CARBON CAPTURE
LEGAL PROGRAMME

Case studies on the implementation of Directive 2009/31/EC on the geological storage of carbon dioxide

Spain

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November 2011

www.ucl.ac.uk/cclp

University College London
Centre for Law and the Environment, Carbon Capture Legal Programme

Acknowledgments: This report has been made possible through generous donations from Rio Tinto, Shell, Mitsui, Schlumberger, RPS and The Crown Estate.

Foreword

The CCLP EU Case Studies Project

The Carbon Capture Legal Programme launched the 'EU Case Studies Project' in January 2010. The project analyses the implementation of Directive 2009/31/EC on the geological storage of carbon dioxide ('CCS Directive') in selected European jurisdictions - the United Kingdom, Germany, Poland, Romania, Spain and Norway. Each jurisdiction, for distinct reasons, provides an example of different approaches to the transposition and to CCS in general.

The objective of the project is to identify some of the more subtle nuances in different legal cultures and to provide a better understanding of the rationale for national decisions in specific aspects of the implementation of the Directive. In particular, the focus is on those areas where the Directive leaves room for Member States' discretion or is ambiguous or silent. The project also considers the policy and political context within which the national legal and regulatory framework for CCS has emerged. The studies are deliberately designed to move beyond formal transposition measures to reveal more of the underlying dynamics and tensions involved in national implementation. Such elements are often crucial in driving domestic legal developments. The way in which EU Directives are implemented often reflects distinct legal and administrative traditions, and the case studies seek to present these in order to provide better insights on the development of CCS regulation.

The outcome of the project is a series of reports from the six jurisdictions, based on key legal and policy questions and on a critical reading of the CCS Directive. The CCLP has coordinated the overall research and has carried out the UK case study. Independent experts have been commissioned to carry out research in Germany, Poland, Romania, Spain and Norway.

Background on the EU transposition process[1]

EU Member States have an obligation to adopt all appropriate measures to ensure the fulfilment of the obligations arising out of the Treaties governing the European Union or resulting from acts of the institutions of the Union.[2]

Directives are binding on Member States but only with respect to a result to be achieved, leaving considerable discretion to Member States as to the choice of form and methods to be used for their implementation. In contrast to regulations, the provisions of directives do not automatically become part of the national legal system, but require a national transposition process before doing so. In their transposition, Member States may rely upon existing law; amend existing legislation or pass wholly new legislation.

Each directive will specify a time limit for transposition, normally two years but sometimes three where complex administrative or legal changes are involved. The CCS Directive specified the date of 25 June 2011, which is just over two years after its coming into force.

The European Commission is in charge of ensuring the application of the treaties and the legal acts adopted by the institutions pursuant to the treaties.[3] To fulfil this duty, the Commission enjoys enforcement powers against Member States, which are carried out by means of an infringement proceeding.[4]

[1] This paragraph is the extended version of a CCLP contribution to the International Energy Agency Carbon Capture and Storage- Legal and Regulatory Review- Edition 2 (May 2011). Available at www.iea.org/Papers/2011/ccs_legal.pdf.
[2] Treaty on European Union, Article 4.3. OJ C 191, 29.7.1992.
[3] Treaty on European Union, Article 17.
[4] Treaty on the Functioning of the European Union, Article 258. OJ C 115, 9.5.2008 (ex European Community Treaty, Article 226).

With respect to the transposition of directives, the Commission distinguishes between three categories of infringement proceedings:

a) non-communication cases, where a Member State fails to communicate to the Commission national laws or other measures transposing a directive within the specified time limit;
b) non-conformity cases, where the Commission considers a Member State's transposition of a directive into national law to be incomplete or incorrect;
c) 'bad application' cases, where the Commission feels that there has been a failure to apply a directive in practice, even though there has been correct transposition.

The formal stages of the infringement procedure consist of three phases:

a) a letter of formal notice from the Commission to the Member State, which then has two months to reply (pre-litigation);
b) a reasoned opinion issued by the Commission if the Member State's reply is not satisfactory, setting the details of the infringement and establishing a new deadline for compliance; and
c) referral to the Court of Justice of the European Union, if the non-compliance persists.

The Commission enjoys wide discretion as to when and whether to start an infringement proceeding, and a good deal of informal negotiation takes place to resolve the issue during the various stages of the process. In practice, however, once the deadline for transposition has passed without communication from the Member State, the Commission will automatically start an infringement proceeding based on a formal failure to communicate any national measures.

The vast majority of cases are settled without the need to refer them to the Court. If a case is brought before the Court and the Court rules against the Member State, the State must take all necessary measures to comply with the judgement.[5] If the non-compliance persists, the Commission can refer the case to the Court again, recommending a financial penalty. The Court then has the power to impose financial sanctions on the Member State. Further to amendments made under the Lisbon Treaty coming into effect in 2010, non-communication has been given increased priority, since the Commission is now entitled to request the application of such sanctions upon the first referral to the Court.[6]

[5] Treaty on the Functioning of the European Union, Article 260.2. (ex European Community Treaty, Article 228).
[6] Treaty on the Functioning of the European Union, Article 260.3. (ex European Community Treaty, Article 228).

Key findings of this report:

- Spain is a highly decentralised country with minor oil and gas reservoirs and only medium-sized coalfields. However, there is a high storage capacity in saline aquifers. Spain is only exploring onshore storage opportunities.

- Two CCS demonstration projects are currently under development: the first in Compostilla, promoted by a consortium between CIUDEN and Endesa (full chain demonstration supported by EU funding) and the second in Puertollano, promoted by Elcogas (only capture). In 2011, Endesa suspended the work for phase II of the Compostilla project, due to the insecurity of the energy market and declared that a final decision would only be taken at the end of 2012.

- Spain fully transposed the CCS Directive by means of Law ('Ley') 40/2010 of 29 December 2010, in advance of the deadline for transposition (25 June 2011). Ley 40/2010 largely mirrors the provisions of the Directive, with some minor divergences. The implementation was done by means of new legislation rather than try to adapt the existing mining and other national and regional legislation to the requirements of Directive 2009/31. Regulations are required to make the provisions of Ley 40/2010 operational and clarify some details, but by the end of June 2011 no such regulations had yet been published.

- The main competencies for CCS are assigned to the Minister of Industrial Affairs and the Minister for the Environment. Regional authorities ('Comunidades Autónomas') also have selected competencies. However tensions have already emerged in this context, as the Government of the Comunidad Autónoma of Aragón introduced an application for unconstitutionality of Ley 40/2010 with the argument that the Ley did not respect the division of competencies between central government and the Comunidades Autónomas, foreseen in the Spanish Constitution.

