Geological storage of carbon dioxide (CO_2)

2008/0015(COD) - 31/10/2019 - Follow-up document

The Commission presented a report on the implementation of Directive 2009/31/EC on the geological storage of carbon dioxide (CCS Directive).

This report constitutes the third CCS Directive implementation report covering the period of May 2016 - April 2019. It is based on the reports submitted by Member States and Norway. Only 22 countries submitted reports in time to be considered in this report.

The Commission stated that the provisions of the CCS Directive have been correctly applied across the reporting period in the EU Member States, which have submitted reports to the Commission by 30 June 2019.

The main findings are as follows:

Assessment of storage capacity

The Netherlands estimates a theoretical storage capacity of approximately 1.7Gt in the North Sea, primarily in depleted gas fields. The NORDICCS project reported storage capacity in Denmark in saline aquifers of 22GtCO2 and of 2Gt in hydrocarbon fields. Germany has estimated a storage capacity in selected major gas fields of approximately 75Gt CO2 and between 20 and 115Gt CO2 in saline aquifers. 80% of the aquifers are situated in States that ban storage.

Selection of storage sites

Few countries have determined new areas from which storage sites may or may not be selected. Norway has identified possible CO2 storage sites on the Norwegian shelf and published a compiled atlas of these sites. Czech Republic has considered one storage site LBr-1 for a pilot CCS project located in the south-east of the country.

Exploration and storage permits applications

An application for two storage permits and one update of a permit are under preparation as part of the Dutch CCS Porthos project. Norway has awarded an exploration permit for CO2 storage on the Norwegian Continental Shelf in January 2019. One application for exploration permit has been filed in Andalucia, Spain.

Feasibility for CCS retrofitting

The CCS Directive requires that when applying for license, operators have to assess the technical and economic feasibility of carbon capture, transport and storage. If the assessment is positive, space on the installation site must be set aside for the equipment necessary to capture and compress CO2. Such assessments were carried out in Estonia (one), France (one), Germany (six), Romania (six) and Poland (eight). The assessments find that CCS is not economically feasible.

Some further difficulties were found for some of the plants – in Estonia geological conditions are considered unfavourable, while in Germany plants do not have access to suitable storage sites. Despite low feasibility level in the assessments, most of the power plants (e.g in Poland, Estonia, Germany) are setting aside land for the installation of CO2 capture equipment.

CO2 transport and storage networks

The North Sea Basin Task Force with the UK, the Netherlands, Norway, Germany and Belgium and the Baltic Sea Region CCS network with Estonia, Germany, Finland, Norway and Sweden remain two main CCS regional networks that work to develop common, transboundary solutions for the transport and geological storage of CO2. The cooperation with Member States bordering the North Sea has been reported also under the projects of common interest (PCIs). Sweden is considering future cooperation primarily with Norway on storage as there is a number of private companies interested and currently investigating such an opportunity. CO2 hubs are under development in Fos-sur-Mer, le Havre and Dunkerque in France.

Conclusion

The Commission concluded that despite the continuous lack of positive assessment for technical and economic feasibility for CCS retrofitting, power plants are nevertheless setting aside land should the conditions change in the future. A considerable number of Member States and Norway continue to support or plan to support in the near future, through their national programmes or funds, research and demonstration activities on CCS. Furthermore, many countries are involved in a number of European research and collaborative projects.