



# **Expert Meeting on Financing Carbon Capture and Storage Projects**

## **Possible Regulatory Options for the UK Government to enable CCS Projects**

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## **Business model 1**

- **A company builds a power plant, a pipeline and accesses a store**



## **Business model 2**

- **PF or IGCC power generator with CCS**
- **Pipeline operator**
- **Storage site operator**



## **Business model 3**

- **Air separation company**
- **PF power generator with CCS**
- **Pipeline operator**
- **Storage site operator**



## **Business model 4**

- **Gasifier hydrogen supplier with CCS**
- **Hydrogen power plant operator**
- **Pipeline operator**
- **Storage site operator**



## Who's the Regulator?

- DTI for capture as part of industrial plant
- DEFRA(EA) for capture on environmental issues
- DEFRA(EA) for EU ETS
- DTI for Pipeline Act
- DTI for Petroleum Act so EOR and offshore pipelines
- DEFRA regulates FEPA so saline formations offshore in England & Wales and SE in Scotland



# Carbon Capture Plant

- **Planning Permission (Section 36 Electricity Act)**
- **Environmental impact assessment**
- **IPPC**
- **Health & Safety**





# Pipeline Matters

- **Planning consent**
- **Pipelines Act**
- **Off shore pipelines regulated by Petroleum Act**
- **Health & Safety**
- **Re-use of pipelines**
- **Third Party Access**





## **Health & Safety**

- **Industrial CO<sub>2</sub> applications commonplace**
- **Experience of large scale CO<sub>2</sub> handling in USA**
- **No UK experience of these volumes of inventory**
- **CO<sub>2</sub> not listed as hazardous under COMAH**
- **CCSA/EI in discussion with HSE**
- **HSE will decide if they have sufficient data on which to base regulation. Industry group will review.**
- **EC Centralised verification of safety?**



## **On-Shore Matters**

- **Landfill Directive**
- **Water framework Directive**
- **Planning consent – Town & Country Planning Act**
- **If CO<sub>2</sub> classed as hazardous under COMAH then HSE gets involved in planning and regulation**



## **Off-Shore Matters**

- **London & OSPAR**
- **Environmental Impact Statements**
- **Safety Navigation Zones**
- **Air Navigation Order**
- **Exclusive Economic Zone, 12-200 miles**
- **Criminal & Civil Law**



## Licensing Phases

1. ***Exploration-*** period in which potential store is evaluated
2. ***Retention-*** time limited project development phase
3. ***Operational-*** injection of CO<sub>2</sub> – could be time or volume limited or contract with decision points
4. ***Closure-*** monitoring & decommissioning
5. ***Decommissioned-*** site abandoned and responsibility/liability handed back to Crown



## Storage Licensing Issues

- Site characterisation
- Condition of the site
- Extent of license
- Monitoring of the site
- CO<sub>2</sub> Purity?
- Termination conditions
- Insolvency
- Terms of closure
- Parallels in gas storage



## Long Term Liabilities

- On-going monitoring
  - Remediation in a failure event
  - Compensation claims
  - Cost of CO<sub>2</sub> emissions credits
- 
- State must assume long term liabilities terms to be discussed





## **EU Emissions Trading Scheme**

- **Opt-in for Phase II**
- **Opt-in categories for Phase III? Or full recognition?**
- **Draft Monitoring & Reporting Guidelines made in UK**
- **In the different business models which is the installation?**





## **Mandatory CCS**

- **Workable but with:**
- **Perverse consequences**
- **‘Capture ready’ should be left to the market**



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