- It is not clear whether Ley 40/2010 would allow a Comunidad Autónoma to prohibit the storage of CO_2 on its territory. Ley 40/2010 is silent on this question. As all permits for storage of CO_2 are granted by the Minister for Industrial Affairs, it must be presumed that Ley 40/2010 did not intend to give such a possibility to the Comunidades Autónomas. The Spanish Constitutional Court might indirectly pronounce itself on this question.

- Ley 40/2010 is largely silent or ambiguous with respect to public participation and access to information concerning CCS. At a minimum, it takes the same approach as the CCS Directive by relying on existing legislation governing this matter.

The Author

Ludwig Krämer studied law and history in Kiel, Munich and Paris. He served as a judge at the Landgericht Kiel from 1969 to 2004. From 1972 to 2004, he was delegated to the European Commission in Brussels, where he worked in the Environmental Directorate General. He was successively head of unit of legal affairs, of waste management and of environmental governance. From 2001 to 2004, he was responsible for transposing the provisions of the Aarhus Convention into EU legislation. In this capacity, he represented the EU in the different bodies of the Convention, including at the First Meeting of the Contracting Parties.

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1 General aspects

1.1 The beginning of CCS discussion in Spain

Spain is a highly decentralised state. Competence in areas of energy, climate change and environment is shared between the central level and the regional authorities (Comunidades Autónomas, 'CAs'). The Spanish constitution addresses several of these competence issues, and any dispute is determined by the Spanish Constitutional Court.

Apart from coal and renewable energy, Spain has little of its own energy resources. This might be one of the reasons why the Spanish government strongly favours, with research and financial support, research and actual measures to develop a clean coal technology.

Scientific experts see Spain as a country that will strongly be affected by climate change. For this reason, Spain has developed, since the end of the twentieth century, policies and strategies for addressing climate change issues and mitigation measures. The technology of carbon capture and storage (CCS) received early attention in this context. In 2006, the Spanish government, which was then a Socialist government, created the Fundación Ciudad de la Energía (CIUDEN) with the declared objective to help in particular the Spanish North-West, a traditional coal-mining region with a majority socialist electorate. The Foundation has the task to search for and promote clean coal technology, the environmentally friendly application of energy techniques and develop a national museum for energy. CIUDEN is principally financed by public funds; its President is the Spanish Minister for Industrial Affairs.[7]

The 'Spanish Strategy on Climate Change and Clean Energy', approved by the Central Government in 2007,[8] declared CCS to be 'a valid option for mitigation'.[9] It fixed as objectives: to determine the potential of this technology in Spain, develop the necessary research, development and investment framework for CCS, assess the application of the technology, quantify the amount of CO_2 which would be available for storage and develop the necessary legal framework. Spain has no specific national CCS roadmap.

Within the national strategy, an initiative called Plataforma Tecnológica Espanola del CO_2 ($PTECO_2$) was also launched by the Spanish government, but with strong input from private business and the participation of research centres and universities. $PTECO_2$ is concerned with research and development projects on 'advanced technologies of CO_2 conversion, capture and storage', promotes projects of CO_2 capture and research for geological storage of CO_2, and tries to influence public opinion with regard to CCS technologies.

Subsequently, two pilot projects were planned in Spain. The first was a pilot installation in El Bierzo, Cubillos de Sil (Leon).[10] Its promoter was CIUDEN, which formed a consortium with Endesa, one of the largest Spanish private energy companies, to build a plant in Compostilla, close to El Bierzo. In a first phase, a pilot plant of 30 MW was to be built between 2009 and 2012. The CO_2 captured would be transported, via pipeline, over a distance of about three kilometers to Hontomín (Burgos),[11] where a storage facility would be constructed; there is a saline aquifer in Hotomín, where the CO_2 could be injected. In a second stage, Endesa would construct, starting in 2011-2012, a carbon-based power plant of 300 MW with the capture of

[7] The official title of the Ministry is Ministry for Industrial Affairs, Tourism and Trade (Ministerio de Industria, Turismo y Comercio). Hereafter, the term 'Minister for Industrial Affairs' will be used.
[8] Spanish Strategy on Climate Change and Clean Energy. Horizon 2007-2012-2020, approved by the Spanish Council of Ministers on 2 November 2007. Available at www.mma.es/secciones/cambio_climatico/documentacion_cc/estrategía_cc/pdf/cle_ene_pla_urg_mea.pdf.
[9] Strategy (n 8) section 3.3.6.
[10] Occasionally, also the name of Ponferrada is used for the location.
[11] Hontomín only counts 93 inhabitants.

CO_2 by way of oxy-combustion, and store the captured CO_2 in Hotomín. This second plant was intended to be operational in 2015.

The first phase of the project started to be realised, as planned, in 2009. The pilot plant received partial financial support from the European Commission's European Energy Programme for Recovery (EEPR), with the rest to be financed by Spain. However, in May 2011, Endesa suspended the work for the construction of the 300 MW plant. It justified its decision on the grounds of the insecurity of the energy market and declared that a final decision would only be taken at the end of 2012, the end of phase one. Endesa had originally considered to store CO_2 also in another storage facility in Aragón and had, in 2008, submitted first drafts to the regional government. However, in 2010, it withdrew its plans, officially because the European Commission only intended to co-finance the El Bierzo project.

The second pilot plant was planned by Elcogas, another energy company, in Puertollano (Castilla-La Mancha). The 14 MW integrated gasification combined cycle (IGCC) plant was to start being constructed in 2009, based on pre-combustion technology for CO_2 capture. According to Elcogas, the plant managed, in November 2010, to function continuously for 100 hours.[12] It is designed to treat 3,600m³ of synthetic gas which comes from the gasification unit, and separate and capture CO_2. At present, no storage of the separated CO_2 is foreseen. Though Elcogas stated that it would be sending an annual progress report to the Spanish Government, remarkably little is known on the actual, 2011 state of the plant and its possible functioning.

As regards CO_2 storage, the Spanish Geological Survey (Instituto Geológico y Minero de Espana, IGME) completed a study in 2006/2007 about the CO_2 storage capacity in Spain. The conclusions were that Spain is a country with minor oil and gas reservoirs and only with medium-sized coalfields. However, there is a high storage capacity in saline aquifers. The total capacity of the Spanish structures was estimated at 45 to 50 gigatonnes (Gt).

In 2009, IGME conducted a more detailed study. It identified 103 structures for CO_2 storage, with a total capacity of 13,4 Gt. 50 of these structures had a capacity of more than 50 megatonnes (Mt).[13] Both studies were limited to onshore structures. Offshore capacities and explorations in and around the Baleares and the Canaries Islands were not included in the studies. As of the end of June 2011, the overall IGME survey of appropriate storage sites in Spain had not yet been published.

The drafting of Ley 40/2010 (the key transposition measure discussed below) and the past activities deployed by public and private bodies with regard to CCS show a preference for onshore storage of CO_2. Transporting CO_2 for storage to other countries has, until now, not even been mentioned in the public debate.

