Basic information

2008/0015(COD) COD - Ordinary legislative procedure (ex-codecision procedure) Directive	Procedure completed
Geological storage of carbon dioxide (CO2) Amending Directive 2000/60/EC 1997/0067(COD) Amending Directive 2001/80/EC 1998/0225(COD) Amending Directive 2004/35/EC 2002/0021(COD) Amending Regulation (EC) No 1013/2006 2003/0139(COD) Amending Directive 2006/12/EC 2003/0283(COD) Amending Directive 2008/1/EC 2006/0170(COD) Amended by 2016/0375(COD) Amended by 2016/0394(COD) **Subject** 3.70.02 Atmospheric pollution, motor vehicle pollution 3.70.03 Climate policy, climate change, ozone layer 3.70.13 Dangerous substances, toxic and radioactive wastes (storage, transport) 3.70.20 Sustainable development	

Key players

European Parliament

Committee responsible	Rapporteur	Appointed
ENVI Environment, Public Health and Food Safety	DAVIES Chris (ALDE)	21/02/2008

Committee for opinion	Rapporteur for opinion	Appointed
ITRE Industry, Research and Energy (Associated committee)	GROSSETÊTE Françoise (PPE-DE)	27/03/2008

Council of the European Union

Council configuration	Meetings	Date
Justice and Home Affairs (JHA)	2936	2009-04-06
Transport, Telecommunications and Energy	2913	2008-12-08
Transport, Telecommunications and Energy	2895	2008-10-09
Transport, Telecommunications and Energy	2854	2008-02-28
Transport, Telecommunications and Energy	2875	2008-06-06
Environment	2898	2008-10-20
Environment	2912	2008-12-04
Environment	2856	2008-03-03
Environment	2784	2008-06-05

European Commission	Commission DG	Commissioner
	Environment	DIMAS Stavros

Key events

Date	Event	Reference	Summary
23/01/2008	Legislative proposal published	COM(2008)0018	Summary
19/02/2008	Committee referral announced in Parliament, 1st reading		
28/02/2008	Debate in Council		Summary
03/03/2008	Debate in Council		Summary
10/04/2008	Referral to associated committees announced in Parliament		
05/06/2008	Debate in Council		Summary
06/06/2008	Debate in Council		Summary
07/10/2008	Vote in committee, 1st reading		Summary
09/10/2008	Debate in Council		
16/10/2008	Committee report tabled for plenary, 1st reading	A6-0414/2008	
20/10/2008	Debate in Council		Summary
04/12/2008	Debate in Council		
08/12/2008	Debate in Council		
16/12/2008	Debate in Parliament		
17/12/2008	Decision by Parliament, 1st reading	T6-0612/2008	Summary
17/12/2008	Results of vote in Parliament		
06/04/2009	Act adopted by Council after Parliament's 1st reading		
22/04/2009	End of procedure in Parliament		
23/04/2009	Final act signed		
05/06/2009	Final act published in Official Journal		

Technical information

Procedure reference	2008/0015(COD)
Procedure type	COD - Ordinary legislative procedure (ex-codecision procedure)
Procedure subtype	Legislation
Legislative instrument	Directive
Amendments and repeals	Amending Directive 2000/60/EC 1997/0067(COD) Amending Directive 2001/80/EC 1998/0225(COD) Amending Directive 2004/35/EC 2002/0021(COD) Amending Regulation (EC) No 1013/2006 2003/0139(COD) Amending Directive 2006/12/EC 2003/0283(COD) Amending Directive 2008/1/EC 2006/0170(COD)

	Amended by 2016/0375(COD) Amended by 2016/0394(COD)
Legal basis	EC Treaty (after Amsterdam) EC 175-p1
Stage reached in procedure	Procedure completed
Committee dossier	ENVI/6/58793

Documentation gateway

European Parliament

Document type	Committee	Reference	Date	Summary
Committee draft report		PE407.716	05/06/2008	
Amendments tabled in committee		PE409.630	18/07/2008	
Amendments tabled in committee		PE409.631	24/07/2008	
Amendments tabled in committee		PE409.632	24/07/2008	
Committee opinion	ITRE	PE404.776	15/09/2008	
Committee report tabled for plenary, 1st reading/single reading		A6-0414/2008	16/10/2008	
Text adopted by Parliament, 1st reading/single reading		T6-0612/2008	17/12/2008	Summary

Council of the EU

Document type	Reference	Date	Summary
Draft final act	03739/2008/LEX	23/04/2009	

European Commission

Document type	Reference	Date	Summary
Document attached to the procedure	COM(2008)0013	23/01/2008	
Legislative proposal	COM(2008)0018	23/01/2008	Summary
Document attached to the procedure	COM(2008)0030	23/01/2008	Summary
Document attached to the procedure	SEC(2008)0054	23/01/2008	
Document attached to the procedure	SEC(2008)0055	23/01/2008	
Commission response to text adopted in plenary	SP(2009)402	29/01/2009	
Follow-up document	COM(2014)0099	25/02/2014	Summary
Follow-up document	COM(2015)0576	18/11/2015	Summary
	SWD(2015)0246		

Follow-up document		18/11/2015	
Follow-up document	COM(2017)0037	01/02/2017	Summary
Follow-up document	COM(2019)0566	31/10/2019	Summary
Follow-up document	COM(2023)0657	24/10/2023	

Other institutions and bodies

Institution/body	Document type	Reference	Date	Summary
EESC	Economic and Social Committee: opinion, report	CES1203/2008	09/07/2008	

Additional information

Source	Document	Date
National parliaments	IPEX	
European Commission	EUR-Lex	

Final act

Directive 2009/0031
OJ L 140 05.06.2009, p. 0114 Summary

Geological storage of carbon dioxide (CO_2)

2008/0015(COD) - 25/02/2014 - Follow-up document

The Commission presents a report on the implementation of Directive 2009/31/EC on the geological storage of carbon dioxide (CCS), based on Member States' reports sent to the Commission between July 2011 and April 2013.

