What has ROAD learnt about CCS regulation and how can these lessons be applied?

5th IEA International CCS Regulatory Meeting
Paris, 18 - 19 June 2013
Tom Jonker
Rotterdam Opslag en Afvang Demonstratieproject (ROAD)

Co-operating Partners ROAD

- **Maasvlakte CCS Project C.V.** is a joint venture of:
  - E.ON Benelux
  - GDF SUEZ Energie Nederland
- In **co-operation** with intended partners:
  - TAQA Energy
  - GDF SUEZ E&P
- With **financial support** of:
  - European Commission (EU)
  - Government of the Netherlands
  - Global CCS Institute
  - Private partners (discussions pending)

Co-financed by the European Union
European Energy Programme for Recovery

Government of the Netherlands

Status Quo ROAD

- Engineering

- Detail engineering of capture plant ready
- Pipeline route engineered and 'flow assurance' study completed
- 'Tie-ins' (i.a. flue gas, steam) with power plant being installed

- Permits

- Permitting procedures finalized (beginning 2012)
- Capture permits are definitive and irrivocable
- Storage permits positive review by EC (beginning 2012)
- Publication definitive transport and storage permits soon

- Contracts

- Capture supplier selected and EPC contract ready to be signed
- Commercial contracts for transport and storage will be signed at FID

- Finance

- Very low CO_2 prices have caused a financing gap
- ROAD and RCI will do everything within their power to find additional financing, the next coming months

ROAD is ready to start construction as soon as financing gap has been solved

Lessons learnt from CCS regulation

- The most important CCS legislation regarding the storage of CO2 comes from the Directive 2009/31/EC on the geological storage of CO2.
- There are several important requirements of this legislation leave room for interpretation by Member States.
- The case study by the ROAD project assesses key issues relating to the storage permit.

Transposition CCS Directive in the Netherlands

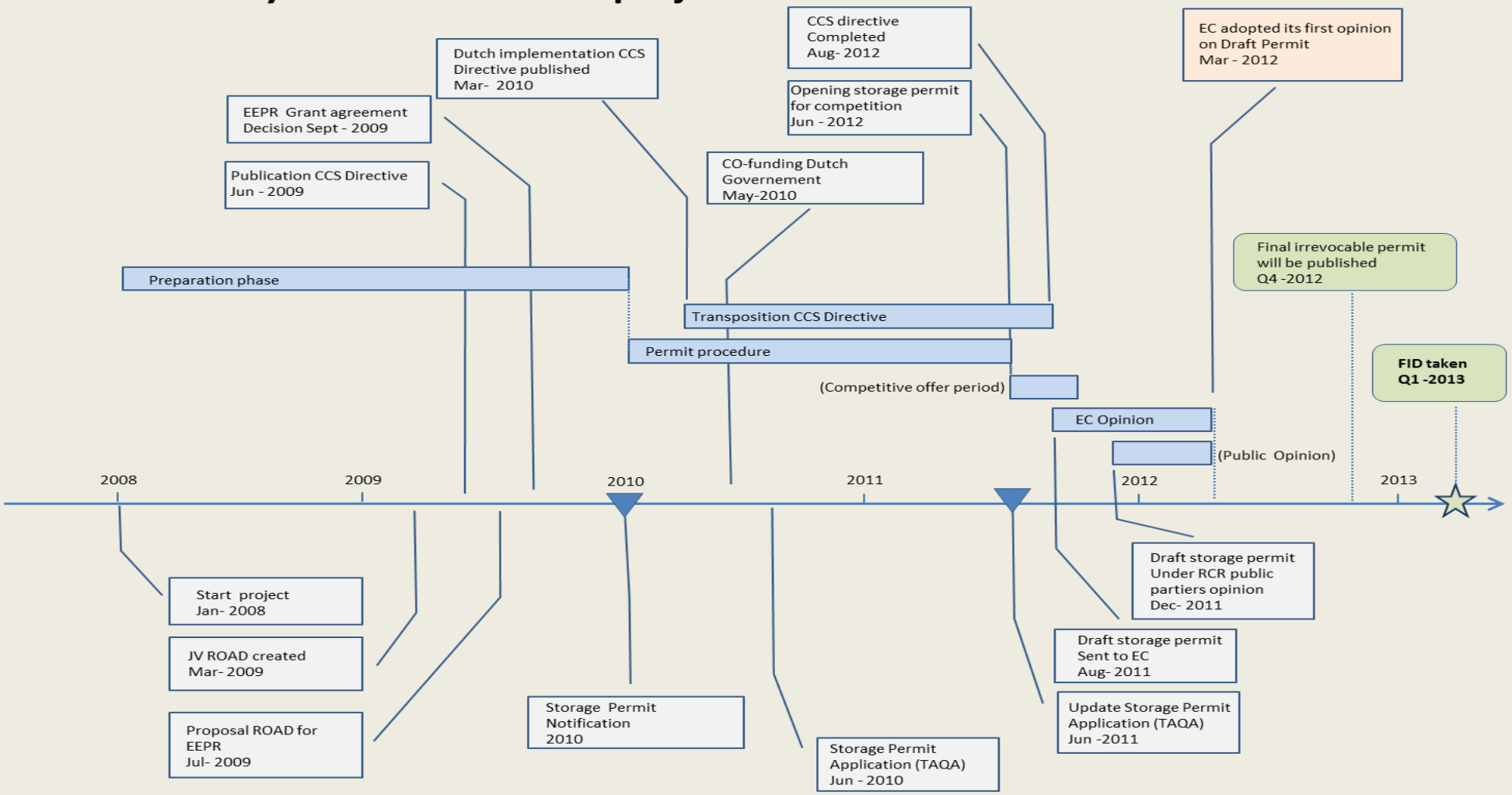
- Implementation CCS Directive in Dutch Mining Act:
  1. Literal translation
  2. Contains no further interpretation of open standards
  3. Interpretation of open standards in storage permit