1.2 The transposition of Directive 2009/31 into Spanish law

Immediately after the adoption of Directive 2009/31, the Spanish Government set up a technical working group, composed of officials from the Central Ministry of Industrial Affairs and the Ministry for the Environment. [14] Academics from technical university faculties and representatives from industry participated in the work. It was quickly decided that it would be

[12] Elcogas, Informe anual 2010. Available at www.elcogas.es/es/principales-indicadores/datos-economicos-financieros.

[13] MA Zapatero Rodriguez ao, *Estimación de la capacidad europea para el almacenamiento de CO_2* (Madrid, Caso espanol, 2009). Available at www.igme.es/internet/sistemas_infor/ConsultaSID/presentacion.asp?ID=140531.
There are other publications which indicate a storage capacity of 23.363 GW, based on research of 2008.

[14] The official name of this Ministry is 'Ministry for Environment, Rural and Marine Issues' (Ministerio de Medio Ambiente, Medio Rural y Marino). Hereafter, the term 'Ministry for the Environment' will be used.

better to elaborate completely new legislation rather than try to adapt the existing mining and other national and regional legislation to the requirements of Directive 2009/31. In July 2009 the working group produced a draft for a bill which was submitted to public consultation. Twenty-four comments were received, mainly from interested businesses. There was remarkably little public discussion on the bill. Greenpeace and the environmental organisation Ecologistas en Acción[15] each published a general paper where they warned against the use of CCS technology; the Greenpeace paper was a Spanish translation of an international document from 2008 and contained no specifics on the Spanish situation.[16] No critical voices came from regional entities (CAs) or from lawyers. Generally, CCS was perceived as a technology that allowed Spain to continue to use its indigenous coal as an energy source and to comply with its climate change commitments and obligations. This was consistent with representative findings of CIUDEN of 2009, where 28 per cent of the Spanish persons consulted rejected CCS technology, 17 per cent approved it, 38 per cent had no opinion and 17 per cent considered it to be of some help, but no permanent solution to climate change problems. This means that one out of four Spaniards consulted rejected the technology, whereas three out of four were positive or neutral.[17]

The Spanish Government adopted the revised draft as a Bill in December 2009 and sent it to the Council of State (Consejo de Estado) which approved it in March 2010.[18] The Government then sent the Bill to the two Spanish Houses of Parliament. The Bill was adopted by a large Parliamentary majority from both the conservative and the socialist parties; only small left separatist parties (seven votes) opposed it. The 'Ley 40/2010 de 29 de diciembre, de almacenamiento geológico de dióxido de carbono' was published in the Spanish Official Journal. The published Act contains an explanatory memorandum ('Preámbulo') of four pages.

1.3 Content of Ley 40/2010

The Act entered into force on 31 December 2010. It contains six chapters, dealing with general provisions (chapter I, Articles 1 to 7), exploration and storage permits (chapter II, Articles 8 to 17), operation, closure and post-closure (chapter III, Articles 18 to 25), access of third parties to transport and storage facilities (chapter IV, Articles 26 and 27), register and information of the public (chapter V, Articles 28 and 29), and sanctions (Chapter VI, Articles 30 to 38). Furthermore, four additional, two transitory and fifteen final articles contain provisions on the amendment of existing legislation and on the integration of Ley 40/2010 into the existing Spanish legal order.

In accordance with the Directive, Ley 40/2010 deals almost entirely with the storage of CO_2, while CO_2 capture and transport are only very marginally discussed. The explanatory memorandum explains this limitation by the fact that installations which capture CO_2 will need a permit under the Act on integrated pollution prevention and control and will, furthermore, be subject to the requirements of the Act on environmental impact assessment. As regards the transport of CO_2 via pipelines, Ley 40/2010 provides that an environmental impact assessment is necessary. Ley 40/2010 limits itself to ensure that access to the transport systems and to the storage facilities shall be made possible in a transparent way and without discrimination. With regard to specific transport problems, governmental regulations could be elaborated in due time.

Geographically, Ley 40/2010 applies to the storage of CO_2 in the underground of Spain, including the territorial sea, the Spanish Exclusive Economic Zone and the continental shelf (Article 2(1)). Storage beyond this area will not be authorised (Article 2(3)), nor will CO_2 storage

[15] Ecologistas en Acción: Captura y almacenamiento de carbono Un nuevo pacto con el diablo? Available at www.ecologistasenaccion.org/Article7090.html.
[16] Greenpeace Espana: Falsas Esperanzas. Por qué la Captura y 'Almaceniamiento de Carbono no salvará el clima. [Amsterdam 2008].
[17] Findings presented by CIUDEN presented at a public workshop '*Strategies of communication and effective engagement in CCS-projects*: *results of the European NEARCO² project*' in Madrid (30 June 2011).
[18] The opinion of the Consejo de Estado is not (yet) published.

in the water column or above the marine seabed (sobre el lecho marino)[19] will be authorised (Article 2(4)).

Ley 40/2010 does not apply to the storage of CO_2 for investigation, development or experimentation purposes for new products or processes, provided that such storage is less than 100 kilotonnes.

Ley 40/2010 contains numerous provisions which provide for the adoption of Regulations in order to elaborate details of its application, and the Thirteenth Final Article gives a general power to the Government to adopt, 'within the limits of its competence', regulations concerning the application, execution and development ('aplicación, ejecución y desarrollo') of Ley 40/2010. The annexes to Ley 40/2010 may be amended by Royal Decree, in order to adapt them to changes in EU law.

Possible gaps of Ley 40/2010 shall be covered by Royal Decree 2857/1978, of 25 August, on General Provisions of Mining ('Real Decreto 2857/1978, de 25 de agosto, por el que se aprueba el Reglamento General de la Minería'), to the extent that these provisions do not contradict Ley 40/2010 (Fourteenth Final Article).

2 Important problems raised by Directive 2009/31

2.1 The delimitation of competence between the Central State and Comunidades Autónomas (CAs)

Ley 40/2010 is based on Article 149(1) no 23 of the Spanish Constitution which gives the Central State the competence to adopt basic legislation for the protection of the environment; however, Articles 10, 11, 13 to 15, 24 and 25 were based on Article 149(1) no 13 of the Constitution, and Articles 3, 6 to 9, 16, 17, 26 and 27 were based on Article 149(1) no 25 of the Constitution.[20]

The Minister of Industrial Affairs and the Minister for the Environment were given significant competencies concerning CCS.[21] The Minister for Industrial Affairs in particular is responsible for the granting of exploration permits which affect more than one Comunidad Autónoma (CA) and the granting and revoking of storage permits. The CAs were mainly given competencies in the monitoring of Ley 40/2010, such as approval of operational and post-closure plans, inspections of the storage facilities, and the taking of remedial or correcting measures in cases of leakage or significant irregularities; they are also competent to issue exploration permits which only affect one CA.[22]

In 2011, the Government of the Comunidad Autónoma of Aragón introduced an application of unconstitutionality of Ley 40/2010 before the Spanish Constitutional Court.[23] The detailed content of application 1870-2011, which is pending, is not known. However, according to the information published in the Boletín Oficial, the following articles of Ley 40/2010 were attacked as not respecting the division of competencies between the Central State and the CAs:

[19] The term 'above the marine seabed' is not defined or explained. Its use probably intends to clarify that only underground storage will be authorised.

