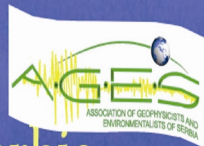


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Implementation of EU CCS Directive in European countries: recent progress and problems

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Summary

The EU CCS Directive transposition process and related problems in European countries, including EU member states, Norway and Croatia were monitored in the frame of EU FP7 project CGS Europe in 2011. The deadline for member states to bring into force the laws, regulations and administrative provisions was 25 June 2011. By the end 2011 the transposition of the Directive into national law was approved by the European Commission (EC) in Spain only, but was ready at national/ jurisdictional level in 13 more countries (Austria, Denmark, Estonia, France, Greece, Ireland, Italy, Latvia, Lithuania, Slovakia, Sweden, The Netherlands and UK) and two regions of Belgium. Romania, Bulgaria, Portugal, Slovenia and Czech Republic finished transposition of CCS Directive at the national level at the beginning of 2012. In January 2012 European Commission has assessed transposition of CCS Directive, and in addition to Spain more seven countries were accepted to be ready (Denmark, the Netherlands, Italy, France, Lithuania, Malta and Slovenia). Eight countries prohibited or planning to prohibit CO₂ storage permanently in their territory, except for research (Estonia, Ireland and Finland), or temporarily (Austria, Czech Republic, Denmark, Latvia, Poland, and Sweden). Italy and Belgium do not permit storage in selected areas. Storage capacity was estimated by CGS Europe project partners as „sufficient at national level“ by 17 countries, as „insufficient“ by five countries, as „no identified“ in Estonia and Finland and „not yet estimated“ in Austria and Sweden. The process of transposing CCS Directive into national law and its assessment by EC is still on-going in 2012.

Introduction

Directive 2009/31/EC (CCS Directive) of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide entered into force on 25 June 2009 and established a legal framework for the environmentally safe geological storage of carbon dioxide to mitigate climate change. The deadline for member states to bring into force the laws, regulations and administrative provisions was 25 June 2011, and the storage sites have to operate in accordance with this Directive by 25 June 2012 (Directive 2009/31/EC). The CCS Directive transposition process and related problems in European countries, including EU member states, Norway and Croatia were monitored in the frame of EU FP7 project CGS Europe in 2011 and updated at the beginning of 2012. The aims of the research were to analyse results of the transposition of the CCS Directive into national law, to compare the situation in the studied countries after the deadline, and to identify common and specific problems. During this study we had to take into account different geological, political and financial situations, climate and energy strategies, varying levels of research and technological development, and differences in public awareness and acceptance of CCS. The results of the study clarify the drivers and barriers to transposition, and prospects for implementation of CCS in Europe.

Results

By the end 2011 the transposition of the Directive into national law was approved by the European Commission (EC) for Spain only, but was ready at national/ jurisdictional level in 13 more countries (Austria, Denmark, Estonia, France, Greece, Ireland, Italy, Latvia, Lithuania, Slovakia, Sweden, The Netherlands and UK) and two regions of Belgium. Romania published their CCS laws in 2011 and additionally (according to EC requirements) at the beginning of 2012. Bulgaria, Portugal, Slovenia and Czech Republic transposed CCS Directive at the national level at the beginning of 2012 (Fig.1).

