



**Regulatory and legal issues:
development of an enabling legal framework
for carbon capture & storage in the EU**

Conference on Financing and Regulating CCS

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Risk management framework

Capture

- Regulated and permitted under IPPC, included explicitly in Annex I of 96/61
- Update of BAT Reference Documents (BREFs) to specify requirements
 - Possible horizontal BREF on CO₂ capture technologies

Transport

- Currently regulated at MS level (for natural gas); relevant European and international standards apply
- Large pipelines require automatic Environmental Impact Assessment, small ones on case-by-case basis
- TREN Working Group on safety of oil and gas pipelines
- Conservative approach: no risk differences CO₂/NG justifying a different approach
- Similar approach to transport by ship



Storage

Free-standing legal framework is being developed, covering:

- Exploration for storage sites
- Site characterisation and selection
- CO₂ acceptance criteria and procedure
- Monitoring and reporting obligations
- Measures in case of leakage, or events likely to lead to leakage
- Closure and after-care
- Transfer of responsibility to the Member State
- Financial security
- Access to transport and storage network
- Amendments to water and waste legislation
- Review of draft permitting decisions



Risk management framework

Exploration for CO₂ storage sites

- Exploration made subject to a permit
- Non-discriminatory access to exploration:
 - Procedures for granting of permits open to all entities
 - Permits granted on the basis of objective published criteria
- Permits granted for maximum of 2 years; if not converted into a storage permit by that time, would lapse.



Site characterisation and selection

Analysis specified in some detail in annex:

- Static model built of reservoir
- Dynamic modelling of expected behaviour of CO₂ under a range of scenarios, including extreme ones
- Risk assessment and characterisation for scenarios showing risk of leakage

Article specifying requirements on site selection

- If analysis shows that, under proposed conditions of use, there is no significant risk of leakage or damage to the environment or human health



CO₂ acceptance criteria and procedure

Acceptance criteria based on the agreements in London Convention and OSPAR:

- CO₂ stream shall consist overwhelmingly of carbon dioxide
- No wastes or other matter added for the purpose of disposal
- Streams may contain incidental associated substances from the source or capture process, but concentrations may not exceed levels that would:
 - Adversely affect the integrity of the storage site and transport infrastructure
 - Pose a significant risk to the environment
 - Or breach the requirements of applicable EC legislation.

Before injection is started:

- The operator of the storage site must show that the CO₂ to be accepted for injection fulfils the criteria in question
- The operator must keep records of the origin, quantity and characteristics of the CO₂ accepted.

CO₂ streams from different sources shall be accepted on a non-discriminatory basis.



Monitoring and reporting obligations

Purposes of monitoring:

- Comparison of actual and modelled behaviour of CO₂ in target storage formation
- Detection of any migration of CO₂ from the storage site into the storage complex
- Detection of leakage of CO₂ beyond the limits of the storage complex
- Detecting any significant adverse effects for the surrounding environment, human populations or users of the surrounding environment
- Assessing whether permanence of storage is achieved

Monitoring plan:

- Based on best monitoring practice and regularly updated
- Consideration of a wide range of technologies and justification of choice
- Specification and justification of parameters, location and spatial sampling rationale, frequency and temporal sampling rationale



Measures in case of leakage or events likely to lead to leakage

- Competent authority to be notified and corrective measures to be taken
- Competent authority shall either take corrective measures itself or require operator to take corrective measures. If operator fails to take corrective measures, competent authority shall take them



Treatment under the ETS

Phase II: 2008-12

- Installation plus capture, transport and storage can be opted in together under Article 24
- No additional allocation for capture, transport and storage
- Monitoring and reporting guidelines adopted by the Commission.
- Separate rules could be established for combustion+capture, transport, and storage, and could be generic where variation between projects is unlikely.