[20] For the legal basis see Ley 40/2010, Disposición final undécima. Art 149 of the Spanish Constitution reads: 'El Estado tiene competencia exclusiva sobre las siguientes materias:…13. Bases y coordinación de la planificación general de la actividad económica ;… 23.Legislación básica sobre protección del medio ambiente, sin perjuicio de las facultades de las Comunidades Autónomas de establecer normas adicionales de protección…25. Bases del régimen minero y energético.' (The State shall have exclusive competence on the following matters: .. 13: Basics and coordination of general planning of the economic activity;.. 23: Basic legislation on the protection of the environment, without prejudice of the possibility of the CAs to adopt additional protection provisions..; 25: Basics of the mining and energy system).

[21] See for details Ley 40/2010, Art 5.

[22] See for details Ley 40/2010, Art 5(3).

[23] Boletín Oficial del Estado no 94 of 20 April 2011, section I, p 40343.

- Article 1(3) which provides for the possibility to adopt regulations concerning transport networks and other accessory installations which are linked to storage facilities;

- Article 5 which divides competencies between the Central State and the CAs;

- Article 8(6) which obliges the holder of an exploration permit to comply with the permit and to inform also the Minister of Industrial Affairs of his findings;

- Article 9(6) and (7) which provide that the exploration permit is granted by the Minister of Industrial Affairs and that there are possibilities to make a public tender for exploring sites;

- Article 10(4), (6) and (7) which deal with details of the storage permit, its duration and the fact that such a permit is considered to be granted in the general interest;

- Article 11(1), (2) and (6) which provide that the storage permit is granted by the Minister of Industrial Affairs and that the affected CAs (only) are to be consulted;

- Article 13 which fixes conditions for the storage permit;

- Article 15(1) to (5) which deal with the revision and revocation of storage permits;

- Article 19(2) and (3) which deal with the monitoring plan to be elaborated by the operator which has to be submitted together with the application for a permit;

- Article 23 (1) to (3) which indicate that closure must be approved by the Minister of Industrial Affairs and that the post-closure plan is to be submitted to this Minister which then transfers it to the affected CAs;

- Article 26(1), (3), (4) and (5) which deal with access by third parties to the transport and storage facilities and make the Minister for Industrial Affairs responsible in this regard;

- Article 27 which deals with the solving of conflicts in cases of Article 26;

- The First Transitory Article which charges the Central State to control the viability of existing CCS installations;

- The Eleventh Final Article which contains the above-mentioned legal basis of Ley 40/2010.

It remains to be seen to what extent Aragón will be successful with its application. At first sight, it is not obvious why an exploration permit which only affects one CA may be granted by that CA, but why a storage permit which only affects one CA is to be granted by the Central State. In this context, it is remarkable that Spanish constitutional and/or administrative law rarely provides for joint decisions of Central Government and CAs or a close participation of CAs in the decision-making process at Central Government level; rather, there appears to be a tendency of attributing responsibilities either to one or to the other side.

To what extent the application of Aragón is procedurally or substantively supported by other CAs, is not known. Most of the CAs are governed by political parties that are in opposition to the actual Spanish Government; this might influence the constitutional conflict, though there seems to be, regarding CCS in general, a large consensus in Spain in favour of this technology. No CA has ever publicly declared that it opposes CCS.

2.2 May Comunidades Autónomas prohibit the storage of CO_2 altogether?

All storage permits are granted by the Minister of Industrial Affairs (Articles 5 and 11), who has to give to the affected CA a period of three months for commenting on any application for a storage permit; if no comment is received within this period, the Minister may decide. A negative opinion by the CA does not prevent the Minister from granting the permit. Thus, Ley 40/2010 is based on the idea that the CAs may not actually prohibit the storage of CO_2.

Article 149(1) no 23 of the Spanish Constitution, though, allows the CAs to adopt in areas of exclusive competence of the State, provisions which give supplementary protection to the environment. This would allow a CA to argue that because of environmental reasons, storage of CO_2 in its region is not allowed, and such reasons may be linked to the subsurface, the risk of leakages, or the risk of earthquakes.

However, the above-mentioned Eleventh Final Article of Ley 40/2010 explicitly states that Article 11 was based on Article 149(1) no13 of the Constitution, which deals with the general planning and coordination of economic activity; with regard to this provision, supplementary environmental provisions may not be adopted by the CAs.

Directive 2009/31 is in its entirety based on the environmental provision of the present Article 192(1) TFEU; this also includes the granting of a storage permit. Ley 40/2010 has turned this environmental provision into an economic provision, by basing Article 11 on Article 149(1) no 13 of the Constitution which deals with economic questions. The explanatory memorandum does not give any justification for this decision. If this decision is legally justified, the CAs do not have the right to prohibit the underground storage of CO_2 altogether. If the decision is not legally justified, then underground storage is an environmental issue, and CAs may, on the basis of Article 149(1) no 23, prohibit the storage on their territory altogether.

It is the Spanish Constitutional Court which will have to decide on this matter. In this author's opinion, the provisions on the underground storage of CO_2 (one cannot look at Article 11 of Ley 40/2010 alone, but will have to take together all the provisions concerning this storage) are environmental provisions, because:

- their objective is the reduction of greenhouse gas emissions into the atmosphere and contribute therefore to the fight against climate change;

- the storage of CO_2 is similar to the storage of waste – though Directive 2009/31 explicitly excluded the application of EU waste law to such storage, and Ley 40/2010 followed it in this. The intention is to permanently contain an environmentally harmful material (CO_2) for hundreds of years;

- the underground storage of CO_2 has no other economic purpose; the continued use of coal-fired power plants in Spain is not the (first or primary) objective of the underground storage;

- there is no economic activity related to the storage of CO_2; thus, when one or several CAs were prohibiting the underground storage of CO_2, the economic activity in Spain would not be impaired, in particular, as the storage of CCS could take place in other parts of Spain;

- the very existence of the right of CAs, laid down in Article 149 (1) no 23 of the Constitution, to adopt supplementary environmental protection measures, demonstrates that such supplementary measures may also have an economic impact; indeed, the taking of supplementary provisions is not limited to provisions which do not impair economic activities.

Should the Constitutional Court also be of the opinion which is defended here, this would not necessarily mean that Ley 40/2010 is annulled. It would only mean that CAs would retain the possibility to prohibit the underground storage of CO_2 on their territory altogether.

