



	Creating an enabling policy framework for CCS			
	Dr Paul Zakkour, ERM Energy & Climate Change			
	Inst of Air Quality Management, London, 14 th November 2007			

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Overview

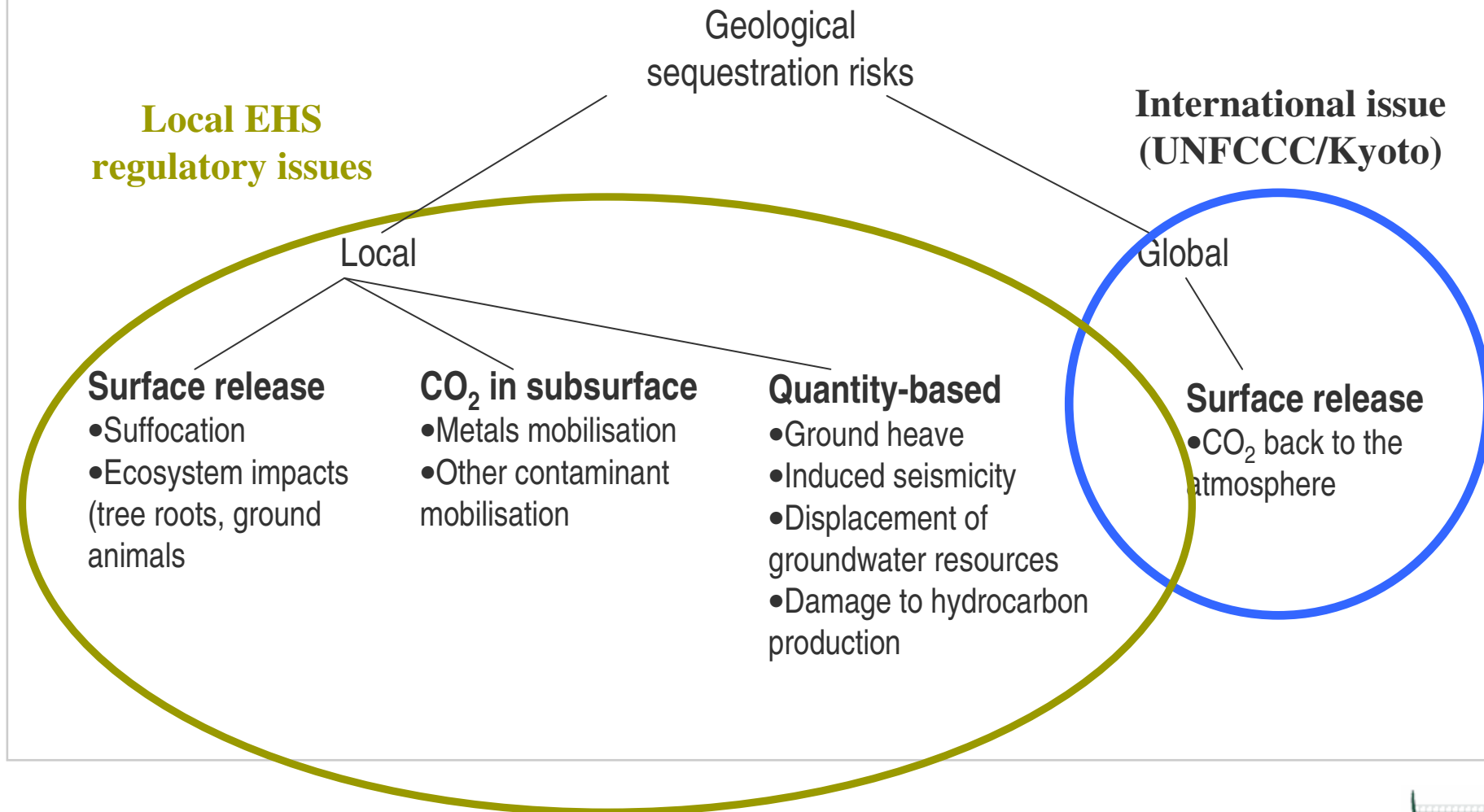
- **Objective:** To provide an update on recent developments
- **Legal and Regulatory needs for CCS**
- **International developments**
 - London Convention & Protocol
 - OSPAR
 - UNFCCC/Kyoto
- **European Union activities**
- **Conclusions**