General progress on the implementation of the CCS Directive: the report shows that all Member States notified transposition measures to the Commission (the date set for transposition was 25 June 2011.)

- Whilst the majority of Member States have completed transposition of the Directive; Austria, Cyprus, Hungary, Ireland, Sweden and Slovenia **have not yet notified complete transposing measures**. On account of this partial non-communication the Commission addressed reasoned opinions to these six Member States in November 2013 and will check that the meaures are finalised by spring 2014.

- Member States took **different approaches to the transposition of the CCS Directive**. While several decided to only amend existing legislation, most Member States opted for a **combination of new specific legislation on the geological storage of CO2 and amendments to existing legislation**. 17 Member States made amendments to their environmental legislation and eight of these made changes also to their mining legislation.

- **Most Member States assigned responsibilities to multiple authorities, as CCS intersects with a number of different regulatory areas**. The most frequently chosen competent authorities are environmental bodies (18 Member States), followed by institutions responsible for the fields of economy, energy and mining.

- **The assessment of potential CO2 storage sites is ongoing**, with several Member States issuing exploration permits and the Commission reviewing the draft permit issued by the Netherlands for intended permanent storage of up to 8.1 Mt CO2 in a storage reservoir on the Dutch continental shelf. An appraisal of CO2 storage capacity was provided by **the EU GeoCapacity project**, which estimated for the 21

participating Member States theoretical storage potential of 87 Gt CO2 (69 Gt in deep saline aquifers, 17 Gt in depleted hydrocarbon fields and 1 Gt in unmineable coal beds).

- **Member States that authorise CO2 storage on their territory** have communicated implementation of the provisions on monitoring, reporting and inspections, leakages and significant irregularities, closure and post-closure obligations, as well as the two financial mechanisms established by the CCS Directive.

- Some Member States have reported a decision not to allow CO2 storage on their territory due to unsuitability of their geology for CO2 storage (Finland, Luxembourg and the Brussels Capital Region of Belgium). Some other Member States have also not allowed geological storage of CO2 (Austria, Estonia, Ireland, Latvia, Slovenia, Sweden) or restricted it (Czech Republic, Germany). As regards Member States which restrict or prohibit CO2 storage on their territory, some transposed only the provisions of the Directive that deal with capture and transport aspects of CCS, while others transposed all the provisions of the Directive, including the storage related Articles.

Ensuring consistent implementation of the CCS Directive across the EU: the report notes that assessments made in the context of the EU's Roadmap for moving to a competitive low carbon economy in 2050 and the Energy Roadmap 2050 see CCS, if commercialised, as an important technology contributing to the transition to a low carbon energy system in the EU.

The Commission underlines the importance of consistent implementation of the CCS Directive across the EU, in particular regarding the selection, operation, closure and post-closure of storage sites and the assessment to retrofit large combustion plants for CO2 capture. It therefore **pursues infringement cases for partial non-communication of transposing measures and it is checking whether the notified measures conform in substance to the CCS Directive.**

In addition to checking the transposition of the CCS Directive and reviewing draft storage permits, the Commission performs other activities in order to support consistent implementation of the CCS Directive throughout the EU. In September 2009 **an Information Exchange Group of experts from Member States** was set up. In March 2011 **four guidance documents** were published with a view to providing an overall methodological approach to implementation of the key provisions of the CCS Directive.

The next Commission report, will be transmitted to the European Parliament and the Council by 31 March 2015.

Geological storage of carbon dioxide (CO_2)

2008/0015(COD) - 18/11/2015

The Commission adopted **the climate action progress report**, including the report on the functioning of the European carbon market and the report on the review of Directive 2009/31/EC on the geological storage of carbon dioxide.

The main conclusions of the report are as follows:

Progress towards meeting the Europe 2020 targets and the Kyoto Protocol targets: the report notes that the EU is **currently on track** towards meeting its Europe 2020 greenhouse gas reduction target as well as its Kyoto Protocol targets:

- according to most recent estimates, in 2014 total EU greenhouse gas (GHG) emissions covered by the 2020 Climate and Energy Package were **23% below the 1990 level and decreased by 4% compared to 2013;**
- according to the projections with existing measures provided by Member States in 2015, emissions are estimated to be **24% lower** in 2020 than they were in 1990.
- **for all but four Member States** (Luxembourg, Ireland, Belgium and Austria), projected emissions in 2020 are below the domestic targets set under the Effort Sharing Decision.

Further measures needed: according to the projections with existing measures provided by Member States, total EU GHG emissions in 2030 are estimated to be 27% below 1990 levels. Additional measures are needed for the EU to meet the target of a domestic reduction in greenhouse gas emissions of **at least 40 %** by 2030 compared to 1990.

To address this, the Commission has proposed a revision of the EU Emissions Trading System (EU ETS) in July 2015. In the first half of 2016, the Commission will also make proposals on the implementation of the non-ETS emissions reduction target of 30% compared to 2005.

Continued successful decoupling of economic activity and GHG emissions: the EU continues to successfully decouple its economic growth from its GHG emissions. During the 1990-2014 period, the **EU's combined GDP grew by 46%, while total GHG emissions** (excluding LULUCF and including international aviation) **decreased by 23 %.** In particular, the implementation of the 2020 Climate and Energy Package has resulted in a **significant increase in renewable energy** and **progress in energy efficiency**. Both of these are the key drivers behind the observed reduction in emissions, with the carbon price acting as driving force expected to be progressively stronger in the future.

