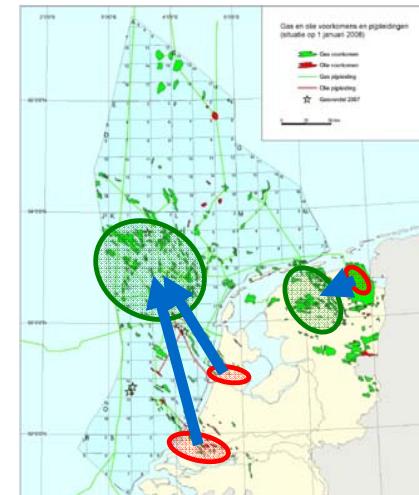


# CCS in ETS

How will it work?

Monitoring



Vincent Swinkels

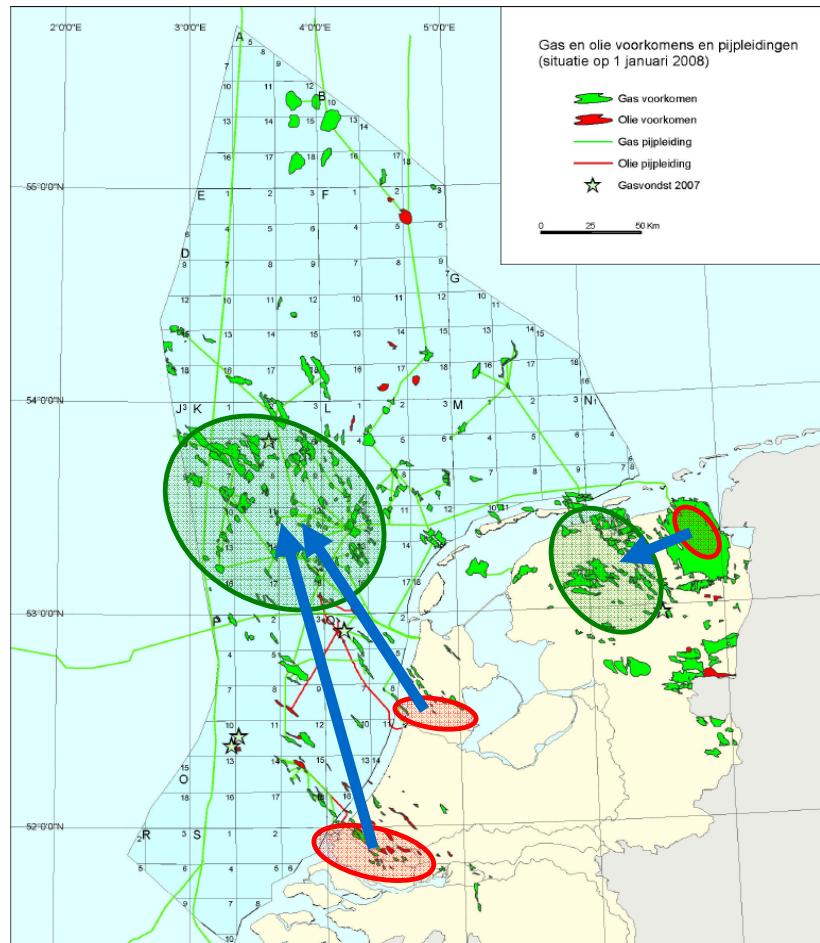
June 2008

# Content

- Introduction
- Changes to ETS
- Monitoring in CCS and ETS Directives: differences and overlap
- Leakage
- Position of biomass
- Conclusions