Phase III: 2013-

- Same, but with explicit and separate inclusion of capture, transport and storage in Annex I



Closure and aftercare

- Closure plan required for initial permit
- Resubmitted when closure is to take place and approved by competent authority
- Site only considered to be definitively closed when competent authority has confirmed that closure plan fully implemented and measures for aftercare (maintenance, monitoring and control and any corrective measures in aftercare) are in place
- Subject to provisions on transfer of responsibility to the state, site remains responsibility of the operator in aftercare



Transfer of responsibility to the Member State

Proposed condition

- Competent authority shall take over responsibility for the site, including all legal obligations, if and when all available evidence suggests the long-term security of the storage

Intended effect

- The condition for transfer is harmonised, avoiding distortion of competition
- The operator retains responsibility for the storage site in so far as it presents a significant risk – polluter pays
- Once the site has demonstrated that the CO₂ is behaving as expected, and that the behaviour indicates long-term containment, the risk of subsequent events is low and transfer to the state should not result in significant future liabilities for the state.



Financial security

Covers *inter alia*:

Closure obligations

- To ensure that site can be safely closed and the necessary aftercare put in place in case of operator insolvency
- Financial implications relatively clear
- Analogous to current EU requirements for landfill and some national provisions on offshore oil and gas decommissioning.

Corrective measures and ETS liabilities

- Corrective measures are such things as plugging a blown well – already covered in insurance products for petroleum industry
- ETS obligations for any leakage:
 - Shortage of empirical history on leakage, so modelling approaches would be needed for specific sites (but not unique to CO₂ storage)
 - Modelling required in any case, and site selection based on risk of leakage being low
 - Based on discussions with insurers, suitable products should be feasible



Access to transport and storage network

- **Member States to ensure non-discriminatory access to transport network, but retain right limit access for reasons justified by public interest (standard Treaty provision)**

- **Non-discriminatory access to storage covered previously (CO₂ acceptance criteria)**



Amendments to water and waste legislation

Water

- Amendment of Article 11.3.j of the Water Framework Directive 2000/60 to allow:
 - Injection of carbon dioxide streams for storage purposes into geological formations which for natural reasons are permanently unsuitable for other purposes, provided that the injection is authorised under the enabling legal framework

Waste

- Removal of CO₂ captured and transported for the purposes of storage from the scope of the waste legislation



Review of draft permit decisions

- Review in the early phases of CO₂ storage useful to ensure provisions are interpreted consistently across the EU, and will provide the basis for sharing experience on site selection, characterisation and monitoring
- Draft permits submitted to the Commission which would assess them, probably assisted by a Scientific Panel
- Commission would provide an opinion on the permit which the competent authority would have to take into account
- Final permitting decision would remain with the Member State



Communication on CCS Demonstration

Approaches considered:

1. **Relying on individual initiatives (MS, industry)**
 - + **implementation/costs no issue at EU level**
 - **timing arbitrary, effort dispersion**
2. **Coordinating and complementing “solicited” strong stakeholder commitment**
 - + **implementation speed, flexibility**
 - **project number/distribution, progress conditional**
3. **Centralized programme with PPP-like structure**
 - + **critical mass, robust action**
 - **implementation delay, budgeting decision**



Actions to be taken

1. Facilitation of state aid clearance for demonstration projects
2. Inclusion of CO2 infrastructure in TEN
3. Creating a project network as a support action under FP7
 1. **Coordination, common identity**
 2. **Exchange of information**
 3. **Collective actions: public acceptance, third countries**
4. Commitment to address higher costs
 1. **In the context of SET Plan**
 2. **Complementary to ETS**



Next steps

1. Implementing CCS legislation and long-term perspective on ETS
2. Mobilizing finance at industry, MS and EU levels
 1. **ZEP Technology Platform**
 2. **European Summit 2008**
 3. **SET-Plan implementation**
3. European “Flagship Programme”?
 1. **Clarify funding & financing**
 2. **Agree stakeholder commitments (levels, forms)**
 3. **Define « technology matrix »**



Input needed from stakeholders

1. **Confirming commitment to earlier milestones**
 - **Industry: 2015 for a set of demos, 2020 for commercial viability**
 - **MS: confirm European Council statement that EU support scheme welcome**
 - **Fine-tuning/qualifying is OK; wavering less helpful**

2. **Financing debate**
 - **Clarity on financial parameters of demonstration and deployment**
 - **Explicit commitments of own resources from industry and MS**
 - **Assessment of forms of possible public support**



Timing

- **Intensive internal discussions October/Dec**
- **Adoption scheduled with climate/energy package.**