Norwegian Carbon Capture and Storage Related Activities

Prepared by: Enden Dag Trygve, Ministry of Petroleum and Energy, Norway

The issue of carbon capture and storage is high on the Norwegian Government's agenda, both from the perspective of enhanced oil recovery and as a possible way of mitigating global climate change. Collaboration between industry and Government is taking place in order to develop CCS as a commercial viable alternative. Activities connected to development of new technologies for CO_2 capture and storage has been ongoing and increasing for several years in Norwegian companies and research institutions, in cooperation with the Norwegian authorities.

The industry has gained valuable experience from storage of CO_2 at the Sleipner field in the North Sea. Instead of releasing the CO_2 separated from the Sleipner West gas production, the CO_2 is injected in the Utsira formation 1000 metres beneath the seabed. This is the first time CO_2 removed from natural gas production has been injected offshore in a sub-surface reservoir. A million tonnes of CO_2 has been stored annually since 1996, and continuous monitoring shows no signs of leakage from the formation.

In 2006 production of LNG from the Snøhvit field will start. The CO_2 produced with the gas on the Snøhvit field is to be captured and stored 2,600 metres beneath the seabed at the edge of the reservoir. A total of 700,000 tonnes will be stored annually.

Strong collaboration between industry and authorities is necessary on a national and an international level in order to develop technologies for CCS. The Norwegian Government has established a new public facility, Gassnova, to promote technologies for carbon emission abatement and will be a main instrument in developing these technologies. The financing source for Gassnova's projects will be the returns from a gas technology fund of NOK 2 billions. In 2005 Gassnova will administer approximately NOK 100 million.

In addition, a national gas technology program, CLIMIT, is established, operational from January 2005. Gassnova and the Research Council of Norway will collaborate on this program. The program will prioritise research, development and testing of technologies for gas fired power plants with CO_2 capture and storage.

Norway participates in several international initiatives for Carbon Capture and Storage, among others is the Carbon Sequestration Leadership Forum, IEA-programmes and the EU 6^{th} framework for R&D programmes and projects.

Norway is taking part in several CSLF projects and is a lead part in the CO_2STORE project. The projects aim is to investigate the properties of new storage reservoirs in Denmark, Germany, Norway, and the UK. The project will also predict the long term fate of CO_2 at Sleipner (Utsira reservoir) and do further work on seismic and gravimetry as monitoring techniques.

Norway is participating in the CASTOR and the CO_2 Capture Project. The CASTOR project will perform risk assessment studies for four new European storage sites, among them is Snøhvit. The projects aim is reducing the costs of capture and separation of CO_2 (from 40-60€/ton CO_2 to 20-30€/ton), improving the performance, safety, and environmental impact of geological storage concepts, and, finally, validating the concept at actual sites. The CO_2 Capture Projects seeks to develop new technologies to reduce the cost of capturing CO_2 from combustion sources and safely store it underground.
Norway took initiative to establish an informal governmental forum for dialogue on CO_2 for EOR between Norway, Denmark and Great Britain. The forum will contribute to exchange of information on activities related to capture, storage and use of CO_2 between the countries.

Norway has also been actively seeking clarification on legal issues on storage of CO_2 in the OSPAR and London conventions.

Useful links:
www.oed.no
www.gassnova.no