

The logo for ccsnetwork.eu is displayed in white text on a blue background. The background features a dark blue area on the left with a light blue diagonal streak, and a lighter blue area on the right with a white diagonal line.

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The European CCS Demonstration Project Network

Global CCS Institute's Members' Meeting,
23rd May 2013

Mike Gibbons - Chair of the Network's Steering Committee.
Daniel Rennie - Network Secretariat

✎ What is the CCS Project Network?

- ✎ The European CCS Demonstration Project Network was established in 2009 by the European Commission to accelerate the deployment of low-carbon, safe, large-scale and commercially viable CCS projects.
- ✎ Current members are five of the most advanced large scale demonstration projects in Europe.

Objectives

- ✎ Enabling knowledge-sharing amongst projects.
- ✎ Address key topics that will enable CCS project deployment.

👉 The portfolio



Don Valley, UK
Power sector
 650 MW, pre-combustion
 5 Mtpa CO₂

ROAD, NL
Power sector
 250 MW, post-combustion
 1.1 Mtpa CO₂

Compostilla, ES
Power sector 330 MW, oxyfuel
 1.6 Mtpa CO₂

Porto Tolle, IT
Power sector 250 MW, post-combustion
 1 Mtpa CO₂

Sleipner, NO
Gas processing
 0.9 Mtpa CO₂

Bełchatów, PL
Power sector
 260 MW, post-combustion
 1.8 Mtpa CO₂

Jämschwalde, DE
Power sector
 300 MW, post-combustion & oxyfuel
 1.7 Mtpa CO₂

✎ What has the Network accomplished in the past 12 months?

- ✎ One operating project of the Network has stopped nearly 1 million tonnes of CO₂ from being emitted into the atmosphere.
- ✎ Jämschwalde technical reports have been released.
- ✎ Publication of reports and engaged with stakeholders at a number of events.
- ✎ Numerous workshops, with reports available on:
 - ✎ Public Engagement.
 - ✎ Regulatory Development.
 - ✎ Storage.
 - ✎ Transport.



Network Situation Report: 2012



ROAD

Summary
The ROAD project is based in the Port of Rotterdam, Netherlands. The project operator is E.ON Borealis in partnership with CO2Suez. The project will apply post combustion capture in a 350 MW stream from new IGW coal and biomass power plant. The CO₂ captured will be transported in a 26km pipeline to offshore depleted gas reservoirs which are located in Block P18 of the Dutch continental shelf. The pipeline has a transport capacity of around 5 million tonnes per year. The depleted gas reservoirs are at a depth of around 3,500 m under the seabed of the North Sea and have an estimated storage capacity of approximately 35 million tonnes. The project will capture 1.1MCO₂/year.

Progress during 2012

- Design of the capture unit has been completed.
- The storage permits have been awarded.
- The final investment decision was due to be made in 2012 but has now been delayed to 2013.

Sleipner

Summary
The Sleipner project is based in the North Sea 250 kilometres west of Stavanger, Norway. The project operator is Statoil in partnership with Total and Exxon Mobile. It is a gas processing project, the only non-power project in the Network. The natural gas produced at the field is shipped via conventional amine capture of its high (1-3%) CO₂ content, and then the CO₂ is injected into a deep saline aquifer via a 2km pipeline. The project commenced in 1996 and has captured over 13Mt of CO₂ to date.

Progress during 2012

- The project joined the Network in 2012.
- Work continues to extend operations to include gas production from the Gudrun field, capturing and storing an additional 0.1-0.2 mtpa of CO₂.

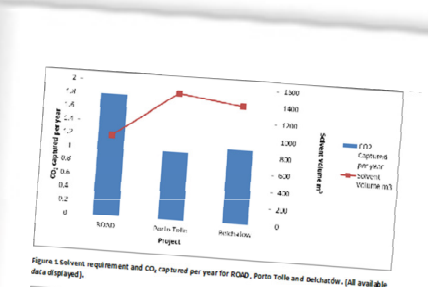


Figure 1 Solvent requirement and CO₂ captured per year for ROAD, Porto Tolle and Bontolovo. (All available data displayed).

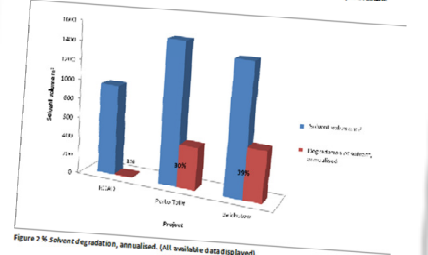


Figure 2 % Solvent degradation, annualised. (All available data displayed).

Amine emissions
The following data illustrates the gaseous emissions as fractions of the CO₂ stream under treatment. With the exception of Don Valley and Sleipner, the projects provided their planned flue gas data. Composite gave their results as a rate of gaseous release per second (g/s) and the other projects gave their data as a percentage volume of the total flue gas in flow (Figure xx).



The Network in Germany for the dissemination event



What are our challenges?

**The real challenge is in the operational
deployment of the projects!**

*The following issues are not true of all countries, but are a reflection of the problems faced by
the Network members as a whole*

👉 *Key issue: Policy uncertainty*

- 👉 Regional and national climate and energy policies must provide long-term **clarity on the way forward**.
- 👉 Incentive mechanisms should be consistent with this pathway.



✎ ***Key issue: Legal / regulatory frameworks burdens***

- ✎ Ensuring that projects are not unduly burdened with unquantifiable risks and liabilities would greatly aid deployment.
- ✎ For example, within the CCS Directive:
 - ✎ Transfer of responsibility.
 - ✎ Liability and financial security requirements.
 - ✎ Third party access requirement issues

✎ ***Key issue: Lack of appropriate investment and deployment mechanisms***

- ✎ Strong incentives and backing will need to be **urgently** introduced to enable the operation of first-mover CCS projects. Much more needs to be done.
- ✎ These must take into account the risk and large upfront costs experienced by project developers.
- ✎ If CCS is going to be developed quickly and at scale, suitably sized infrastructure for future clusters needs to be put in place.

✎ *Key risk: Public acceptance*

- ✎ The successful implementation of **European CCS demonstration projects** will be key in establishing a positive perception of CCS as an important part of an effective and efficient CO₂ emission reduction portfolio.



Conclusions

- ✎ The Network is an important international mechanism for providing peer support to projects, but fundamental political action and support is needed.
- ✎ The main challenge for the projects is progressing to the point of making a successful final investment decision.
- ✎ CCS in Europe is at a critical point. The projects require urgent political support to ensure Europe delivers on its goals of deploying CCS successfully, creating jobs and curbing GHG emissions.

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