

The Skagerrak-Kattegat CCS project – facing the challenge of regional CO2 handling

Industrial CO2 sources contributes approx. 25 % of total Scandinavian (N,DK,S) greenhouse gas emissions. The industry sources cover several branches, from petrochemicals, fertilizers, refineries, cement, pulp and paper as well as energy production thus facing different situations regarding competition and business challenges. The carbon emissions are both related to energy use and specific process sources.

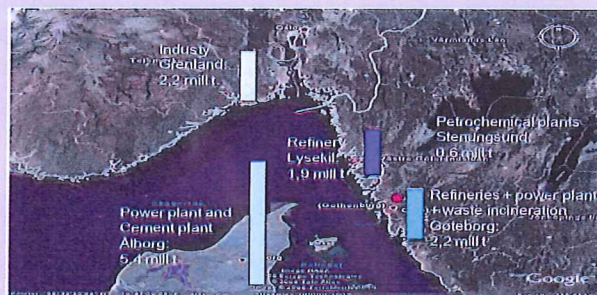
Industrial CCS – a key driver for low carbon production technologies

The industrial CO2 containing streams may vary in concentration, total pressure and are often distributed on several local point sources within each industrial site. In some cases there are business related drivers for separating the CO2 from the main product like in ammonia and fertilizer production, natural gas processing and conditioning etc, making more concentrated CO2 streams available. Carbon capture requires large quantities of energy, typically low quality steam for stripping as in post combustion technologies. Within large industrial sites there is still a considerable potential for waste heat recovery thus reducing the demand for import of energy to the CO2 capture plant.

The industry clusters typically form a significant part of the basis for local communities. This means long term employment, business for local sub suppliers and tax and fiscal incomes to the community as well as contributing to export values and the national GDPs. Facing a more demanding future, set by a low carbon regime, the industries need a common solution in order to minimize costs, find sustainable ways to carbon handling and avoid the threat of moving the whole industry to other locations in the third world.

The Skagerrak-Kattegat CCS project – a regional solution for southern Scandinavia

Within the Skagerrak-Kattegat basin several industrial clusters are located; and within a circle radius of 100 km approx. 13 mill tones of CO2 are emitted to the atmosphere from industry point sources larger than 500 kt CO2. There are further potential sources outside of this area which could be hooked up to a future CO2 transport system. There is thus a platform for looking into viable and cost effective transport systems, provided a safe CO2 storage site with sufficient storage capacity can be qualified. The catchable amount of CO2 from these sources will contribute with approx. 25 % of the national CO2 reduction targets in Scandinavia by 2020.



The project has a number of industrial partners and is linked with another CCS project ("Muligheter for lagring av CO2 i Skagerrak og østlige Nordsjø og på land i Danmark") aimed at looking more closely into storage alternatives within the Skagerrak-Kattegat region. These projects acknowledge the financial support from EU Interreg and Gassnova in addition to funding by industrial partners and local communities.

Typical for regional projects across national borders there will be several trans-boundary issues and legal matters that need to be analyzed, and this is properly addressed within the project. One of the targets in the project is to assess the access cost for the industries in this area for using the CO2 transport and storage infrastructure.

Addressing the whole carbon value chain and the framework for implementation

The Interreg IV A, KASK project address the whole CO2 value chain including capture at the industrial sites, finding an optimal CO2 transport infrastructure, using available geological and seismic data to identify the best located storage site and looking into the regulatory framework that must be in place to implement CCS in this region.

Further, communication is a separate work package within the project aimed at increasing the knowledge of CCS in the region and among the partners and trying to establish a Scandinavian forum for CCS in the region and prepare for what seems the next logic step on the road to CCS implementation.

The uniqueness of this project is to try and take a holistic view on CCS on a regional basis and come up with a viable carbon value chain to prepare industries in this area for a future low-carbon regime.

The main contributors within the project are Telemark Technology Centre in Porsgrunn, University of Oslo, Chalmers Technical University, Gothenburg and Gothenburg University.

Message to authorities and decision makers

The outcome of this project will contain several messages we hope will be helpful to all stakeholders and those who need to take decisions along the way to large scale CCS implementation.

First of all it is to acknowledge the value created by our industries and what needs to be done in order for them to prepare and survive in a future low-carbon regime where CCS probably will have a key role to play.

Secondly both national and regional authorities must ensure that the required framework and legal institutions will be in place and not be a barrier creating delays and uncertainty for industry players.

The intrinsic risk and uncertainty that is associated with all CCS projects must be acknowledged and the risks and burdens need to be balanced and shared with regard to future financing of the infrastructure and storage facilities that must be established.

For more project information please contact dag.bjornsen@tel-tek.no



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