The report indicates that the Commission is also rolling out the initiatives planned under the 'Framework strategy for a resilient Energy Union with a forward-looking climate policy'. There are upcoming proposals on measures related to areas including renewable energy, energy efficiency, transport, and research and development. Furthermore, the Commission is working on the implementation the Energy Union.

Carbon Capture and Storage: the Commission has carried out an evaluation on the Carbon Capture Storage (CCS) Directive and concluded that the Directive is fit-for-purpose and sets up the necessary regulatory framework to ensure the safe capture, transport and storage of carbon dioxide while allowing the Member States sufficient flexibility.

The report on the review of the CCS Directive, as required under its Article 38, is included in the annex to this report. It addresses the evaluation of the Directive's performance, effectiveness, efficiency, coherence, relevance and EU-added value under the Commission's REFIT programme.

Geological storage of carbon dioxide (CO_2)

2008/0015(COD) - 17/12/2008 - Text adopted by Parliament, 1st reading/single reading

The European Parliament adopted by 623 votes to 68 with 22 abstentions, a legislative resolution amending the proposal for a directive of the European Parliament and of the Council on the geological storage of carbon dioxide and amending Council Directives 85/337/EEC, 96/61/EC, Directives 2000/60/EC, 2001/80/EC, 2004/35/EC, 2006/12/EC and Regulation (EC) No 1013/2006. The report had been tabled for consideration in plenary by Chris DAVIES (ADLE, UK), on behalf of the Committee on the Environment, Public Health and Food Safety. The amendments were the result of a compromise between the Council and the Parliament. MEPS secured the funding of demonstration projects by ensuring that 300 million ETS allowances will be awarded to large scale CCS projects in the EU.

The main amendments - adopted under the 1st reading of the codecision procedure - were as follows:

Objective: the compromise text clarifies that the directive establishes a legal framework for the environmentally safe geological storage of carbon dioxide to contribute to the fight against climate change. The purpose of environmentally safe geological storage of CO2 is permanent containment of CO2 in such a way as to prevent and, where this is not possible, eliminate as far as possible negative effects and any risk to the environment and human health.

Scope and prohibition: the Directive shall not apply to geological storage of CO2 undertaken for research, development or testing of new products and processes with a total intended storage below 100 kilo tonnes. Furthermore, the storage of CO2 in a storage site with a storage complex extending beyond the frontiers of the EU will not be permitted.

Selection of storage sites: Member States retain the right to determine the areas from which storage sites may be selected pursuant to the requirements of this Directive. This includes the right of Member States not to allow for any storage in parts or in the whole of their territory. Member States who intend to allow geological storage of CO2 in their territory shall undertake an assessment of the storage capacity available in parts or in the whole of their territory, including by allowing exploration pursuant to the Directive. The Commission may organise an exchange of information and best practices between those Member States. A geological formation shall only be selected as a storage site, if under the proposed conditions of use there is no significant risk of leakage, and if no significant environmental or health risks exist.

Exploration permits: the procedures for the granting of exploration permits must be open to all entities possessing the necessary capacities and permits must be granted or refused on the basis of objective, published and non-discriminatory criteria. The duration of a permit should not exceed the period necessary to carry out the exploration for which it is granted. However, Member States may prolong the permit where the stipulated duration is insufficient to complete the exploration in question and where the exploration has been performed in accordance with the permit. Exploration permits shall be granted for a limited volume area

Storage permits: no storage site may be operated without a storage permit, and there shall be only one operator for each storage site, and no conflicting uses must be permitted on such site. Priority for the granting of a storage permit for a given site shall be given to the holder of the exploration permit for that site, provided that the exploration of that site is completed, that any condition set in the exploration permit has been complied with, and that the application for a storage permit is made during the period of validity of the exploration permit.

Applications for storage permits : applications to the competent authority for storage permits shall include at least the prescribed information, inter alia: (i) the total quantity of CO2 to be injected and stored, as well as the prospective sources and transport methods, the composition of CO2 streams, the injection rates and pressures, and the location of injection facilities; (ii) description of measures to prevent significant irregularities; (iii) proof that the financial security or other equivalent provision as required will be valid and effective before commencement of injection .

Conditions for storage permits: the competent authority shall only issue a storage permit if certain conditions are met and the compromise text stresses the financial soundness of the operator. It also requires that in the case of more than one storage site in the same hydraulic unit, the potential pressure interactions are such that both sites simultaneously can meet the requirements of the Directive.

Commission review of draft storage permits: Member States shall make the permit applications available to the Commission within one month after receipt. They shall also make available other related material that shall be taken into account by the competent authority when it seeks to make a decision on the award of a storage permit. They shall inform the Commission of all draft storage permits and any other material taken into consideration for the adoption of the draft decision. Within four months after receipt of the draft storage permit, the Commission may issue a non-binding opinion on it. If the Commission decides not to issue an opinion, it shall inform the Member State within one month of submission of the draft permit and state its reasons.

Monitoring: Member States shall ensure that the operator carries out monitoring of the injection facilities, the storage complex (including where possible the CO2 plume), and where appropriate the surrounding environment for the purpose of, inter alia, detecting significant irregularities and updating the assessment of the safety and integrity of the storage complex in the short- and long-term including the assessment of whether the stored CO2 will be completely and permanently contained.

Inspections: competent authorities must organise a system of routine and non-routine inspections of all storage complexes. Routine inspections shall be carried out at least once a year until three years after closure and every five years until transfer of responsibility to the competent authority has occurred. They shall examine the relevant injection and monitoring facilities as well as the full range of relevant effects from the storage complex on the environment and on human health.

Transfer of responsibility: where a storage site has been closed all legal obligations relating to monitoring and corrective measures pursuant to the requirements laid down in this Directive, the surrender of allowances in cases of leakage and preventive and remedial action, shall be transferred to the competent authority on its own initiative or upon request from the operator, if certain conditions are met. These include whether a minimum period, to be determined by the competent authority has elapsed. This minimum period shall be no shorter than 20 years, unless the competent authority is convinced that all available evidence indicates that the stored CO2 will be completely and permanently contained.

