

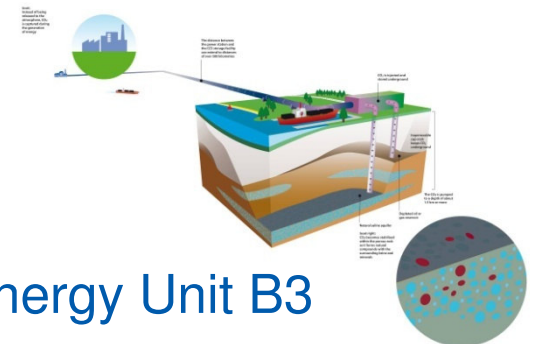
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- CCS – A European Overview

APGTF Workshop on Carbon
Abatement Technologies
16 March 2010

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● CCS context: EU climate & energy strategy

EU climate strategy 20-20-20 by 2020:

- » -20% GHG, +20% Renewables and +20% Energy Efficiency
- » CCS is an essential part of the package

2nd Strategic Energy Review (SER):

- » Highlights the role of indigenous energy sources including fossil fuels
- » Coal recognised as an essential component of EU's domestic energy supply

Policy Goal:

- » Commercial viability of CCS by 2020



● CCS context: EU policy

● 2007

- » **CCS Communication 1: Sustainable power generation from fossil fuels**
 - Commercial viability by 2020
- » **Spring European Council**
 - Financing of up to 12 demos by 2015
- » **Strategic Energy Technology Plan (SET-Plan)**
 - One of the six strategic energy technologies for 2050

● 2008

- » **CCS Communication 2: Supporting Early Demonstration of Sustainable Power Generation from Fossil Fuels**
 - Project Network - Supporting structure for CCS demo projects

● 2009

- » **ETS Directive**
 - 300m ETS allowances for CCS and innovative renewables
- » **CCS Directive**
 - A framework for permanent geological containment of CO₂
- » **European Energy Programme for Recovery (EEPR)**
 - €1bn for CCS demonstration projects



● 5 CCS challenges - EU actions

1. Regulatory framework

- » Directive 2009/31/EC on CO₂ storage to be transposed by June 2011

2. Long-term economic viability

- » CCS under the Emission Trading System (ETS)
- » Copenhagen negotiations: uncertainty over carbon price

3. Financing industrial-scale CCS demo projects

- » €1 bn EEPR funding for up to seven demos
- » 300m NER allowances

4. Public awareness

- » FP7 project NearCO₂
- » CCS Project Network

5. International co-operation



● CCS Directive

● **Enabling Framework**

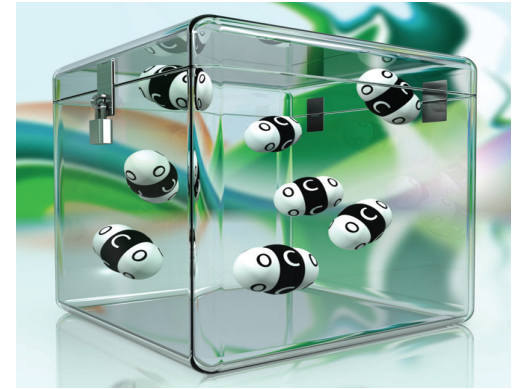
- » Member States determine whether and where CCS will happen
- » Companies decide whether to use CCS on the basis of conditions in the carbon market

● **Objectives and Principles**

- » Legislative Framework for managing environmental risks
- » Overcomes existing legal barriers
- » Uses existing frameworks where possible

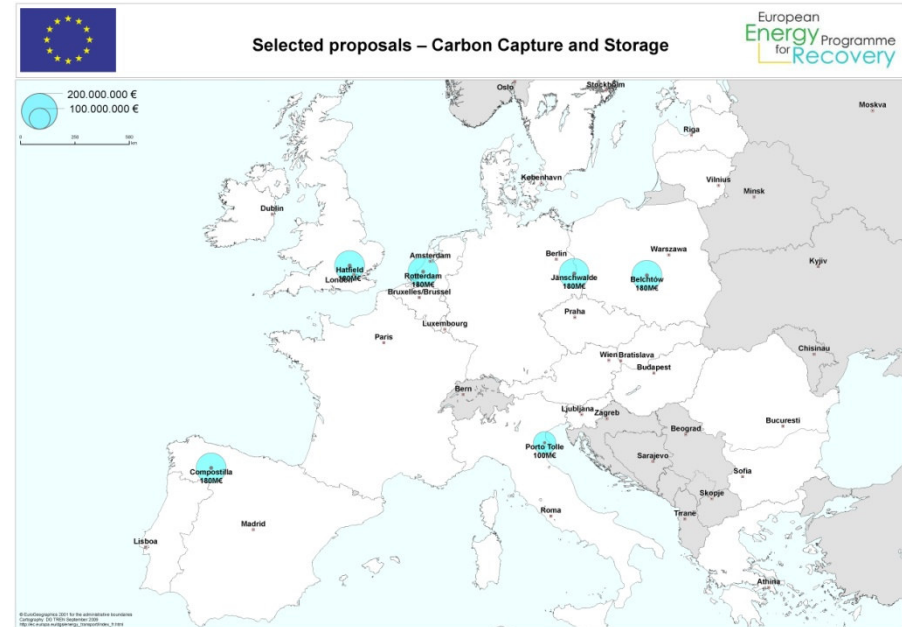
● **Focus on Storage**

- » Capture regulated under IPPC Directive
- » Transport regulated as for natural gas transport (by Environmental Impact Assessment & at Member State Level)



