



	Regulatory Options for CO <sub>2</sub> Capture and Storage: <i>A summary of Task 2 report</i>			
	Dr Paul Zakkour, ERM Energy & Climate Change EC CCS Stakeholder meeting, 8 <sup>th</sup> May 2007			

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# Overview

- **Objective of the paper**
- **Impacts and risks to be managed**
- **Inclusion of CCS in the EU ETS**
- **Filling remaining gaps with other EU law**
- **Waste management law – does it add anything?**
- **Outstanding policy questions**
- **Policy choices**

# Objective

- **To outline the nature of the risks posed, and what is needed in a management framework**
- **To consider options for regulating these risks using existing EU law**
- **To stimulate a debate on the most appropriate way forward**

# Impacts and risks to be managed

Capture	Transport	Injection and Storage
<p><b>1. Emissions of other pollutants</b> to various media (such as SO<sub>x</sub>, NO<sub>x</sub>, solid waste and upstream impacts)</p> <p><b>2. Occupational and local environmental health and safety (EHS) risks</b> posed by the presence of large volumes of pressurised CO<sub>2</sub>, H<sub>2</sub>, and O<sub>2</sub> at capture plants;</p> <p><b>3. Environmental concerns from construction and operation</b> of the capture process (inc BAT)</p>	<p><b>1. Pipeline routing</b></p> <p><b>2. Global risk</b> - that the pipeline leaks and the captured CO<sub>2</sub> is re-emitted back to the atmosphere; and,</p> <p><b>3. Local EHS risk</b> that any leaked CO<sub>2</sub> poses to the surrounding local populations and the environment</p>	<p><b>1. Above ground installation siting, construction etc. + prospection</b></p> <p><b>2. Global risk</b> - that the stored CO<sub>2</sub> is re-emitted to the atmosphere,</p> <p><b>3. Local EHS risks</b> - associated with the impacts and effects of CO<sub>2</sub> storage and un-planned loss of containment. These EHS risks can be split into:</p> <ul style="list-style-type: none"> <li>- <i>surface release</i>: asphyxiation and ecosystem impacts (tree roots, ground animals etc.)</li> <li>- <i>effects of impurities</i> on the subsurface</li> <li>- <i>impacts of CO<sub>2</sub> in the subsurface</i>: e.g. metal or other contaminant mobilisation)</li> <li>- <i>quantity-based (physical) effects</i> e.g. induced seismicity, etc</li> <li>- <i>local EHS risks</i> posed by the presence of large volumes of pressurised CO<sub>2</sub> at injection facilities and storage sites.</li> </ul>

# Regulatory needs

- ***Risk assessment and risk management***: enforce risk assessment and management, inc tech stds on design, operation, and closure
- ***Verification and assurance (consenting regime)***: to ensure consistent stds for site selection across EU-27
- ***Enforced closure powers***: for unsatisfactory operations
- ***Liability***:
  - Local and global damage
  - Upfront financial provisions
  - Liability transfer

# EU ETS – what it could achieve

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

# What EIA, IPPC, Seveso, ELD might add

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

# Waste designation

- ***Waste notification provisions***: create a “duty of care” for producer. But chain of custody already created under EU ETS. Would allocate liability on producer
- ***Landfill Directive provisions***: ambiguity and unsuitable technical standards. Does create requirement for financial securities

***Probably no real advantage to using waste management legislation to regulate CCS***



# Outstanding policy issues

- 1. Whether there is a need to harmonise consenting procedures for storage sites, through:**
  - Prescriptive guidance/legislation?
  - EU level approval (comitology or otherwise)?
- 2. Whether a BREF is the right regulatory instrument for CO<sub>2</sub> storage site tech standards?**
- 3. Whether there is a need for financial securities?**
- 4. Whether Seveso should be conferred on to CCS?**

# Regulatory options/choices

- 1.** Include each part of chain in EU ETS. Modify EIA, IPPC, Seveso (ELD?) to cover gaps, *absent* of any new-stand alone legislation. Disapply waste law.
- 2.** As for **1.** (either complete or partial implementation of existing EU law) but introduce *new parallel* stand-alone legislation (like LFD). Disapply waste law.
- 3.** Similar to **2.** but exclude provision of all current laws and create *entirely new* stand-alone legislation.
- 4.** Include only capture part in EU ETS. Create new permitting and licensing regime for transport and storage (based around waste law “duty of care”)
- 5.** Continue on the basis of CCS being a waste disposal activity, and apply waste laws.