



**EU-Directive 2009/31/EC  
on the geological storage of  
carbon dioxide -  
CCS-Directive**

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## EU climate objectives for 2020

★ **20% reduction of greenhouse gas (GHG) emissions compared to 1990**

↳ independent commitment

★ **30% reduction of GHG emissions compared to 1990**

↳ in case of an international agreement

★ **20% renewables in energy mix**

★ **10% biofuels in transport**



## Climate Action and Renewable Energy Package 23 April 2009

- ★ Revised Emissions Trading Directive (ETD)  
(2009/29/EG)
- ★ Decision on effort sharing for non-EU ETS (ESD)
- ★ Revised Directive on the promotion of renewable energy  
(2009/28/EG)
- ★ Revised Environmental State aid guidelines
- ★ Communication supporting early demonstration of  
sustainable power generation from fossil fuels
- ★ **Directive on the geological storage of carbon dioxide  
(CCS-Directive) (2009/31/EC)**



## Package - legislative history

- ★ **Co-decision procedure, Art. 251 EC**
- ★ COM proposal: 23 January 2008
- ★ Adoption EP + Council in 1st Reading
  - ↳ EP: 17 December 2008
  - ↳ Council: 6 April 2009
- ★ Signature: 23 April 2009
- ★ Publication: 5 June 2009
- ★ Entry into force: 25 June 2009



## CCS-Directive - background

- ★ Energy efficiency and renewables preferred options, but other options necessary to achieve 50% reduction of CO<sub>2</sub> emissions by 2050
- ★ CCS important, since fossil fuels will play important role in future energy mix of the EU and internationally
- ★ CCS has been demonstrated as functioning, but not yet as an integrated process at commercial scale in power generation



## Purpose, subject-matter, scope

### ★ Purpose

- ↪ Establish legal framework to manage environmental risks
- ↪ Remove existing legal barriers

### ★ Focus on storage

- ↪ Capture regulated in IPPC- and EIA-Directives, transport regulated in EIA-Directive and at national level

### ★ Scope

- ↪ Territory, exclusive economic zones and continental shelves of the Member States (MS)
- ↪ Not applicable to research projects < 100 kilo tonnes
- ↪ Storage in the water column not permitted



## Site selection and exploration

### ★ Site selection

- ↪ Crucial for storage integrity and security
- ↪ Potential storage sites have to be assessed pursuant to criteria listed in Annex I and may only be selected, if no significant risk of leakage or negative impacts on human health or environment

### ★ Exploration

- ↪ MS decide on exploration procedure
- ↪ If exploration procedure is carried out, exploration permit has to be issued to protect holder against conflicting uses of the site during validity



## Storage permits

### ★ Storage permits

- ↪ No storage without storage permit
- ↪ Proposal contains detailed provisions on application, conditions and contents of the storage permit

### ★ Commission review

- ↪ Draft storage permits **and permit applications** have to be submitted to COM, which may issue an opinion within **4 months**
- ↪ MS may deviate from opinion, but have to justify deviation
- ↪ Review will take place with the aid of a scientific panel
- ↪ Purpose: Control of implementation, public confidence





## Acceptance, monitoring, reporting

### ★ Acceptance of CO2 streams

- ↪ CO2 streams shall consist overwhelmingly of CO2
- ↪ Substances other than CO2 must be limited to levels that do not adversely affect the security of the transport network or storage
- ↪ To be verified by operator prior to injection

### ★ Monitoring, Reporting

- ↪ Operator has to regularly monitor storage site and report results at least once a year to the competent authority
- ↪ Monitoring takes place on the basis of a comprehensive monitoring plan to be established by the operator pursuant to the criteria listed in Annex II and agreed by the competent authority
- ↪ Inspections in the **first three years once a year**, then until transfer of responsibility **every five years**



# Leakages

## ★ **Corrective measures**

- ↪ Operator has to immediately notify competent authority and take necessary corrective measures
- ↪ If operator does not take the necessary measures, the competent authority takes the measures itself and recovers the costs incurred from the operator

## ★ **Additional provisions**

- ↪ **Environmental Liability Directive** for local environmental damage (Water, soil, protected species/ habitats)
- ↪ **Emissions Trading Directive** for climate damage
  - Captured and stored CO<sub>2</sub> emissions are recognised as not emitted under the ETS
  - In case of a leakage, the operator has to hand in ETS allowances



## Closure, post-closure obligations and transfer of responsibility

### ★ Closure (= definite cessation of injection)

↪ If conditions in permit met or upon decision by the authority

### ★ Post-closure obligations

↪ Operator remains responsible for storage site after closure (monitoring, corrective measures etc.)