● CCS Financing - EEPR

- » Total budget: approx. €4 bn
- » Up to 7 CCS demo projects (max. 1 per Member State)
- » Six CCS demo projects co-financed in 2009/10
- » €1 billion in total for additional investment-related expenditure in 2009-2011



- EEPR CCS Grant Agreements signed

Proposal name	Applicant	Maximum EEPR contribution (M EUR)
Jaenschwalde, Germany	Vattenfall Europe Generation	180,00
Hatfield, UK	Powerfuel Power Limited	180,00
Porto Tolle, Italy	Enel Ingegneria e prod.	100,00



- EEPB CCS Grant Agreements expected to be signed in March/April 2010

Proposal name	Applicant	Maximum EEPB contribution (M EUR)
Rotterdam, The Netherlands	Maasvlakte CCS Pjt CV	180,00
Belchatow, Poland	PGE Elektrownia Belchatow	180,00
Compostilla, Spain	ENDESA Generacion sa	180,00



● CCS Financing – ETS & NER

● Emissions Trading System promotes low-carbon technologies (2013-20)

- » Recognises CCS
- » New Entrants Reserve (NER300)
 - 300 million allowances set aside from NER
 - Fully complementary to EEPR
 - Mechanism agreed by Member States in Feb 2010
 - Max. 3 projects in each technology category
 - Aiming for 8 CCS projects in first tranche
 - First funding decisions: winter 2011
- » Up to 50% from auctioning revenues for CCS and RES



● CCS Demonstration Project Network

Provide first movers with a means of coordination, exchange of information and experience and identification of best practices



3 Goals:

- Knowledge sharing
- Public engagement
 - » Supply objective information about progress
 - » Consistent, collective and coordinated communication will be more cost-efficient and have higher impact
- Co-operation with 3rd parties
 - » Facilitate global CCS knowledge sharing across established networks, according to common principles
 - » Promote European CCS demonstration efforts



● CCS Project Network Knowledge Sharing

1. Ensure that members are able to exchange experiences on a reciprocal basis in order to identify good practices and lessons learned.
2. Ensure that external stakeholders have access to sufficient information to meet their needs. e.g. information on HSE, project progress and contributions to identifying research needs, risks, infrastructure strategies, CO₂ transport standards.

Key point:

Not only about data, but also the stories and experiences that contextualise the data (Good practices, lessons learned, check lists, how-to lists, case studies, management plans)



● CCS Project Network Membership

- EPR projects will be the first members
- Open to all projects that have concrete plans to demonstrate the full CCS value chain:
 - » By end of 2015
 - » On a minimum power plant capacity of 250 MW, or equivalent industrial output
 - » In European Economic Area



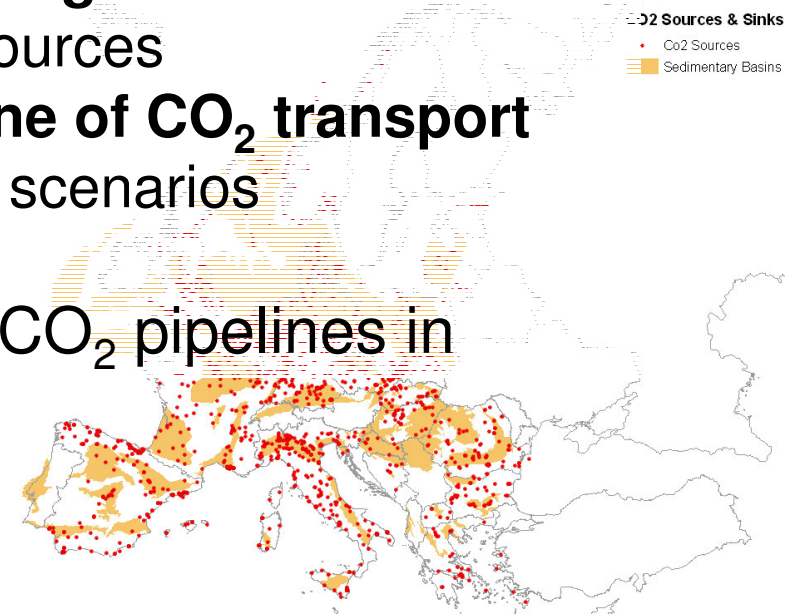
● SET-Plan CCS European Industrial Initiative

- The CCS Project Network is one component of the CCS EII - an industry-led collaboration between the EC and Member States
- CCS EII Technology Roadmap presented in Oct 2009
- EII Aims:
 - » Enhance co-operation between governments and industry to deliver deployment by 2020/25
 - » Integrate R&D with CCS demonstration and industrial deployment in the long-term



Deployment of CO₂ Infrastructure

- New infrastructures will be needed in Europe to facilitate a successful transition towards a low carbon energy system
- EC study in 2010 to:
 - » develop a **complete** and **integrated database** of European CO₂ sinks and sources
 - » and identify the **main outline of CO₂ transport infrastructure** for different scenarios
- Result: Possible inclusion of CO₂ pipelines in TEN-E guidelines



● Conclusions

- EC has rapidly put in place a number of crucial regulatory and financial instruments for CCS demonstration and deployment
- There remains much to be done to succeed with enabling CCS to compete with other low carbon technologies
 - » Continuing support for up to 12 CCS demo projects
 - » Transposition of the CCS Directive by Member States without delay
 - » Actions to help increase public awareness
- The CCS Project Network and CCS EII will continue to work towards these goals in 2010



- Thank you



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