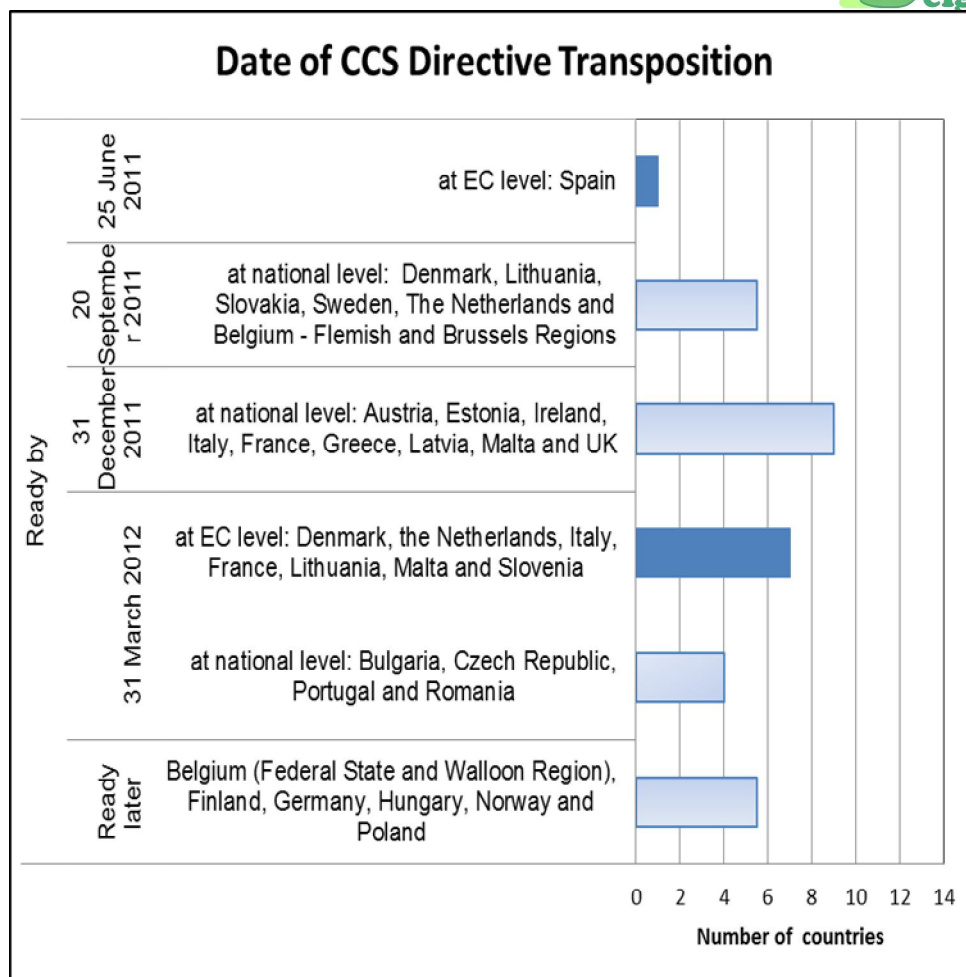


Figure 1 Date of the EU CCS Directive transposition in 27 countries at national and European Commission (EC) levels by 31st March 2012. By March 2012 there were eight EU countries where transposition of the CCS Directive was accepted by European Commission. Among them Spain, (which was ready and accepted before deadline 25 June 2011), Denmark, The Netherlands, Italy, France, Lithuania, Malta where the transposition of the CCS Directive was finalised by end 2011 and accepted by EC at the beginning of 2012, and Slovenia finalised the transposition both at national and EC level before March 2012.

Italy, France, Romania, Spain and The Netherlands permitted CO₂ storage (except for seismic areas in Italy) and support demonstration projects in their national climate and energy strategy. Lithuania, Slovakia and part of Belgium permitted CO₂ storage, but they have unclear prospects for CO₂ storage projects. Denmark temporarily forbids storage until 2020, but permits use offshore for EOR. Sweden temporarily forbids storage, but continues in 2012 to work on a law permitting offshore storage. Latvia temporarily forbids storage until 2013. Austria, Estonia, Ireland prohibited CO₂ storage in their territories. Among them Austria has not yet estimated its CO₂ storage capacity and Estonia has no capacity. Other EU States (Finland, Germany, Hungary and Poland) part of Belgium, Norway and Croatia continue their transposition process in 2012. Norway, Germany and Poland, countries with sufficient storage capacity and either operating or planned demonstration projects, did not finish the Directive transposition process in 2011 due to complications by on-going political debates, public opposition (Germany), ministerial elections and discussions (Poland).

In January 2012 European Commission has assessed transposition of CCS Directive, and in addition to Spain with fully transposed directive before deadline, more seven countries were accepted to be ready in directive transposition (Denmark, the Netherlands, Italy, France, Lithuania, Malta and

Slovenia). This means that a total of eight Member States (including Spain) had by January 2012 fully communicated their transposition mechanisms to the Commission. The process of transposing CCS Directive into national law and its assessment by EC is still on-going in 2012 (Fig.1).

In 2011, there were a total of 21 operating, developing and planned CCS pilot and demonstration projects, including capture and full chain CCS, in nine European countries (Italy, France, Germany, Norway, The Netherlands, Poland, Romania, Spain and UK). Unfavourable results of the CCS Directive transposition in Denmark and delays in Germany have since led to abandonment of two onshore projects planned by Vattenfall in these countries. According to EC requirements, countries have to transpose the CCS Directive in a full extent, including CO₂ storage site monitoring. Even countries decided to forbid storage at their territories have to take regulations including monitoring of the storage sites. As an exception from this requirement EC mentioned countries which do not have physical possibilities (capacity) for CO₂ storage (like Estonia, Finland, or part of Belgium).

Storage capacity was estimated by CGS Europe project partners as „sufficient at national level“ by 17 countries (Fig.2). Among them Norwegian partners stated that they can offer capacity to other countries for cross border storage. Storage capacity was estimated as „insufficient“ by five countries, as „no identified“ in Estonia and Finland and „not yet estimated“ in Austria and Sweden. After implementation of the CCS Directive into national laws, CO₂ storage capacity could be considered as a geological resource, which either has equal rights with other resources (like in Spain and France), or has the lower priority (Poland, Slovakia, Portugal). 16 countries reported that they have, or could have the conflict of interests. The conflict of interests is usually reported with hydrocarbons, drinking water, natural gas storage and geothermal resources.