When the competent authority is satisfied that the conditions are met, it shall prepare a draft decision of approval of the transfer of responsibility which will specify the method for determining that the site has been sealed and the injection facilities have been removed, as well as any updated requirements for the sealing of the storage site and for the removal of injection facilities. In cases where there has been fault of the operator, including cases of deficient data, concealment of relevant information, negligence, wilful deceit or malpractice the competent authority shall recover from the former operator the costs incurred after the transfer of responsibility has taken place.

Financial mechanism: the operator, on the basis of modalities to be decided by Member States, must make a financial contribution available to the competent authority before the transfer of responsibility has taken place. The contribution from the operator shall take into account those criteria referred to in Annex I and elements relating to the history of storing CO2 relevant to determining the post-transfer obligations, and cover at least the anticipated cost of monitoring for a period of 30 years. This financial contribution may be used to cover the costs borne by the competent authority after the transfer of responsibility to ensure that the CO2 is completely and permanently contained in geological storages sites after the transfer of responsibility.

Information to the public: Member States shall make available to the public the elements relating to the geological storage of CO2 in accordance with applicable Community legislation.

Review: the Commission shall transmit to the European Parliament and to the Council a report on the implementation of this Directive within nine months of receiving Member States' reports. In the report that intervenes by 30 June 2015 on the basis of experience with the application of this Directive, in light of the experience with CCS and taking into account technical progress and the most recent scientific knowledge the Commission shall assess, in particular:

- whether permanent containment of CO 2 in such way as to prevent and reduce as far as possible negative effects on the environment and any resulting risk to human health and the environmental and human safety of CCS has been sufficiently demonstrated;;

- whether the procedures regarding the Commission's reviews of the draft storage permits (Article 10) and the draft decisions on transfer of responsibility (Article 18) are still required;

- experience with the provisions on CO2 stream acceptance criteria and procedure;

- experience with the provisions on third-party access and with the provisions on transboundary cooperation;

- the provisions applicable to combustion plants with a rated electrical output of 300 megawatts or more;

- prospects for geological storage of CO2 in third countries;

- further development and update of the criteria referred to in Annex I and Annex II;

- experience with incentives for applying CCS on installations combusting biomass;

- the need for further regulation on environmental risks related to CO2 transport;

and will present a proposal for revision of the Directive if appropriate.

Where permanent containment of CO2 in such way as to prevent and, where this is not possible, eliminate as far as possible negative effects and any risk to the environment and human health, and the environmental and human safety of CCS have been sufficiently demonstrated, as well as its economic feasibility, the review shall examine whether it is needed and practicable to establish a mandatory requirement for emission performance standards for new electricity-generating large combustion installations.

Transposition: 2 years after publication.

Geological storage of carbon dioxide (CO_2)

2008/0015(COD) - 23/01/2008 - Legislative proposal

PURPOSE: to establish a legal framework for the geological storage of carbon dioxide (CO2).

PROPOSED ACT: Directive of the European Parliament and of the Council.

BACKGROUND: on 10 January 2007, the Commission adopted an integrated package of measures in the area of energy and climate change, inviting the Council and the European Parliament to approve:

- an EU commitment to reduce greenhouse gas emissions by at least 20% by 2020 compared to 1990 levels, as well as the aim for a 30% reduction by 2020, subject to the conclusion of an international agreement on climate change;
- a binding target for the EU of a 20% share of renewable energy sources in energy consumption by 2020, and a 10% target for biofuels.

This strategy was approved by the European Parliament and EU leaders during the March 2007 European Council. The European Council invited the Commission to present concrete proposals, particularly on the provisions for sharing the effort between Member States to achieve this objective. The series of measures presented is the response to this invitation. It includes a proposed set of key interdependent measures to be taken, as outlined below:

- a proposal for a directive amending Directive 2003/87/EC, to improve and extend the European Union Greenhouse Gas Emission Trading Scheme (see COD/2008/0013);
- a proposal for a decision on the effort to be made by Member States to reduce their greenhouse gas emissions, in order to respect the Community's commitments to reduce these emissions by 2020 (see COD/2008/0014);
- a proposal for a directive aiming to promote renewable energy (see COD/2008/0016).

Included among the proposals that make up this set of measures are: a proposal for a regulatory framework on carbon capture and storage; a communication on the demonstration of carbon capture and storage; and a new Community framework on State aid in the area of the environment.

CONTENT: Energy efficiency and renewables are in the long term the most sustainable solutions both for security of supply and climate. However, we cannot reduce EU or world CO2 emissions by 50% in 2050 if we do not also use the possibility to capture CO2 from industrial installations and store it in geological formations (carbon dioxide capture and storage, or CCS).

This legal framework is designed to ensure that CO2 capture and storage is an available mitigation option, and that it is done safely and responsibly. The proposal ensures that CO2 capture is regulated under Directive 96/61/EC, concerning integrated pollution prevention and controlfor certain industrial activities, and that both CO2 capture and pipeline transport are regulated under Directive 85/337/EEC, concerning the assessment of the effects of certain public and private projects on the environment. Its main objective, however, is the regulation of CO2 storage and the removal of barriers in existing legislation to CO2 storage.

The proposal specifies that the objective of geological storage is permanent containment, and that storage in the water column is prohibited. This shall not apply to geological storage of CO_2 undertaken for research, development or testing of new products and processes.

As regards site selection and exploration permits, the proposal stipulates that Member States determine the areas to be made available for storage, the conditions for site use, and the provisions governing exploration.

