CCS offers long term economic security and growth



# CCS in Rotterdam



- 1 Shell Pernis
- 2 E.ON-ROCA
- 3 ROAD (2015/2025)
- 4 Abengoa
- 5 Air Liquide
- 6 CO<sub>2</sub> Hub Cintra

- 7 Pegasus (location to be determined)
- 8 Air Products
- Connecting industry to CCS network (not just large scale demo's)

- Transport by pipeline
- Transport by ship
- CO<sub>2</sub> capture

- Green houses
- Energy intensive industry
- CO<sub>2</sub> Hub

# Demonstration - Issues and challenges

Public perception and benefits:

- Addressing concerns and scepticism – what's in it for me?
- Regional government – primary contact point
- Trusted to act in public interest
- Experienced in communication of complex cost-benefit choices
- Tasked to secure community benefit

Examples:

- 2nd Maasvlakte development
- Storage facilities for natural gas
- Existing coordination of local platforms between public and industry



# Demonstration - Issues and challenges

## Permitting and licensing

- Delivery timetable imposed by funding
- Complex multi-component projects with multiple developers
- Due process from 10+ competent authorities
- Public consultation
- Environmental impact assessments
- Environmental permit
- Planning permit
- Health and safety



# Demonstration - Issues and challenges

Project integration and cluster preparation

- Facilitating cooperation between developers
- Forward planning of infrastructure to enable extension

Cross border transport

- London protocol
- Complexity of multiple legislative systems



# Issues and challenges Deployment

- Post demonstration policy – ensuring CCS delivers (inclusion of gas and industry)
- Availability of storage reservoirs (exchange from hydrocarbon production to CO<sub>2</sub> storage)
- Realising strategic storage asset for EU (North Sea, Baltic)
- EU CCS infrastructure network development

**Issues in common with other front-runner regions**

# Sharing and learning

EU mitigation strategy – needs to be inclusive across MS

Rotterdam experienced in hosting and developing CCS

- getting private sector on board
- public engagement
- infrastructure and storage feasibility studies
- economic impact assessment

**Regions Network will work with all regions interested in CCS**

**We are learning on the job – sharing issues, experience and solutions critical to delivery**

# Looking Forward

***The case for a regions' network is strong and logical***

- Must focus on a delivery programme aligned and integrated with e.g. ZEP, Project Network, EEPR/NER delivery on the ground
- Explore longer term development in the regions
  - Public engagement & awareness
  - Social infrastructure – benefits & investment
  - Storage strategy
  - Transport capacity
  - Transboundary permitting
- Regions' Network Programme in development
- Next Regions' meeting – November 2011



# Thank You