It is not known when the Spanish Constitutional Court will deliver its judgment.

2.3 The issuing of an opinion by the European Commission

According to Article 10 of Directive 2009/31, applications for storage permissions have to be made available to the European Commission within one month after receipt, together with the relevant documents ('all draft storage permits and any other material taken into consideration for the adoption of the draft decisions'). The Commission is entitled to 'issue a non-binding opinion' on the application, within four months after receipt of the application.

Ley 40/2010 transposed this provision in Article 11(6), providing that the Minister for Industrial Affairs is obliged to obtain an opinion of the European Commission. However, nothing is explicitly said about the transmission of documents to the Commission; in particular the opinion of the affected CA would be relevant for the Commission, in order to issue a balanced opinion. However, all the different technical documents are included in the application and are thus automatically sent to the Commission. Ley 40/2010, Article 11(5) mentions in this regard a certification of the technical and economic capacity of the applicant; the characteristics of the storage place and an assessment of the safety conditions; a project of operation of the storage place, including an investment programme; the quantity and origin of CO_2 which is to be stored, in particular, whether the CO_2 stems from own economic activity or is supplied by third persons; the transport means foreseen; the composition of the CO_2; the pressure of injecting the CO_2; the situation of the injection facilities; a balance of the CO_2 gases in the total process of capture, transport and storage; methods used to prevent leakages and significant irregularities; a monitoring plan; proposals for correcting measures; a proposal for a post-closure plan; and an environmental impact assessment. To this, Article 11(6) adds that an opinion of the Instituto Geológico y Minera de Espana (IGME) will be asked for by the Minister.

Ley 40/2010 does not require that the final decision of the storage permit be sent to the Commission or that reasons are given when that decision departs from the Commission opinion; this is required by Article 10(2) of Directive 2009/31.

2.4. The transfer of responsibility (Article 18 of Directive 2009/31)

Article 24 of Ley 40/2010 deals with the transfer of responsibilities for the storage of CO_2 from the operator to the Central State. The provision constitutes an almost literal copy of Article 18 of Directive 2009/31. The minimum period, before a transfer can take place, is fixed at 20 years; however, the Central Government may fix a shorter period, provided that all legal requirements laid down in Article 18(1) of Directive 2009/31 are complied with.

The proposal for a decision on the transfer of responsibility shall be sent to the European Commission to enable it to give an opinion. However, it is not foreseen that the final decision justifies the departing from the Commission's opinion, contrary to what is provided in Article 18(5) of the Directive. No information or participation of the CA, where the storage took place, is foreseen, though the CA is required to stop the periodic inspections of the site after the transfer of responsibility.

The Explanatory Memorandum does not give any explanation why a period of twenty years was chosen. The general prescription period in Spanish law is fifteen years.[24] No further information on the reasons for transferring responsibilities is given either, though the transfer of responsibility from a private company to the State is not a normal approach under Spanish law.

[24] Art 1964 Spanish Código Civil.

2.5. Administrative arrangements, in particular between the Central State and the CAs

Ley 40/2010 intends to deal with CCS in Spain in a definitive manner, subject, of course, to the different executive provisions which are foreseen in the Ley. It is in particular not foreseen that there will be legislation on CCS adopted by the 17 Spanish CAs. But, as the Constitutional Court has been requested to decide on the question as to whether the line between the competencies of the Central State and the CAs was correctly drawn,[25] Ley 40/2010 might not be the last word in the matter of CCS.

Under Ley 40/2010, the CAs have essentially the following functions:[26]

- Issue exploration permits for CCS, unless the intended exploration extends beyond the borders of the CA affected;
- Solve eventual disputes between holders of rights in relation to an exploration permit;

- Be consulted on an application for a storage permit;[27] the affected CA may, within three months, issue an opinion on the application, though the responsible Minister for Industrial Affairs is not bound by that opinion; if no opinion is issued within the three months, the procedure may be pursued;

- Approve the monitoring plan elaborated by the operator of the storage facility, and approve the provisional post-closure plan, so that these can be included in the storage permit;

- Set up a system of inspection of the storage sites and inform the Central State of the results of each inspection;[28]

- Ensure that in the case of leakages or significant irregularities of a storage site, the operator takes the necessary corrective measures, or take such measures themselves and recover the costs;[29]

- Ask for a revision or a repeal of the storage permit, where they consider this appropriate;[30] and

- Temporarily take over all the legal obligations of the operator in the case that a storage permit is repealed, until a new permit is issued; they may recover any costs from the previous operator.[31]

The CAs are not consulted or informed with regard to the financial guarantee which the operator is obliged to submit (Article 12); it is true, though, that a further regulation shall be elaborated with regard to such guarantees (Article 12(2)). It is not even foreseen that the affected CAs receive a copy of the storage permit, though this may be implicit.

2.6 Ownership of pore space

Article 3 of Ley 40/2010 provides that geological formations which are part of existing storage sites shall be 'public domain' ('dominio público').[32] As such, they may not be sold or acquired by

[25] See above under section 2.1.
[26] Ley 40/2010, Art 5(3).
[27] Ibid at Art 11(6).
[28] Ibid at Art 21.
[29] Ibid at Art 22.
[30] Ibid at Art 15(2) and (3).
[31] Ibid at Art 15(5).

persons, nor seized by the courts. Conceptually, it might be possible to talk of 'public property'. The dominio público in Article 3 refers to onshore geological formations, the underground of the territorial sea and of all seabeds over which Spain exercises sovereignty. Only the responsible public authorities may allow or accept economic activities or give permits for dominios públicos.

The public property status of the formations does not mention the pore space. However, it appears to be generally assumed that also this pore space is part of the dominio público, as this space is nowhere considered as a problem. Article 10(1) of Ley 40/2010 explicitly states that 'no storage site may be used for the storage of CO_2 without a storage permit has been granted in conformity with this Act'.[33]

Under Spanish civil law 'the owner of land is owner of the surface, and of what is under it, and may do work, make installations and excavations as he likes, subject to what is laid down in the Mining legislation.'[34] As Ley 40/2010 is part of the Spanish mining legislation,[35] its provisions prevail over rights of the land owner, as stated by Article 350 Civil Code.

In conclusion: the Spanish State is, via the dominio público figure, owner of the pore space.

2.7 Liability

Spain used the same approach as Directive 2009/31 with regard to liability: the Third Final Article added the clause contained in Article 34 of the Directive to the Spanish legislation on environmental liability.[36] This means that CO_2 storage is an activity which may make the operator responsible for restoration under the provisions of Ley 26/2007. Ley 26/2007 is a transposition of Directive 2004/35 on environmental liability with regard to the prevention and remediation of environmental damage.[37] Article 5 of Ley 26/2007 excludes in particular any action for bodily injury or economic loss. Ley 40/2010 does not provide for any other clause of liability with regard to bodily injury or economic damage.