The proposal provides for review of draft permit decisions on storage by the Commission. The Commission may offer an opinion, which the competent authority would take into account in making its permitting decision.A further provision relevant in this context is the conferring of the Environmental Impact Assessment Directive (85/337/EEC as amended by 97/11/EC) on CO2 storage sites in Article 29 (paragraph 1, point b), which ensures impact assessment and public consultation.

The proposal also covers operation, closure and post-closure obligations, including CO2 acceptance criteria, monitoring and reporting obligations, inspections, measures in case of irregularities and/or leakage, and provision of a financial security.

One chapter establishes provisions concerning transport and storage. Finally, general provisions take account of the competent authority, cross-border cooperation, penalties, reporting and the relevant comitology procedures.

Annex I specifies detailed criteria for the requirements on site characterisation and risk assessment of Article 4. Annex II specifies detailed criteria for monitoring requirements of Article 13.

Geological storage of carbon dioxide (CO_2)

2008/0015(COD) - 05/06/2008

The Council held a public debate on key aspects of the climate change and renewable energy legislative package. Ministers confirmed the need to achieve ambitious objectives in the fight against climate change whilst preserving European potential for economic growth.

EU member states and the Commission stressed the importance of reaching a timely agreement with a view to facilitating a broader convergence on a global scale, in the run-up to the international meeting to take place in Copenhagen in December 2009.

The discussions concentrated on key aspects of the package, namely:

On the EU emission trading system (ETS) review:

- the allocation method; redistribution and use of auctioning proceeds and rules for auctioning,
- risks of "carbon leakage": relocation of energy-intensive industries outside the EU,
- EU-wide cap: replacement of the current system of national allocation plans by the setting of an EU-wide cap,
- reference year or period to be used for verified emissions data,
- new entrants reserve: quantity of allowances set aside for new entrants,
- small installations: size of installation to be potentially excluded from the scope of the ETS.

On effort-sharing (amongst member states in sectors not covered by the ETS):

- scope: sectors not to be covered by the EU ETS,
- reference year or period for calculating the reduction targets per country,

- intermediate targets: effectiveness of using indicative or compulsory intermediate targets;
- on cross-cutting issues between EU ETS review and effort-sharing,
- trigger 20-30%: adjustment clause enabling the EU to move from the independent 20% commitment to a more ambitious target to which a future international agreement will commit the EU,
- degree of flexibility for member states to meet their commitments in a cost-efficient way.

On carbon capture and storage (CCS):

- storage permits,
- composition of CO2 stream,
- transfer of responsibility after closure of a storage site,
- modalities of the financial security provision to be made by applicants for storage permits,
- conditions of access to transport networks,
- capture readiness.

On sustainability criteria for biofuels:

- minimum greenhouse gas emission saving requirement,
- environmental and social criteria,
- methodology for calculating the greenhouse gas emission saving.

Geological storage of carbon dioxide (CO_2)

2008/0015(COD) - 03/03/2008

The Council held a policy debate on key aspects of the climate action and energy legislative package with a view to the adoption of political guidelines to be given by the European Council on 13 and 14 March 2008. The European Council conclusions will provide guidance for further examination of the package.

Other questions related specifically to the EU emissions trading system (ETS), the non-ETS sectors and to the proposed framework for geological storage of carbon dioxide. At the end of the meeting, the presidency summarised the outcome of the debate as follows:

- the presentation of the climate action and renewable energy package by the Commission is a welcome response to the objectives and targets endorsed by the EU heads of state and government last year;
- Ministers welcome the direction of the proposed new design features of the EU ETS, such as the increased harmonisation of allocation, including the use of auctioning, as a way of enhancing the cost-effectiveness of the required emission reductions. In this respect, the need to anticipate greater flexibility for the realisation of different objectives was identified;
- carbon leakage remains a key concern that should be addressed appropriately;
- it will be important to clarify the methodology used to determine the reduction of emissions and the objectives in terms of renewable energies;
- work on the ETS review by the EU, the sharing of the non-ETS effort, the framework for storage of carbon dioxide and renewable energy sources must progress at the same rate;
- there is a need to make headway on the technical issues as quickly as possible in order to reach a final agreement with the European Parliament in early 2009 at the latest.

Ministers held an exchange of views on the international aspects of the package with Mr Yvo de Boer, Executive Secretary of the UN Climate Convention. The package contains the following proposals:

- a Directive amending Directive 2003/87/EC in order to improve and extend the EU greenhouse gas emission allowance trading system;
- a Decision on the effort of EU Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020;
- a Directive on the promotion of the use of renewable energy sources;
- a Directive on the geological storage of carbon dioxide.

The legislative package, to be examined under the Parliament-Council codecision procedure, was presented by the Commission with a view to implementing the objectives, targets and commitments undertaken by EU heads of state and government in March 2007:

- a 20% reduction of greenhouse gas emissions by 2020 compared to 1990;
- a 30% reduction in greenhouse gas emissions by 2020 compared to 1990 as its contribution to a global and comprehensive post-2012 agreement;
- saving 20% of the EU's energy consumption compared to projections for 2020;
- a 20% share of renewable energies in overall EU energy consumption by 2020;
- a 10% minimum target for the share of biofuels in overall EU transport petrol and diesel consumption by 2020;

- to develop and define the necessary technical, economic and regulatory framework to bring environmentally safe carbon dioxide capture and sequestration to deployment with new fossil-fuel power plants.

Geological storage of carbon dioxide (CO_2)

2008/0015(COD) - 23/01/2008

In a communication entitled “Europe's climate change opportunity”, the Commission recalls that 2007 marked a turning point for the European Union's climate and energy policy. Europe showed itself ready to give global leadership: to tackle climate change, and to face up to the challenge of providing secure, sustainable and competitive energy.