- ROAD fully endorses this approach:
  - Each CCS project has it's own specific characteristics
  - Tailor made approach is essential

- Regulation should not restrict the development of CCS, keep legislation as general as possible, location-specific agreements in storage permit.

Storage permit process

Timeline of key milestones ROAD project



Storage permit process

- Although the storage permit is finalized and ready for publication, the permit needs a detailed update before injection starts (2015):
  - All plans (monitoring, corrective measures etc.) are not operational yet and must be finalized in 2014
  - Additional studies will be carried out (for example: well and fault integrity studies)
  - The Financial Security must be in place in 2014
  - The minister must give his/her approval on these updates when the permit will be adjusted and Sodm and TNO (state advisors) will give their expert advice
  - The Opinion of the EC "..*confirms the suitability of the chosen storage location for the permanent storage of CO2 as was demonstrated by a detailed characterisation and assessment of the storage site and complex*". But the EC will be enabled in 2014 again to give a non legal-binding opinion on the update of the storage permit.

Addressing the key issues in the storage permit

Three key issues:

1. Financial Security (FS)
2. Transfer of responsibility
3. Financial Mechanism (FM)

Addressing the key issues in the storage permit

1. Financial Security (FS)

- Which activities are included in the FS?
- Calculate the amount of the costs (risk based approach)
- Are all available financial instruments accepted?

Addressing the key issues in the storage permit

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10-29
Monitoring										
Contingency monitoring										
Corrective measures										
Abandonment well P18-4A2										
Abandonment platform P18A										
CO_2-proof abandonment P15-9										
Financial mechanism										
EU-ETS										
Subtotal										
Contingency 20%										
Total										

Addressing the key issues in the storage permit

2. Transfer of responsibility

- Key question: when and how can you prove that all available evidence indicates that the stored CO2 will be completely and permanently contained? Thorough elaboration of procedures and criteria in the storage permit?

- There are no reasons why the minimum period of 20 years has to lapse.

- Monitoring plan is considered to be sufficient to prove the complete and permanent containment.

- The operator must submit a report to the competent authority for approval of the transfer (after injection phase).

Addressing the key issues in the storage permit

3. Financial Mechanism

- Monitoring period and cost limited to 30 years of monitoring
- Otherwise there will be no transfer (operator pays for everything)
- Monitoring after handover is included in monitoring plan

Key challenges

- Storage process:
  - Although the storage permit is finalized and ready for publication, the permit needs a detailed update before injection starts
  - No 100% certainty before 2014
  - Second opinion EC in 2014

- Financial Security:
  - Which financial instrument (bank guarantee, balance sheet, insurance, etc.) will be accepted in 2014?
  - Can increase (and decrease) over time

- Transfer of responsibility:
  - No certainty on period after abandonment to transfer
  - Financial Mechanism

Key challenges

- Civil liability
  - Amendment of Dutch Civil Act not published yet (how to qualify carbon dioxide?)
  - Transfer of liabilities with transfer of responsibilities
  - Cap in time

- Volatility EUA's
  - Costs for leakage are unknown
  - Speculation on EU ETS should not be part of CCS demonstration projects

Maasvlakte CCS Project C.V.

Parallelweg 1

3112 NA Schiedam

www.road2020.nl

GLOBAL CCS INSTITUTE

ccsnetwork.eu
*connect *construct *share

Government of the Netherlands

Co-financed by the European Union
European Energy Programme for Recovery