The ordinary liability system in Spain is based on fault: 'A person who causes by fault or negligence, by an act or an omission, damage to another person, shall be obliged to repair the damage caused'.[38] The Spanish Mining Act 22/1973 provides in Article 81 that any person who has mining rights which are recognised 'by this Act' shall be liable for the damage caused during his activities. This liability is a strict liability. However, its application to the activities mentioned in Ley 40/2010 is not possible, as the First Final Article of Ley 40/2010 explicitly provides the inclusion of a new provision into Article 1 of Ley 22/1973 – which deals with the field of application of that Act – reading 'The exploration and exploitation of underground structures in view of its use as geological storage for CO_2 shall be regulated by a specific Act'.[39]

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[32] The details of the *patrimonio público* system are laid down in Ley 33/2003, del 3 de noviembre, del Patrimonio de las Administraciones Públicas. Art 3 explicitly refers to this Ley.

[33] 'Ningún lugar de almacenamiento podrá ser utilizado para el amacenamiento de CO_2 sin que sobre el mismo se haya otorgado la correspondiente concesión con arreglo a esta Ley'.

[34] Art 350 Spanish Civil Code: 'El proprietario de un terreno es dueno de su superficie y de que está debajo de ella, y puede hacer en el las obras, plantaciones y excavaciones que le convengan, salva... con sujeción a lo dispuesto en las leyes sobre Minas'.

[35] Art 2(2) of Ley 40/2010 explicitly states that Ley 22/1973 on Mines shall be applicable to the exploration and storage of CO_2, as far as certain issues were not addressed by Ley 40/2010 or executive regulations. The Fourteenth Final Article of Ley 40/2010 declares that gaps in the execution of Ley 40/2010 shall be filled in, when there is need, by Regulation 2857/1978 on Mining Issues.

[36] Ley 26/2007, de 23 de octubre, de Responsabilidad Medioambiental.

[37] Directive 2004/35, OJ 2004, L 143 p 56.

[38] Art 1902 Codigo Civil: 'El que por acción u omisión causa dano a otre, interveniendo culpa o negligencia, esta obligado a reparar el dano causado.'

[39] Disposición final primera of Ley 40/2010: 'La investigación o exploitatción de estructuras subterráneas para su utilización como almacenamiento geológico de dioxido de carbone se regirá por su legislación especifica.'

There is thus strict liability for damage caused to the environment, within the limits of Directive 2004/35 and the corresponding Spanish Ley 26/2007. Damage to persons and economic damage is based on fault and follows the general provisions of the Spanish Civil code.

2.8 Financial security

Article 19 of 2009/31 Directive provides for the obligation of the potential operator to provide a financial security, in order to ensure that all obligations arising under the storage permit can be met. Article 12 of Ley 40/2010 obliges the operator to present, together with his application for a storage permit, a financial security which enables him to meet all obligations flowing of the permit and of Ley 40/2010, including the closure and post-closure obligations and the legal provisions concerning greenhouse gas emissions under the EU Emission Trading Scheme. The security must be valid and effective before the storage begins.

The form of financial security shall be established by the Minister for Industrial Affairs (Article 5(1)(d)). When establishing the security, he is to take into consideration the storage capacity of the site, the cost of (saved) greenhouse gas emission allowances, the dismantling of the storage facilities and the closing of storage site (Article 12(3)).

In its legislation on environmental liability – Ley 26/2007 – Spain had made use of the option of Directive 2004/35 and introduced a mandatory financial security for activities which are covered by that legislation. This financial security is of 20 million euros. Article 12(7) of Ley 40/2007 declares that the financial security under Ley 40/2010 shall be additional to that of Ley 26/2007.

Ley 40/2010 does not fix further details, but indicates that the form and content of the security and the procedure to follow will be laid down by way of Regulation. Such a Regulation had, as of the end of June 2011, not yet been published.

Overall, the Spanish provisions repeat those of Article 19 of Directive 2009/31, but neither do they go further nor do they specify details.

2.9 Conflicting use

Ley 40/2010 contains quite a number of provisions on conflicting use of a storage site. As a general rule, Article 5(1) (e) assigns to the Minister of Industrial Affairs, within the limits of his competencies, the responsibility to ‘guarantee that for storage sites no conflicting uses are permitted’; the Minister is thus requested to coordinate to this extent with other central or regional authorities on this matter. Furthermore, under Article 5(1)(f), the Minister is charged to solve conflicts that might appear with regard to access to the transport networks and to the storage sites.

Article 6 stipulates that exploration and storage permits may be granted also in such cases, where mining or hydrocarbon rights had been granted beforehand for all or part of the storage site. The condition for such permits is, however, that the storage of CO_2 is compatible with the mining or hydrocarbon rights which had been permitted earlier on. Likewise, an exploration or storage permit granted on the basis of Ley 40/2010 does not prevent the granting of permits for mining or other geological resources, unless the work linked to such permits puts at risk the storage of CO_2.

Should conflicts arise between permits for the exploration or storage of CO_2 and permits for the exploitation of mineral and other resources, the competent authority – either the Minister for Industrial Affairs or the affected CA – shall decide which exploitation has the higher interest (mayor interés); this decision shall be reasoned. Older rights shall be compensated, if they have to cede. Where no prevalent interest can be found, the project which was first permitted shall have priority (se dará prioridad al derecho de mayor antigüedad) (Article 6(3)).

Article 8 deals with the exploration permit. The permit gives to its holder the exclusive right to explore the underground (Article 8(3)). During the exploration, no use of the storage site shall

be authorised which would be incompatible with the site exploration. The different administrations are requested to coordinate themselves in order to avoid such incompatible use (Article 8(5)).

Also the storage permit grants the exclusive right to its holder to store CO_2 at the storage site identified in the permit (Article 10(1)). Only one holder of a permit may exist per site. Incompatible uses may not be permitted. In order to avoid such incompatible uses, the Minister for Industrial Affairs shall inform other public administrations of any application for a storage permit (Article 10(4)).

A specific provision concerning the solving of conflicts is laid down in Article 27 of Ley 40/2010 with regard to the access to the transport system and to the storage facilities. The Minister of Industrial Affairs is asked to solve such conflicts. In doing so, he shall take into account the capacity of the storage site or the transport system; the Spanish commitments for CO_2 reduction under international or EU law; the possible incompatibility of the techniques used for the storage of CO_2; the different interests of the site owner, the permit holder and the other interested persons.

All these provisions provide for dispute settlements with the help of public authorities. However, they do not exclude or restrict normal administrative or civil law litigation procedures before Spanish courts.

Article 27(2) addresses transboundary conflicts. Where the transport system or storage site is on Spanish territory, the dispute settlement procedures of Ley 40/2010 shall apply. Where the transport system or storage site is located in another EU Member State, intergovernmental concertation shall take place 'in order to guarantee the coherent application of the system on geological storage of CO_2.'