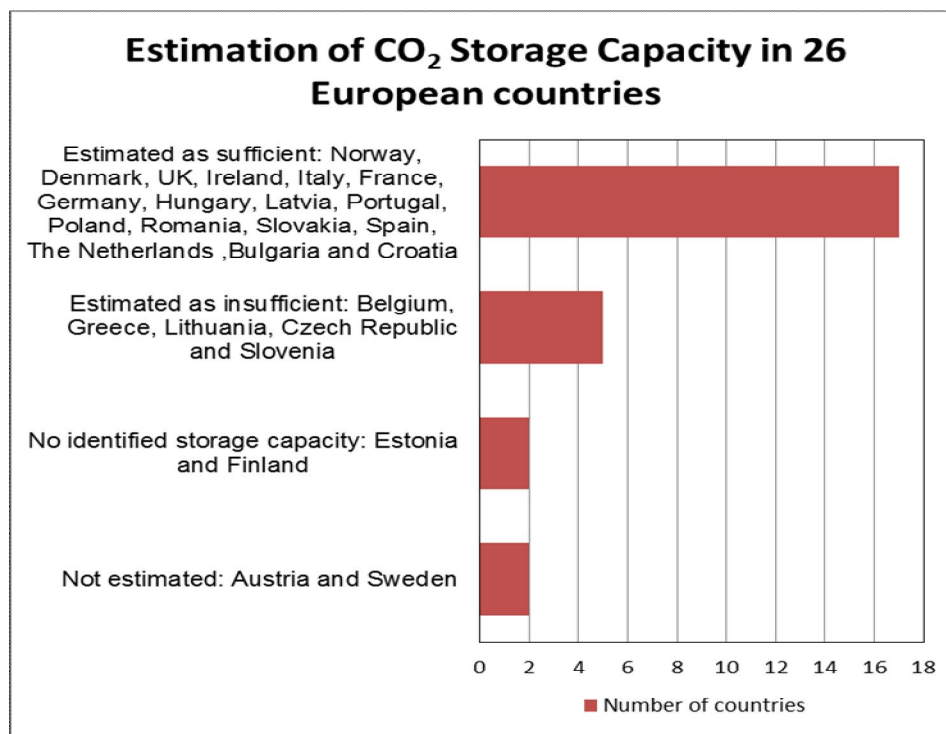


Figure 2 Estimation of CO₂ storage capacity in 26 European countries, as sufficient, insufficient or absent based on the approach of FP6 EU GeoCapacity project. Calculated capacity was compared with national large industrial emissions per year (more than 100 000 tonnes CO₂ per year) (Vangkilde-Pedersen & Kirk, 2009). All the identified storage sites should be capable of storing the lifetime emissions of the selected source point(s). In the present study we considered CO₂ storage capacity as sufficient if reported conservative estimates of storage capacity is enough for storage of large national emissions from industrial point sources during 25 years and more.

Conclusions

1. Many of the European countries made significant progress towards implementation of CCS technology through a national climate and energy strategy, research, transposition of the CCS Directive into national law and development of pilot and demonstration projects. However, the transposition process met various barriers and problems in a number of European States and was challenged by the on-going economic crisis.
2. By the end of 2011 EC confirmed the full transposition of the CCS Directive into national law only in Spain, but at the beginning of 2012 additionally seven countries was considered by EC to be also ready (Denmark, the Netherlands, Italy, France, Lithuania, Malta and Slovenia). Finland, Germany, Hungary, Poland, Norway and two regions of Belgium continue the transposition process after March 2012.
3. The countries with the most advanced level of CCS research and technology, CCS plans included in the energy and climate strategies, supported pilot and demo projects (Germany, UK, Norway, France, The Netherlands and Italy) did not use their advantages to finish CCS transposition before the EC deadline. Among these countries Italy, France, The Netherlands and UK managed to finish transposition at national level in 2011, while Germany and Norway postponed it to 2012. Nevertheless the situation in UK regarding implementation of CCS is one of the most promising in Europe, considering the published in December 2011 decision on governmental financial support of one billion pounds for demonstration projects and many on-going actions towards implementation of CCS technology in the country. The situation in Germany, where two versions of CCS Bill have been rejected in 2010 and 2011, seems to be the most problematic.
4. The high influence of Green parties and NGOs, and their ability to involve the public in debates negatively influenced the transposition process in Germany, and led to a ban on onshore storage in Denmark until 2020, and abandonment of the plans for onshore demonstration projects in Denmark (Nordjylland Coal Power Station) and Germany (Jämschwalde Lignite Power Station).
5. In the studied countries CO₂ storage capacity was estimated as sufficient in 17 countries, insufficient in five countries, and no capacity was found in two countries (Estonia and Finland). No estimations are available for Austria and Sweden.
6. Eight countries prohibited or planning to prohibit CO₂ storage permanently in their territory, except for research (Estonia, Ireland and Finland), or temporarily (Austria, Czech Republic, Denmark, Latvia, Poland, and Sweden). Italy and Belgium do not permit storage in selected areas.
7. Several countries took measures to prohibit CO₂ storage temporarily in order to wait with large scale deployment of CO₂ storage technology in their territories (Austria and Czech Republic), or by limiting the amount of permitted for storage CO₂ (Bulgaria), and to see the results of the demonstration projects (Poland).
8. The readiness of the CCS Directive transposition into national laws depends on different national conditions and problems, but does not directly correlate with national policy, financial situation or storage capacity.

References

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