



ROAD's experiences with CCS permitting processes

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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



TAQA



- With **financial support** of:

- European Commission (EU)
- Government of the Netherlands
- Global CCS Institute



Co-financed by the European Union

European Energy Programme for Recovery



Government of the Netherlands



GLOBAL
CCS
INSTITUTE

ROAD, Rotterdam

- Project developer: Maasvlakte CCS Project
- Capture
 - 250MWe (net) post-combustion.
 - Power plant $\eta=46\%$
(with capture plant $\eta=36\%$ (designed)).
 - Baseload.
 - 90% capture.



Transport

- ✎ 26km pipeline.



Storage

- ✎ Depleted gas reservoirs.
- ✎ Offshore.
- ✎ 1.1 MtCO₂/yr.

Status ROAD

- Design of capture plant is complete.
- The capture permits are irrevocable and the EPC contract is ready to sign.
- Storage permit has been successfully reviewed by the Commission, which has given its first Opinion (a second is to follow prior to injection).
- Transport and storage permits will be published if a positive FID is likely (“chicken and egg”).
- Flow assurance study has been completed.
- Storage facility negotiations are progressing well.
- The project has significantly slowed down its efforts because of various consequences of the low carbon price. It can not progress until additional funding has been cleared (conservation and no-regret actions are taken in order to limit the loss of momentum).
- FID is now foreseen for Q1 2013.

CCS permits and competent authorities

- General:

- EIA
- National Coord. Scheme (transport and storage)
- 3 Emission permits

Ministry of EL&I, Ministry of I&M and Province of Zuid-Holland (delegated to DCMR)

Ministry of EL&I

Dutch Emission Authority

- Capture:

- 1 permit for physical asp.
- Environmental permission
- Building permission
- Nature Protection permit
- Water permit

Province of Zuid-Holland (delegated to DCMR)

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Province of Zuid-Holland

Ministry of I&M (delegated to the State Water Authority, Department South Holland)

CCS permits and competent authorities

- **Transport:**

- State Zone planning *Ministry of EL&I, Ministry of I&M*
- Water permit *Ministry of I&M (delegated to the State Water Authority, Department South Holland)*
- Flora&Fauna Act Exemption *Ministry of EL&I*
- Railway Permit *Prorail*

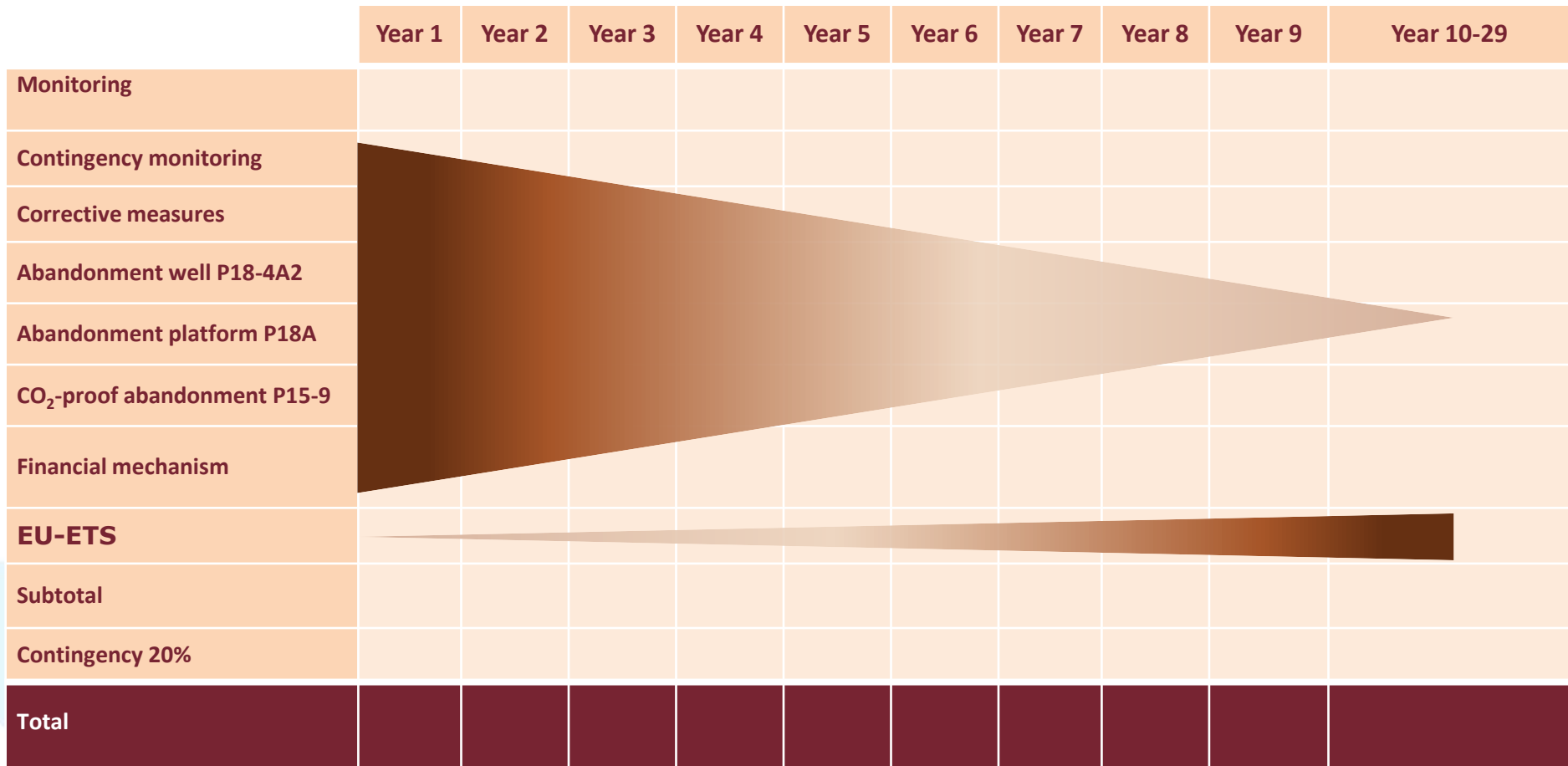
- **Storage:**

- 1 permit for physical asp. *Ministry of EL&I*
- Storage permit *Ministry of EL&I, Dutch Mining authorities, European Commission (non legally binding opinion)*

Key regulatory challenges

- Storage permit:
 - Storage process
 - Financial Security
 - Transfer of responsibility
- Liabilities:
 - Civil liability
 - Volatility EUA's (major issue)

5. Addressing the key issues in the storage permit



Key regulatory challenges - storage permit

- 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 regulatory challenges - liabilities

- 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