Two key targets were set by the European Council:

1) A reduction of at least 20% in greenhouse gases (GHG) by 2020 – rising to 30% if there is an international agreement committing other developed countries to "comparable emission reductions and economically more advanced developing countries to contributing adequately according to their responsibilities and respective capabilities";

2) A 20% share of renewable energies in EU energy consumption by 2020.

The European Council agreed that the best way to reach such ambitious goals was for every Member State to know what was expected, and for the goals to be legally binding. This meant that the levers of government could be fully mobilised, and the private sector would have the long-term confidence required to justify the investment needed to transform Europe into a low-carbon, high energy efficiency economy.

At the United Nations Climate Change Conference in Bali in December 2007, the European Union was able to play a pivotal role in securing agreement on the roadmap towards a new comprehensive agreement on cutting emissions to be reached by 2009.

The next step is to translate the European Union's political direction into action. The package of measures proposed by the European Commission thus represents a coherent and comprehensive path to preparing Europe for the transition towards a low-carbon economy.

The proposals rest on **five key principles**:

1) The targets must be met: to assure Europeans of the reality of change, to convince investors to invest, and to show the EU's seriousness of intent to partners worldwide. The proposals must therefore be effective and strong enough to be credible, with mechanisms for monitoring and compliance in place;

2) The effort required from different Member States must be fair. In particular, some Member States are more able than others to finance the necessary investments. The proposals must be flexible enough to take account of Member States' different starting points and different circumstances;

3) The costs must be minimised: with a design tailor-made to limit the price tag of adaptation for the EU economy. The costs of change and the consequences for the Union's global competitiveness, employment and social cohesion need to be kept at the forefront in designing the right structure;

4) The EU must drive on beyond 2020 to further reduce greenhouse gases to meet the target of halving global emissions by 2050. That means stimulating technological development and ensuring that the system can benefit from newly available technologies;

5) The EU must do everything possible to promote a comprehensive international agreement to cut greenhouse gas emissions. The proposals are conceived to show that the Union is ready to take further action as part of an international agreement, and will establish more ambitious targets in the reduction of greenhouse gas emissions (stepping up from the 20% minimum target to a more ambitious 30% reduction).

In its Communication, the Commission lists the main instruments to achieve the set objectives:

Updating the Emissions Trading System (ETS): the European Union Emissions Trading System has proved a pioneering instrument to find a market-based solution to incentivise cuts in greenhouse gas emissions. However, a review of the ETS has shown that it needs to be strengthened and updated if it is to meet its new objectives.

Reducing greenhouse gas emissions beyond the ETS: since the revised ETS will only cover less than half of the GHG emissions, an EU framework is needed for national commitments to cover the remaining emissions – covering areas like construction, transport, agriculture, waste and industrial plants falling under the threshold for inclusion in the ETS. The target for these sectors would be a 10% reduction in emissions from 2005 levels, with specific targets for each Member State .

Promoting renewable energy: today, the share of renewable energy in the EU's final energy consumption is 8.5%. An increase of 11.5% is needed on average to meet the target of 20% in 2020. Member States enjoy different possibilities to deploy renewable energy, and the efforts required to reach the 20% share of renewable energy in the EU's overall energy consumption need to differ between the Member States. The Commission's proposal is based on a methodology according to which half of the additional effort is shared equally between Member States. The other half is modulated according to GDP per capita. The European Council also decided to fix a specific minimum target for sustainable biofuels of 10% of overall petrol and diesel consumption.

The role of energy efficiency: the EU goal of saving 20% of energy consumption by 2020 through energy efficiency is a crucial part of the puzzle. It would save the EU some € 100 billion and cut emissions by almost 800 million tonnes a year. Transport, buildings and more efficient power generation, transmission and distribution all offer opportunities which need to be stimulated through a mixture of legislation and information. Product standards can be used to bring more efficiency to a wide range of goods, from televisions to cars and heaters to streetlights. Better labelling also plays an important role.

Looking beyond 2020 - galvanising the potential for deeper cuts in emissions: over the past ten years, technology has developed swiftly. Renewable energy technologies are making wind and solar energy more commercially viable than ever before. Energy efficiency is now being mainstreamed into

products. But this process must be accelerated if Europe's goals for climate and energy are to be met and if the commercial potential of these technologies is to be exploited to the full. Climate change and energy have been earmarked as likely primary areas on which the European Institute of Technology could focus its attention.

Carbon capture and storage (CCS): for Europe,the target of halving 1990 GHG emissions by 2050 will never be met unless the energy potential of coal can be exploited without increasing emissions. That is why the European Council backed early action to make CCS the technology of choice for new power plants, including the setting up of up to 12 demonstration plants by 2015. European legislation is needed to provide the right framework for CCS to work in the internal market and factor the benefits of CCS for the ETS.

Bringing about change: to meet the EU's goals at minimum cost, the Commission's proposals build on the experience of the Emissions Trading System and leave the market to drive as much as possible. It also retains as much flexibility for national decision as possible within the constraints of specific national targets. Member States should have the freedom to determine their own energy mix and to promote renewable energy in different ways. Lastly, new state aid guidelines will provide a framework setting out how Member States can use aid to promote a higher level of environmental protection, notably in the field of energy.

The particular needs of energy-intensive industries: energy-intensive industries face a particular challenge during the transition to a climate-friendly economy. A comprehensive international agreement would address this problem. However, in the absence of such an agreement, or of significant unilateral action by competitors in energy-intensive sectors, the EU must take action to ensure a level playing field. Consequently, the Commission’s proposals put in place provisions to allow action to be taken.

The capacity to invest: the European Council recognised that the ambition of the proposals will make real demands on all Member States. The Commission has therefore carefully assessed the economic impact of the proposals against the capacity of each Member State to make the investment required. With the overall cost to the European economy estimated at just under 0.5% of GDP by 2020, the Commission believes that no Member State should be asked to make an investment which diverges too far from this broad average. With this in mind, the specific requirements asked of each Member State have been modulated to allow for a realistic level of investment from lower-income Member States.