Legal and regulatory needs for CCS

- To confer the right to store CO₂ in the subsurface
- To assess and manage risk of leakage (multi-dimensional)
- To allocate liability for any damages (environmental, personal injury, property, climate etc.)
- To provide powers for enforced closure

- *Policy needed to incentivise deployment – purely climate change driven technology*
 - *ETS*
 - *Feed-in tariffs etc*

Summary of risks/regulatory needs



Regulatory needs: Managing leakage risk

- Leakage **IS NOT** an inherent function of storing CO₂
- Leakage **IS** a function of:
 - Site characterisation and selection
 - Risk assessment
 - Risk management
 - Monitoring and reporting
 - Remediation and short-term liability
 - Decommissioning
 - Stewardship and long-term liability
- **Regulations must be designed to cover these issues**

International developments: London/OSPAR

- **London Convention (1972) and Protocol (1996)**
- **Amendment agreed to Annex I of Protocol (in force 10/02/07).**
Allows:
 - disposal into sub-seabed geological formations of “*overwhelmingly*” CO₂ streams without addition of “*wastes or other matter*”
 - Risk management framework under development
- **OSPAR (1992)**
 - Moving more slowly – similar debate as per LC
 - Some Parties proving difficult on purity standards
 - OSPAR Commission meeting 25-29/06/07 agreed FRAM and amendment. Still in progress

International developments:

UNFCCC / Kyoto

- **UNFCCC:** “*parties to promote enhancement of CO₂ sinks*”
- **KP:** “*develop policies and measures that support ...CO₂ sequestration..*”
- **Two key developments:**
 - IPCC 2006 Inventory Guidelines (v. important)
 - COP/MOP Decisions on eligibility of CCS in CDM
- **IPCC 2006 non-binding/unapproved: could allow IET (Art 17 of KP) on back of CCS projects**
- **CCS in CDM: protracted process. Due 2008**

International developments: IPCC GHG 2006

Estimating, Verifying & Reporting Emissions from CO ₂ Storage Sites	
Site Characterization	<p>Confirm that geology of storage site has been evaluated and that local and regional hydrogeology and leakage pathways (Table 5.1) have been identified.</p>
Assessment of Risk of Leakage	<p>Confirm that the potential for leakage has been evaluated through a combination of site characterization and realistic models that predict movement of CO₂ over time and locations where emissions might occur.</p>
Monitoring	<p>Ensure that a monitoring plan is in place to identify and measure leakage and validate and/or update models.</p>
Reporting	<p>Report CO₂ injected and emissions from storage site</p>

← Site characterisation

← Risk assessment

← Risk management
(monitoring)

← Risk management
(reporting)

International developments: CCS in the CDM

- **CDM EB reporting to COP/MOP (Nairobi, Nov 2006) – issues to resolve:**
 - Policy/legal (liability etc)
 - Technical/methodological (site selection etc.)
 - Permanence (e.g. CERs or T/LCERs?)
- **Nairobi mandate (Decision FCCC/KP/CMP/L.8)**
 - Invite more methodologies, submission from Parties etc.
 - View to SBSTA27 preparing recommendations for COP/MOP3 (Bali) and finalisation at COP/MOP4 (2008)
- **IEA/Shell/ERM – prepared and published methodology report (April 2007)**

European Union developments: CCS in EU ETS

- **Under Decision 2004/156/EC (MRGs): MS invited to propose MRGs for CCS**
 - DTI+ERM did that. Proposed “permitting approach”
 - Process started through ECCP II
- **Revised EU ETS MRGs for Phase II**
 - Inclusion via Art 24 of 2003/87/EC
 - DTI+ERM completed *another* process now for UK opt-in under Art. 24 – hand-over to Commission
- **All still fuzzy – could transfer to CCS Directive**

European Union developments: CCS Directive

- **ERM/Norton Rose/ECN – supported EC on Enabling Policy/Regulatory Framework for CCS**
- **Reviewed legal status; Assessed regulatory options... Regulatory models considered:**
 - EIA, ETS, IPPC, Seveso II, Waste & Water Law, ELD
 - Use EIA, IPPC, ELD. Disapply waste. Exempt in Water FD
- **Point of departure for developing regulatory framework:**
 - What will EU ETS inclusion provide?
 - What could other legislation (including waste legislation) also add to that?

