

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!