Geological storage of carbon dioxide (CO_2)

2008/0015(COD) - 20/10/2008

The Council held an in-depth discussion of the three draft legislative measures within their competence, i.e. the review of the EU greenhouse gas emission allowance trading system (EU ETS); effort sharing outside the EU ETS and the Directive on the capture and storage of carbon.

The discussion brought out the clear will to succeed in arriving at an agreement with the European Parliament by the end of 2008 so that a first-reading could be reached before the end of the current legislature.

The Council intends to step up its discussions in close collaboration with the Commission so that the EU may continue to have a leading role in combating climatic change at international level. With this in mind, the Presidency instructed the Permanent Representatives Committee to prepare the negotiations on the package with the European Parliament without delay, in order to come to an agreement at first reading.

Discussions related principally to the following:

- **measures applicable to the energy sector within the EU ETS**: discussions showed that an auctioning rate of 100 % in the energy sector was accepted by most delegations. However some specific situations might justify derogations of limited duration and extent, in particular because of insufficient integration of the energy sector at European level;
- **pre-allocation of the income from auctions**: the discussion showed that although some Member States thought that the use of the income from auctions was a matter for national competence, voluntary commitments could be given consideration;
- **financing capture and storage of CO2**: the Council was prepared to examine the possibilities of combining several options, including national and Community financing, to supplement the contribution of the private sector;
- **the risk of "carbon leakage"** (i.e. relocation of energy-intensive under takings outside the EU), and the measures to be taken to protect both the environment and the competitiveness of industry in Europe: the Council showed its determination to provide clear answers to the problems which might arise from "carbon leakage". In this connection, it examined the need to lay down quantitative and qualitative criteria within appropriate periods of time, and arrangements for the sectors which were the most exposed to world competition.

Geological storage of carbon dioxide (CO_2)

2008/0015(COD) - 06/06/2008

The Council took note of a progress report on climate change-energy legislative package prepared by the Presidency and held a public policy debate on the main outstanding issues identified in it.

The climate change-energy package complements existing measures aiming at reaching the overall objective - endorsed by the European Council in March 2007 - of a 20% reduction in greenhouse gases by 2020 and of achieving a 20% share of renewable energies in overall EU energy consumption by 2020, including a 10% target for renewable transport fuels. The progress report was presented to both Council formations Energy and Environment as it deals with the package as a whole.

The Energy ministers' debate focused on a proposal for a directive on the promotion of the **use of energy from renewable sources**, with the aim of providing input for further work of the Council and its preparatory bodies under the incoming French Presidency.

The Presidency progress report points out the main outstanding issues identified in all four legislative proposals in the package.

As far as the **Renewables Directive** is concerned, these are the following: targets (level of the national renewable energy targets, conditionality of the renewable transport fuel target and the indicative trajectory and its consequences), long lead-time projects, the systems of trading in guarantees of origin and reinforcing measures.

One part of the report is devoted to the progress made on the **sustainability criteria for biofuels**, which are considered necessary to ensure that the production of biofuels does not have negative consequences that outweigh the benefits arising from their use. In February 2008, Coreper established an **ad hoc working party** with the task of drawing up a common sustainability scheme for biofuels for the purposes of the renewables and fuel quality directives. The working party met on several occasions and made progress on numerous issues. However, **some issues need to be addressed further**: the level and date of application of the second stage for the minimum greenhouse gas emissions saving requirement, the environmental and social sustainability of biofuel production which would apply also in third countries and the methodology for calculating greenhouse gas emissions saving.

Geological storage of carbon dioxide (CO_2)

2008/0015(COD) - 23/04/2009 - Final act

PURPOSE: to establish a legal framework for the geological storage of carbon dioxide (CO2).

LEGISLATIVE ACT : Directive 2009/31/EC of the European Parliament and of the Council on the geological storage of carbon dioxide and amending Council Directive 85/337/EEC, European Parliament and Council Directives 2000/60/EC, 2001/80/EC, 2004/35/EC, 2006/12/EC, 2008/1/EC and Regulation (EC) No 1013/2006.

CONTENT: following a first reading agreement with the European Parliament, the Council adopted this Directive which establishes a legal framework for the environmentally safe geological storage of carbon dioxide (CO2) to contribute to the fight against climate change. The purpose of environmentally safe geological storage of CO2 is permanent containment of CO2 in such a way as to prevent and, where this is not possible, eliminate as far as possible negative effects and any risk to the environment and human health.

Carbon dioxide capture and geological storage (CCS) is a bridging technology that will contribute to mitigating climate change. It consists of the capture of carbon dioxide (CO2) from industrial installations, its transport to a storage site and its injection into a suitable underground geological formation for the purposes of permanent storage. The Directive notes that this technology should not serve as an incentive to increase the share of fossil fuel power plants. Its development should not lead to a reduction of efforts to support energy saving policies, renewable energies and other safe and sustainable low carbon technologies, both in research and financial terms.

Preliminary estimates, carried out with a view to assessing the impact of the Directive indicate that **seven million tonnes of CO2 could be stored by 2020, and up to 160 million tonnes by 2030**, assuming a 20 % reduction in greenhouse gas emissions by 2020 and provided that CCS obtains private, national and Community support and proves to be an environmentally safe technology. The CO2 emissions avoided in 2030 could account for some 15 % of the reductions required in the Union.

Whether to use carbon capture and storage (CCS) or not is still a matter for independent decision by each EU Member State. For Member States that wish to do so, the Directive sets the framework and conditions for use of CCS technology in Europe. It introduces requirements for the separation and capture of CO2, and for its transport by pipeline. It explains the procedure for the **identification and safe use of storage sites** in rock deep underground. The legislation provides for a private operator to pass responsibility to a Member State for the very long term storage of CO2, but only after there is near absolute certainty that the possibility of leakage has been reduced to zero.