# Introduction

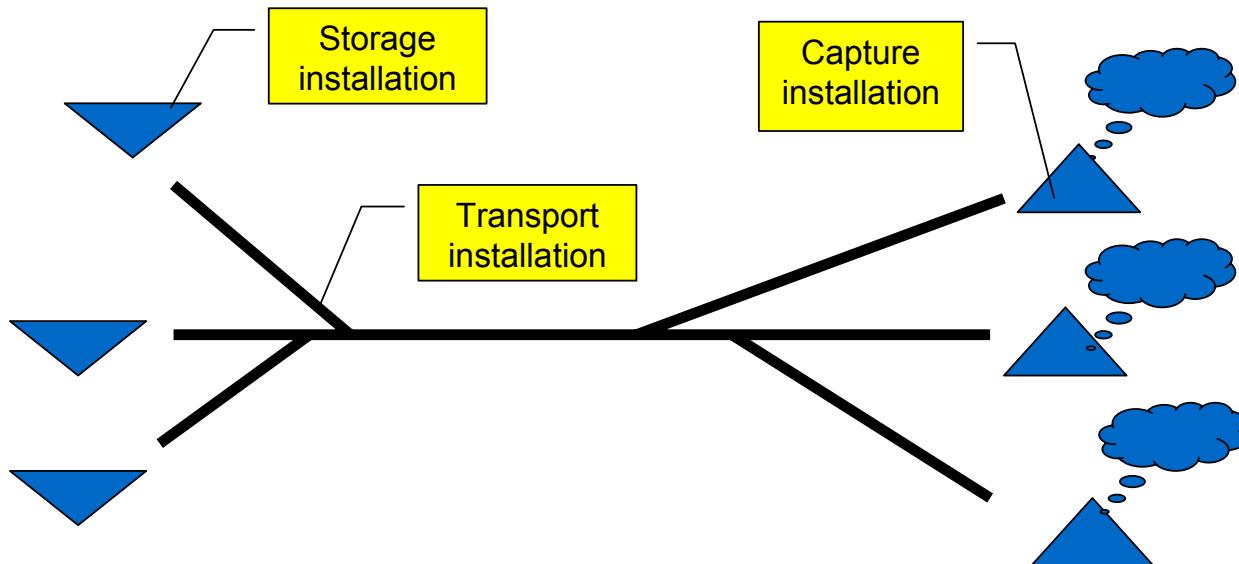
- DHV
- Involvement in ETS
- Involvement in CCS:
  - Environment ministry
  - Nogepa/ Ministry of Economical affairs
  - Northern Provinces



# ETS highlights

- ETS: European emission trading system
- Operational since 2005
- Over 10.000 installations
  - Electricity production, combustion installations > 20MW
  - Steel, refineries, cement, glass, ceramics, paper industries
- Covers about 50% of European CO2 emissions
- Allocation based on grandfathering
- Duty to surrender allowances equal to actual CO2 emissions
- Current prices: €15-20 per ton CO2

# Changes to ETS 1



# Changes to ETS 2

- Proposed changes to ETS Directive:
  - Capture, transport and storage are defined as installations under ETS
    - ◊ ETS permit
    - ◊ ETS monitoring plan
    - ◊ annual verification and reporting
  - Possibility to transfer emissions to other ETS installation for purpose of storage
  - From 2013 onwards
  - Auctioning for power plants, instead of free allocation

# How ETS will finance CCS

No CCS

**Real emissions**

Buy emission allowances

CCS

**Real emissions**

Transfer of emissions

Buy emission allowances

# Monitoring in CCS and ETS

Directives have very different perspectives:

- CCS monitoring: Integrity and safety
- ETS monitoring:
  - CO2 is money
  - If you cannot measure it, leave it out

# Monitoring in CCS and ETS

|                                  | CCS                   | ETS                        |
|----------------------------------|-----------------------|----------------------------|
| <b>Volume, quality of CO2</b>    | Important             | Important<br>High accuracy |
| <b>source of CO2</b>             | Nice to know          | Important,<br>Biomass?     |
| <b>Integrity, Safety of site</b> | Important, main focus | Not relevant               |
| <b>Occurrence of leakage</b>     | important             | important                  |
| <b>Volume of leakage</b>         | Nice to know          | Important<br>High accuracy |

# Leakage

Under ETS:

- Leakage is regarded as emission of ETS installation
- Installation needs to surrender allowances
- Difficulties:
  - How to measure/ calculate with any degree of accuracy
  - Difference in time

# Leakage: possible solutions

- Estimate emissions including 'penalty' to cover for uncertainty
- Limit ETS participation up to the point of injection.

