CCS Projects in Europe and the Issue of Finance

Kai TULLIUS
Policy Officer – Coal and Oil

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Content

- EU Policy Context: Energy and Climate Change

- Deploying CCS in Europe
  - Legislative Framework
  - Long Term Economic Viability

- Financing CCS demonstration projects
Objectives agreed for 2020

- 20% GHG reduction compared to 1990
  - Independent commitment
- 20% reduction in primary energy consumption
- 20% renewables in energy mix
- 10% biofuels in transport
  - If production is sustainable
  - If second generation biofuels commercially available
Policy Context

- **2007 Spring European Council**
  - target of 20% cut in greenhouse gas emission by 2020
  - enabling low-CO2 power generation from fossil fuels by 2020
  - up to 12 CCS demonstration plants in operation by 2015

- **Summer-Autumn 2007**
  - Evaluation and Impact Assessment period

- **November 2007: Strategic Energy Technology Plan**
  - R&D efforts to focus on low carbon technologies
  - CCS one of strategic technologies: large-scale demos next priority

- **23 January 2008:** Commission adopts a set of proposals including the CCS Communication and the CCS Directive
Costs and benefits of CCS

**Costs:**
- R&D (€1bn) and demonstration (€10-20bn) to reduce costs
- Further investment to roll out CCS on a wide-scale

**Benefits:**
- 20-28% of the achievable global CO2 emission reductions by 2050 (IEA)
- Solution for both power generation and energy intensive industries
- For managing future CO2 emissions of dynamically developing coal users (China, etc.)

**Policy goal = CCS commercially feasible by 2020:**
- CCS in retrofits and newbuild thereafter
- Capture-readiness in the meantime
Obstacles / EC Proposals

- Legislative Hurdles
  - CCS Directive

- Non legislative Hurdles
  - Long term economic viability
    - Emission Trading System (ETS)
  - Industrial Scale CCS Demonstration Projects (all main technology routes (Pre-, Post-, Oxyfuel-Combustion))
  - General and Industry Awareness
  - Public Acceptance
    - CCS Communication
CCS-Directive - 1

- **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
  - Overcame existing legal barriers
  - Use existing frameworks where possible

- **Focus on Storage**
  - Capture regulated under IPPC Directive
  - Transport regulated as for natural gas transport (by Environmental Impact Assessment and at Member state Level)

- **Novel element is CO2 storage, main focus of proposes directive**
CCS Directive - 2

Content

- Site Selection
- Authorisation for Storage
- Monitoring plan to confirm expected CO2 behaviour
- Liability measures in case sites do leak
- Transfer of Responsibility to the state
- Access for third parties

CCS-not mandatory, but member states need to

- assure, that enough space is available on site to retrofit plant with capturing and compression facilities
- verify, if storage capacities and transport facilities are available and retrofitting is technological feasible

• CAPTURE READINESS
EU Emission Trading System

- **ETS Phase III proposal**
  - from 2013 full auctioning of CO2 certificates for the power sector

- **CCS under the ETS:**
  - CO2 captured, transported and safely stored considered as not emitted
  - no allocation to capture, transport and storage
  - ETS allowances must be surrendered for any leakage
  - monitoring and reporting guidelines under preparation

- **ETS auctioning revenues**
  - major potential source of funding for CCS demonstration projects
  - EC suggestion: 20% earmarking to low-CO2 technologies
Economic viability of CCS under ETS

Additional Cost for CCS, per ton CO2

Certificate Price

Average Avoidance costs

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Financing CCS demonstration projects

- Economics of early demonstration
- Sources of financing

>> Industrial commitments
  - ETP-ZEP: a vital initiative with commitments to the issue
  - still needed: clear, early and decisive commitments by individual players to concrete large-scale demonstration

>> Member States’ involvement
  - MS-level crucial given budgetary reality and size of challenge
  - Commission guidelines facilitate state aid to CCS
  - ETS revenues + structural policies hinted as suitable

>> EU-level financing
  - limited availability for the time being
    - FP7 + EU structural funds
    - EU financial institutions for specialized cases
    - Communication on financing low-carbon technologies
Potential CCS demonstration projects
Conclusion – Executive summary

**CCS: priority of strategic importance**
- CCS can be commercially viable by 2020
- Opportunities and challenges:
  - Early effective demonstration
  - Timely and bold industry and public investment
  - Market-based stimuli to avoid CO2 emissions

**Commission / Council / EP:**
- CCS regulatory framework
- CCS in ETS
- Revised Community guidelines on state aid for environmental protection
- Revision of TEN-E guidelines (transport infrastructure)
- European Industrial Initiative on CCS

**Early demonstrations**
- Major financial commitments
  - Decisive commitments from industry to trigger public contribution
  - National schemes by Member States
- Continued R&D
Thank You for Your Attention