CCS – Developments in Germany

Almut Fischer, Federal Ministry of Economics and Energy
Overview

• I. History and current political environment for CCS
• II. What are we concentrating on at working level (Ministry, Federal Institute on Natural Resources)
• III. Situation of German Projects
• IV. Closer Insight on German CCS Law/Content
I. History of CCS and current political environment for CCS (1)

• When CCS came up as a topic in mid-2000 – Germany quite interested
• European Directive in 2009
• First German Draft Act in 2009 (comprehensive) – coincided with first exploration activities in northern Germany – public disapproval
• Upcoming federal elections 2009 – the legislative process was discontinued
I. History and Political Environment (2)

• Second attempt for CCS Law in 2010: original scope of first draft was limited
• A law to allow the **DEMONSTRATION** of CCS
• Instruments:
  – limited amount of CO2 that can be stored yearly (1.3 Mio. Tones CO2 per storage site, 4 Mio. Tones CO2 per year nationwide) (3 medium-sized demos)
  – Applications for storage site until 2016
  – States Clause (state territory, parts of state territory can be exempted) – those State laws have been enacted or are about to be enacted.
II. CCS at Working Level

Federal Ministry of Economics and Energy
- Concentrating on keeping CCS a topic (reminder)
- Work with regards to EC COM
- Very important: NSBTF – dedicate quite a lot of work
- Priority to have demonstration of CCS in EU (Efforts on saving ROAD project)

Federal Institute for Geosciences and Natural Resources
- Subordinate to our Ministry
- One (small) branch working on CCS
- However due to low political interest: Concentrate on usages of underground in general
- CCS as one utilization of underground competing with others
II. CCS at Working Level (2)

Germany’s effort in International Standardization

- DVGW - German Technical and Scientific Association for Gas and Water – has secretariat for development of standards for transport for ISO

- Federal Institute for Geosciences and Natural Resources also participating in standards development in storage.

  - On working level quite an effort (Ministry, Federal Institute on Geosciences, DVGW)
III. Situation of German Projects (1)

• Demonstration Projekt: Vattenfall abandoned its very promising demo Jänschwalde in 2011

• Vattenfall’s small pilot in Schwarze Pumpe (30 MW Power station with capture facilities – Oxyfuel Technology) has been officially terminated in April 2014

• Cooperation Agreement with SaskPower in Canada/Knowledge will be used for Boundary Dam

• Schwarze Pumpe Capture Pilot will be deconstructed
III. Situation of German Projects (2)

- Ketzin Storage Pilot:
  - 67,000 Tones of CO2 stored
  - Installations are deconstructed
  - Longer R&D Project on Decommissioning and Monitoring
  - Valuable Results but after project no continuation
- E.ON Capture Pilot in Wilhelmshaven still ongoing
- RWE in Niederaussem: Innovation Center Coal with CCS
- R&D in Universities ongoing
IV. Closer Insight into German CCS Law (1)

• Limited to the Demonstration of CCS (limits to amount of CO2, time limit – to be extended, states clause)

• Because of States Clause: No CCS, however: capture and transport are always possible, because pipelines are not limited by the CCS Law: thus in combination with offshore storage in North Sea – still an option!

• CCS Law could easily be adapted in case political environment would be more positive: functioning and standards of the Law are quite balanced.
IV. Closer Insight into German Law (2)

• Two step procedure: permit for exploration first, planning approval procedure for the storage site
• Storage Approval is issued – high general standards:
  – no affection to public good or predominant private interests
  – long term security is guaranteed, no dangers to health or environment
  – Precaution with regards to human health and environment (High precautionary standard – with regards to science and technology)
IV. Closer Insight into German Law (3)

• Procedural Rules for
  – Self monitoring & Concept for Self Monitoring
  – Safety Proof
  – After Care & Concept for After Care for Storage Site

• Measures in Case of Leakages

• Requirements for CO2-Stream

• Monitoring of public authority (execution of Law with Federal States)

• Liability

• Financial Security
  – 1. For time of operation;
  – 2. After Care – fixed amount of after care contribution, 3 % of stored CO2 yearly – calculated on the average price for Emissions Certificate in that year

• Provisions of the Law partly applicable to research storage sites

• Evaluation of Law and Development of CCS in 2018
Outlook

• Currently, CCS is not an option in Germany
• Germany supports CCS development in Europe
• Most CCS experts expect CCS to have a revival when it becomes apparent that high climate goals cannot be reached.

Thank You for Your Attention!