# Leakage: will it occur?

“Observations from engineered and natural analogues as well as models suggest that the fraction retained in **appropriately selected and managed reservoirs** is *very likely to exceed 99% over 100 years and is likely to exceed 99% over 1.000 years*”.

*IPCC Special Report on CCS  
September 2005*

# Biomass

Does it matter where CO2 comes from?

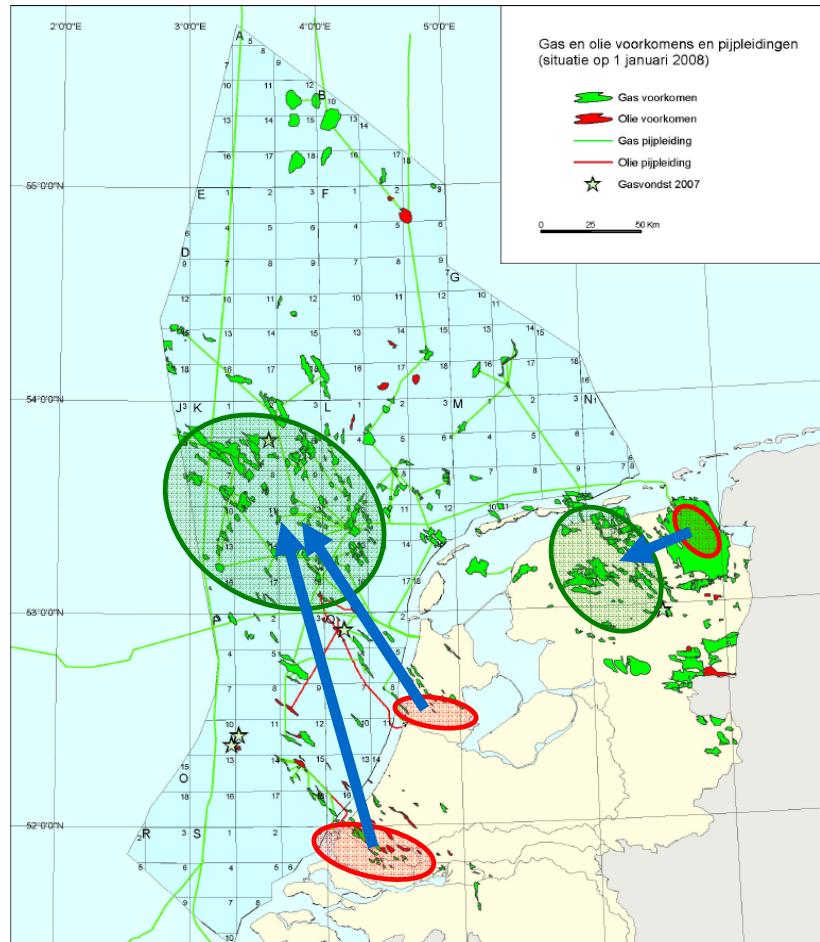
- For CCS: No
- For ETS: Yes
  - Biomass has emission factor zero
  - There is no value (within the system) for storage of biomass CO2

# Biomass: possible solutions

- Financial support outside of ETS
- Free allocation of allowances to CO2 biomass producers
  - Requires additional reserve in allocation!
- Administrative 'exchange' of emissions (and value of emissions) between biomass and non-biomass installations

# Conclusions

- There is overlap on monitoring in current proposals
  - Focus CCS monitoring on integrity, geology, leakage detection
  - Focus ETS monitoring on volume, quality, source of (injected) CO2
- Leave CO2 leakage out of ETS
- Investigate administrative exchange of CO2 emissions
  - For biomass
  - For installations far from pipelines and storage fields



Vincent Swinkels  
DHV Energy  
[vincent.swinkels@dhv.com](mailto:vincent.swinkels@dhv.com)  
+31 6 29098261