EU ETS – what it could achieve

Regulatory need	Achieved under EU ETS?
<i>Risk assessment</i>	Baseline survey and leakage risk assessment [partial coverage]: Monitoring scheme design must be site specific and risk-based
<i>Risk management</i>	<p>Monitoring & reporting (M&R): under Art 4-6 (GHG Permit) subject to regulatory approval</p> <p>Impurities: must be monitored [for accounting purposes]</p> <p>Post closure M&R: enforceable so long as GHG permit valid</p>
<i>Liability</i>	<p>Global risk: Any emissions “offset” via EU ETS (so long as zero allocation to installation(s))</p> <p>Liability transfer [partial]: on withdrawal of GHG permit, perhaps not?</p>

What EIA, IPPC, Seveso, ELD could add

Regulatory need	Other EU laws
<p>Risk assessment & management</p> <p>Enforced closure</p>	<p>EIA: Site selection+characterisation, site-level risk assessment, risk management system, monitoring receptors, pipeline routing</p> <p>IPPC: Technical design standards, monitoring plan, site closure conditions. Trigger enforced closure</p> <p>Seveso II: More detailed risk assessment, emergency planning</p>
<p>Verification & assurance</p>	<p>Three-tier approvals structure in place.</p> <p>EIA: open to consenting at CA discretion – may be a need to harmonise with <i>de minimis</i> consenting conditions</p> <p>IPPC: will require a BREF.</p> <p>Seveso II: inclusions is a policy decision</p>
<p>Liability</p>	<p>IPPC: qualification would trigger ELD.</p> <p>Liability for damage post-closure</p> <p>No financial securities.</p>

EU Draft framework – key elements

- 1. Include CCS in the EU ETS: provides basis for MRV + “offsetting” any emissions**
- 2. Confer EIA Directive onto CCS: provides basis for planning authorisations and public consultation**
- 3. Confer Env Liability Directive: provides basis to local environmental damages**
- 4. Disapply waste and derogate water laws**
- 5. Develop free-standing legislation covering inter alia:**
 - Site selection criteria and process
 - Risk assessment
 - Monitoring
 - Financial security (in event of insolvency)

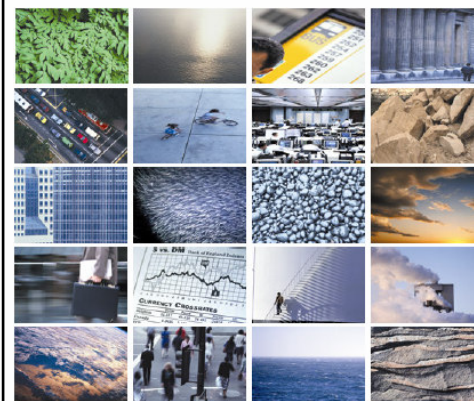


NORTON ROSE



Technical support for an enabling policy framework for carbon dioxide capture and geological storage

Task 2: Discussion paper Choices for regulating CO₂ capture and storage in the EU



Developing monitoring, reporting and verification guidelines for CO₂ capture and storage under the EU ETS

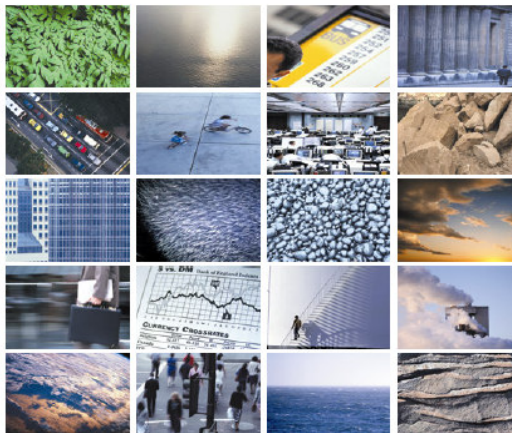
DTI ad hoc group on CO₂ capture and storage
January 2005
www.arm.com



PERMITTING ISSUES FOR CO₂ CAPTURE AND GEOLOGICAL STORAGE

Technical Study
Report Number: 2006/3
Date: January 2006

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Carbon Dioxide Capture and Storage in the Clean Development Mechanism

Possible Approaches to CDM Methodology Issues
October 2006
www.arm.com

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DEPARTMENT FOR BUSINESS
ENTERPRISE & REGULATORY REFORM
CO₂ CAPTURE AND STORAGE IN THE EU ETS
MONITORING AND REPORTING GUIDELINES FOR INCLUSION VIA ARTICLE 24 OF THE EU ETS DIRECTIVE
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