2.10 Public participation and access to information

Article 29 of Ley 40/2010 limits itself to repeat Article 26 of Directive 2009/31 requesting Spanish public authorities to make information on the storage of CO_2 available to the public, in conformity with Ley 27/2006. Nothing is said about dissemination of information. The public Foundation CIUDEN, however, developed detailed strategies and campaigns to influence the public, in particular the public living near potential storage sites, in favour of CCS technology.

Article 28 of Ley 40/2010 deals with the register for storage sites. It provides for a register for exploration permits, storage permits and closed storage sites. The provisions deal in some detail with the question of how the responsible Minister obtains such information from the CAs and other administrations. However, not one word is said on public access to these registers or on dissemination of information.

Applications for exploration permits which contain the necessary supporting annexes shall be published, either in the Spanish Official Journal (Boletín Oficial del Estado, BOE) or in the Official Journal (BO) of the affected CA (Article 9(4)). Public participation is not provided: only the applicant, competitors or third parties who claim that their rights are affected, may present comments (Article 9(4)).

The procedure for the granting of a storage permit shall be laid down by way of Regulations, but by the end of June 2011 no such regulations had yet been published. Thus, it is as yet not known to what extent information on applications will be made publicly available and to what extent public participation in the permitting procedure will be possible.

The Second Final Article of Ley 40/2010 modifies the Spanish legislation on the environmental impact of projects[40] introducing the amendments of Article 31 of Directive 2009/31 into Spanish law. At least for those projects that are assessed, there is thus a right of participation of the affected public.

3 Discretionary provisions in Directive 2009/31

3.1 Field of application

Ley 40/2010 applies to the geological storage of CO_2 in the underground of Spanish mainland, including its territorial sea, its Exclusive Economic Zone and its continental platform. It does not apply to the geological storage of CO_2 for purposes of research, development or testing of new products and processes, provided that the storage capacity does not exceed 100 kilotonnes. For such storage, a specific regulation will be adopted which was not yet published at the end of June 2011. Pending this regulation, the Mining Act of 1973 will apply to CO_2 storage for research purposes (Article 2(2)).

Ley 40/2010 does not provide for enhanced hydrocarbon recovery (EHR), but is limited to CO_2 storage.

3.2 The selection of storage sites (Directive 2009/31, Article 4)

Article 4 of Directive 2009/31 leaves it to Member States to decide which sites are appropriate for the storage of CO_2. The suitability of a geological formation for use as a storage site shall be determined pursuant to criteria which are laid down in Annex I to the Directive. The only substantive criteria laid down in the Directive are that 'there is no significant risk of leakage, and ... no significant environmental or health risks exist' (Article 4(4) of Directive 2009/31).

Article 10(2) of Ley 40/2010 took over the requirements of Article 4(4) of the Directive, and also referred to the criteria of Annex I of the Directive which are reproduced, word by word, in Annex I to Ley 40/2010.

Ley 40/2010 does not determine who shall decide on the suitability of a geological formation as a storage site. There is a Public Research Institute for mining in Spain, The Instituto Geológico y Minero de Espana (IGME), and it is known that this Institute is actively working on a list of suitable CO_2 storage sites. However, no publication has been made to date in this regard.

In the absence of a specific administration or institute being responsible for the selection of suitable storage sites, it must be concluded that Ley 40/2010 also allows private companies or CAs to select suitable storage sites. As a storage permit may only be granted by the Minister for Industrial Affairs (Article 11), and as storage of CO_2 is only allowed when a storage permit has been granted, it will be, in the last instance, this Minister who decides whether a geological formation is suitable for being a storage site. The applicant for a storage permit shall have to submit, amongst others, 'a characterization of the storage place and facility and an assessment of the safety conditions in conformity with this Act'.[41] It must be assumed that the Minister has the necessary technical capacity to assess the documents which are submitted to him in this way.

3.3 Application and granting of an exploration permit (Directive 2009/31, Article 5)

Article 8 of Ley 40/2010 determines that an exploration permit is required for activities to examine the suitability of a geological formation or its storage capacity. Such a permit may be

[40] Real Decreto Legislativo 1/2008, de 11 de enero : Texto refundido de la Ley de Evaluación Ambiental de Proyectos.

[41] Art 11(5): (The application for a storage permit shall include): '(c) La caracterización del lugar y del complejo de almacenamiento y la evaluación de las condiciones de seguia de confromidad con lo previsto en esta Ley.'

accompanied by the permission to make injection tests; where this is the case, the applicant may be required, at the discretion of the permitting authority,[42] to present a financial guarantee.

An applicant must have sufficient technical and economic capacities to make the exploration; it is not specified, what 'sufficient' capacities are. The application procedure shall be specified by Regulation (Article 9(1)); but by the end of June 2011, no such Regulation had yet been published.

Decisions on granting or refusing a permit shall be taken according to objective, published, and non-discriminatory criteria, among others, the envisaged investments, the time within which the exploration will be executed, and the technique and suitability of the project. When two or more applications are submitted for the same area, 'it shall be guaranteed that the permitting procedures allow the participation of all companies which have the necessary capacities'.[43] It is obviously intended to persuade or force competing companies to cooperate in such a case.

The following documents shall accompany an application (Article 9(3)):

a) name and address of the applicant;
b) evidence of his technical and economic capacity;
c) the surface of the area for which a permit is applied for;
d) an exploration plan of the geological storage formation, including an up-to-date working plan and the necessary means to execute the work. This document must conform to the requirements laid down for the determination of the suitability of a geological formation as CO_2 storage site.

Within two months after an application, it shall be decided whether the applicant qualifies for a permit. If this is not the case, the application is rejected. If the applicant does qualify, the name of the applicant and the area covered will be published in the BOE or in the BO of the responsible CA. Within two months after publication, the applicant may suggest improvements to the application, competitors may introduce competing offers and third parties, who see their rights affected, may introduce objections to the application. After two months, new objections shall not be accepted.

With regard to competing applications, a Regulation shall state which documentation is required; it will also determine the assessment of the different offers. By June 2011, such a Regulation had not yet been published.

The exploration permit gives to the applicant the exclusive right to explore the underground according to his application: Normally, the overall area may not be larger than 100,000 hectares, but a derogation may be granted on request.

The permit is granted for a period of four years maximum; a prorogation of two years and a further exceptional prorogation of other two years may be granted (Article 8(4)).

The granting of the permit includes the declaration that the exploration is in the public interest with regard to the land which lies above the exploration; this allows, where this is necessary, the temporary occupation of that land (Article 8(7)).

[42] The administration which grants an exploration permit is the CA for its territory; where the exploration affects more than one CA, the exploration permit is granted by the Minister for Industrial Affairs (Art 5 and Art 9(6)).
[43] '…se garantizará que los procedimientos de otorgamiento delos permisos de investigación permitan la participación de todas las entidades que posean las capacidades necesarias' (Art 9(2)).