The Commission also proposes that all new power plants be built as ‘capture-ready’, capable of being equipped with CCS facilities during their operational lifetimes.

In order to ensure harmonised application throughout the European Union, the Commission will review draft storage permits and draft decisions on closure prepared by national authorities before their final approval.

Operators are obliged to monitor storage sites and report to Member State's authorities, both while storing carbon dioxide and after the closure of sites and the cessation of storage activities. Responsibility for a site reverts to a public authority when sufficient proof is obtained that the carbon dioxide will be completely and permanently contained.

Scope: the Directive will apply to the geological storage of CO2 in the territory of the Member States, their exclusive economic zones and on their continental shelves within the meaning of the United Nations Convention on the Law of the Sea (Unclos). It does not apply to geological storage of CO2, with a total intended storage below 100 kilotonnes, undertaken for research, development or testing of new products and processes. The storage of CO2 in a storage site with a storage complex extending beyond the area referred to above is not permitted. Further, the storage of CO2 in the water column is not permitted.

It should be noted that this Directive forms part of the climate-energy legislative package containing measures aimed at fighting climate change and promoting renewable energy. (See also COD/2008/0013, COD/2008/0014, COD/2008/0016, COD/2007/0019 and COD/2007/0297). The package is designed to achieve the EU's overall environmental target of a 20 % reduction in greenhouse gases and a 20 % share of renewable energy in the EU's total energy consumption by 2020.

ENTRY INTO FORCE: 25/06/2009.

TRANSPOSITION: 25/06/2011.

Geological storage of carbon dioxide (CO_2)

2008/0015(COD) - 28/02/2008

Following the Commission's presentation of the climate-energy package, the Council held a public policy debate, focusing on the proposal for a directive on the promotion of the use of energy from renewable sources.

In view of the nature of the climate-energy package, two horizontal questions focused on the ambition of the package as a whole and on sustainability criteria, and two questions were addressed to energy ministers focusing on renewable energy sources and on the trade in guarantees of origin.

The presidency summarised the debate along the following lines:

- Delegations welcome the climate-energy package in general as well as the proposal on the promotion of the use of energy from renewable sources. Early adoption of the instrument has been urged by several delegations;
- The national targets are considered to be very ambitious - some even think they are too ambitious - and, in order to achieve them, there is inter alia a need for (i) much flexibility on how to achieve them; (ii) increasing public support for renewable energies and; (iii) certainty with respect to the support schemes, including the guidelines on state aid for environmental protection. In this context, it is crucial to have some assurance that, after 2014, the successor to these guidelines will be equally supportive.
- The importance of the indicative trajectories for reaching the targets has been confirmed, but here also, flexibility seems to be necessary;
- Solidarity has been highlighted as another essential aspect;
- Balance is needed between competitiveness, security of supply and sustainability;
- The importance of trade in guarantees of origin has been underlined as a flexible instrument which should enable and not hinder Member States to reach their targets, as well as the continuation of current national support schemes for renewables;
- The contribution of energy efficiency is considered as essential to achieve the objectives;
- With respect to biofuels, there is broad support for ambitious sustainability criteria. However, these criteria should not diminish the competitiveness of European industry nor should they lead to trade barriers since import of and trade in biofuels will be necessary to achieve the target in this field. Moreover, the cost-effectiveness of the sustainability scheme will have to be ensured;
- Several delegations have indicated that sustainability criteria should apply to all forms of biomass. In this context, consistency between the renewables directive and the fuel quality directive is essential;

Lastly, the need for cost efficiency has been underlined as an essential element.

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.

Geological storage of carbon dioxide (CO_2)

2008/0015(COD) - 01/02/2017 - 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).

The report is the second report on the implementation of the CCS Directive and covers the period from May 2013 to April 2016. It is based on the reports submitted by 26 Member States.

The Commission considers that the legislation of **16 Member States** fully complies with the Directive to date. It considers that the provisions of the CCS Directive have been **applied consistently** throughout the reference period in the Member States of the Union.

The main findings are as follows:

Assessment of storage capacity: some Member States (Belgium, Czech Republic, Germany, Romania, Poland, Slovenia, Spain) have made progress in their assessment of storage capacity, but the **implementation of CCS projects will require new, more thorough assessments**.

However, even in cases where the evaluation has not been positive, many authorised power stations **provide space** for the equipment required for CO2 capture and its compression and are designed so that the CCS can be subsequently connected without major modifications in the structure.

In addition, **new power plants** generally go beyond legal requirements and reserve land for this purpose in the event that conditions change.

Other issues related to implementation include:

Selection of storage sites: in most cases, Member States have not defined new areas in which storage sites can or cannot be selected. Only Poland has established a storage area. Five German Länder are currently preparing decisions.

New storage stock assessments have been carried out, are under way or are planned in Bulgaria, Germany, Greece, Hungary, Italy, the Netherlands, Sweden and the United Kingdom.

Applications for exploration and storage permits: only Spain has received applications for exploration permits. Only one project resulted in an application for a storage permit in the United Kingdom and a license application is currently under review in Italy.

Research projects linked to the CCS Directive: although the demonstration and marketing of the CCS have not progressed during the reference period, a number of Member States, as well as the European Union, support or plan to support more research activities aimed at improving techniques and knowledge related to the underground storage of CO2.

CO2 transport and storage networks: two regional CCS networks seek to develop common cross-border solutions for transport and geological storage of CO2 - the North Sea Basin Taskforce and the CCS The Baltic Sea. Other countries are studying the possibility of setting up platforms for emissions from the power generation and industrial sectors in certain port areas.