### ★ Transfer of responsibility

↪ Transfer to the competent authority if:

- all available evidence indicates complete containment of CO<sub>2</sub>
- **minimum period determined by the authority (generally 20 years) has elapsed;**
- **financial contribution for the post-transfer period provided;**
- **storage site sealed and injection facilities removed.**

↪ COM may review and issue an opinion on draft decisions of transfer (as for draft permits)

↪ **Monitoring may be reduced** after transfer (COM proposal: cease)



## Financial security, financial contribution, third-party access

### ★ Financial security

- ↪ To ensure that requirements pursuant to the CCS-Directive and the ETD can be met (including closure and post-closure)
- ↪ Proof of availability together with permit application
- ↪ Adjustment over time, release upon transfer of responsibility

### ★ Financial contribution (post-transfer) (not in COM proposal)

- ↪ to be provided by operator before transfer of responsibility
- ↪ at least costs of monitoring for 30 years

### ★ Third-party access

- ↪ Principle of open and equitable access to CO<sub>2</sub> transport network and storage sites
- ↪ Limits, e.g. storage capacity, national climate policies
- ↪ Dispute settlement arrangements, including for cross-border disputes



## Removing legal barriers

### ★ Community legislation

- ↪ **Water Framework Directive** amended to allow storage of CO<sub>2</sub> in saline aquifers
- ↪ **Waste Framework Directive** and **Waste Shipment Regulation** amended to remove CO<sub>2</sub> for the purposes of storage pursuant to this Proposal from their scope of application

### ★ International level

- ↪ 2006 Amendment of the **London Protocol (1996)** to the London Convention (1972) on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter
- ↪ 2007 Amendment of the **OSPAR Convention (1992)** for the Protection of the Marine Environment of the North-East Atlantic



## Enabling versus mandatory CCS

- ★ **CCS enabled, not mandatory**
- ★ **But new combustion plants with a rated electrical output of 300 megawatts or more may only be permitted if:**
  - ↳ availability of suitable storage sites and technical and economic feasibility of transport networks and retrofit for capture have been assessed; and
  - ↳ **if assessment positive**, if sufficient space for capture and compression reserved on the site
- ★ Requirement applicable from entry into force of the Directive
- ★ Review by 31 March 2015



## Transposition and implementation

- ★ MS have to **transpose** the Directive by 25 June 2011 (Article 33 to be transposed from 26 June 2009)
- ★ Transposition work under way, early transpositions expected towards end 2010
- ★ COM organises **exchange of information** with MS on transposition and implementation
- ★ Next steps in **implementation**:
  - Preparation of guidance documents (next slide)
  - Establishment of scientific Panel
  - Finalisation of Monitoring & Reporting Guidelines for inclusion in EU-ETS



## Guidance documents

### ★ Four main guidance documents:

- ↪ Life-cycle risk management framework
- ↪ Site characterisation/ CO<sub>2</sub> stream composition/ monitoring/ corrective measures
- ↪ Criteria for transfer of responsibility to MS
- ↪ Financial security and financial mechanism

### ★ Timing

- ↪ Currently consulting MS and national geological surveys
- ↪ Issue drafts for wider consultation summer 2010
- ↪ Finalisation autumn 2010





## Conclusion

- ★ Solid and comprehensive legal framework in place, which can also serve as model risk management internationally
- ★ Focus now on transposition and implementation in MS
- ★ Financing of demonstration projects and promotion at international level major tasks in the coming years