The exploration permit may include the right to make injection tests. If this is the case, the permitting authority may request a financial security (Article 8(2)). No further specification is given by Ley 40/2010.

The decision on granting the permit shall be adopted by Decree of the Minister for Industrial Affairs, after agreement of the Minister for the Environment and information of the affected CAs. Where a decision is taken by a CA, this CA decides on the form of publication.

The results of the exploration shall be transmitted to the authorising authority and, in any case, to the Minister for Industrial Affairs. Such information shall be kept confidential for a period of seven years (Article 8(6)).

3.4 Storage permit (Directive 2009/31, Article 6)

The storage permit may be granted to any person who has sufficient technical and economic capacities to implement the storage project that was applied for. Ley 40/2010 does not specify what 'sufficient' capacities are. Only one permit may be granted for a storage site. Its holder has the exclusive right to store CO_2 in the indicated place. The permit shall indicate the exact surface where it is of application (Article 10).

The permit is granted for a period of maximum thirty years; this period may be prolonged for two further periods of ten years each. Exceptionally, the Minister for Industrial Affairs may prolong the injection period for further ten years, when it turns out that the total storage capacity of the site has not yet been used (Article 10(6)). The permit is revised five years after its granting, and then every ten years (Article (15(4)).

The applicant may ask for a declaration that the storage activity is in the public interest. He then has to specify in detail which land and which rights he considers necessary to be expropriated or used. His request will be brought to the attention of the public – Ley 40/2010 does not specify the way in which this is done – and shall be commented upon by the affected institutions.[44] The granting of the storage permit includes the declaration that the project is of public interest and that the land above the site may be used, and eventually expropriated, for the necessary work to install the injection facility and auxiliary installations.

The permit is granted, in all cases, by the Minister for Industrial Affairs. In contradiction to these provisions of Article 5 and of Article 11(1), Article 10(3) states that the declaration of the project of being in the general interest shall be made by the Minister of Industrial Affairs, if the permit is granted by the Central State, and by the responsible CA in the other cases. Indeed, as the storage permit is never granted by a CA, there are no 'other cases' to which the declaration of public utility could refer.

Permits for storage sites in the marine underground may not be granted, where this would be in conflict with the obligations of international marine conventions (Third Additional Article).
Storage permits must be taken into consideration by local, regional or national administrations during the procedures for town and country planning (First Additional Article).

3.5 Application for a storage permit (Directive 2009/31, Article 7)

Article 7 of Directive 2009/31 lists ten documents or group of documents which shall accompany the application for a storage permit. Article 11(5) of Ley 40/2010 takes over most of these requirements, without adding requests for supplementary information. There are the following deviations:

[44] This provision is not clear: Art 10(7) mentions that the information 'recabará informe de los órganos afectados'*('*shall be commented by the affected institutions'). While it may be presumed that the affected CA has a right to comment, the provision does not state, though, whether the Ministry for the Environment or the Minister for Economic Affairs etc. have a right to comment. It does not either indicate, to what extent the opinions shall have to be taken into account.

a) Article 7 no 7 of the Directive requires the submission of a corrective measures plan. According to Article 16(2) of the Directive, such a plan shall be submitted to and approved by the competent authorities.

   Article 11(5)(h) only requires the applicant to submit a 'proposal for corrective measures' ('propuesta de medidas correctores'). He is not obliged to submit a plan and to have it approved.

   Article 14 of Ley 40/2010 deals with the content of the storage permit. That Article provides under letter (g) that the applicant shall inform the Minister for Industrial Affairs and the competent institution of the CA of significant irregularities or leakages, inform them of a corrective measures plan and apply this plan when significant irregularities or leakages occur.

   As this information under Article 14 does not provide that the corrective measures plan be submitted already with the application for a storage permit and be approved beforehand, Article 11(5)(h) is not quite correctly transposed;

b) Article 7 no 9 of Directive 2009/31 requires the submission of documentation according to Article 5 of Directive 85/337 on the environmental impact assessment of certain projects.

   Article 11(j) of Ley 40/2010 requires the submission of an initial document of the project or environmental documentation which corresponds to the requirements of Articles 6 and 16 of the Spanish Regulation on environmental impact assessment.[45] However, Article 6, which refers to projects listed in Annex I to Directive 85/337, does not provide for the submission of a document that describes measures to avoid, reduce or correct significant negative effects of the project on the environment; such a document is required by Article 5 of Directive 85/337. Article 6 of the Spanish Regulation also does not require the submission of a non-technical summary of the documentation, even though such a document is required by Article 5 of Directive 85/337.

   Article 16 which refers to projects listed in Annex II to Directive 85/337, does not require the submission of a non-technical summary of the documentation.

   Article 7 no 7 of Directive 2009/31 has thus not been correctly transposed into Spanish law.

Article 11(2) of Ley 40/2010 provides that the details of the application procedure shall be dealt with by Regulation. As of the end of June 2011, such a regulation had not been published. The Ley states already that such procedures shall be open to all companies which have the necessary capacity and that criteria for granting permits shall be objective, published and transparent. However, priority for a storage permit concerning a specific storage site shall be given to the holder of an exploration permit concerning this site, provided all conditions of the exploration permit were complied with, the exploration has finished and the application for the storage permit was submitted during the validity of the exploration permit (Article 11(3)).

Holders of other mining and geological exploitation rights that do not concern CO_2 storage, who are capable of demonstrating the likelihood of a suitable storage site for CO_2 within the ambit of their rights, may directly present an application for a storage permit and need not pass via an exploration permit, provided their application is made during the validity of their permit (Article 11(4)).

[45] Real Decreto Legislativo 1/2008 (n 40, above).

The application shall be transmitted to the affected CAs which may comment on it within a period of three months. After that period, the procedure may continue without them (Article 11(6)).

3.6 Conditions for storage permit

Article 8 of Directive 2009/31 contains a number of conditions which must be fulfilled, before a storage permit may be granted. These conditions provide that the competent authority must be satisfied that:

a) all relevant requirements of Directive 2009/31 and of other EU legislation are met;
b) the operator is financially sound and technically competent and reliable to operate and control the site and that professional and technical development and training of the operator and all staff are provided;
c) in the case of more than one storage site in the same hydraulic unit, the potential pressure interactions are such that both sites can simultaneously meet the requirements of Directive 2009/31.

Furthermore, the competent authority must consider any opinion of the Commission on the draft storage permit.

Ley 40/2010 does not add supplementary conditions. Its Article 13 partially transposes Article 8 of the Directive. Article 13 provides that the permitting authority, the Minister for Industrial Affairs, shall be satisfied that all applicable legislation is complied with. A reference to EU legislation is not made. Such EU legislation may concern in particular surface water[46] and groundwater,[47] nature protection sites,[48] environmental impact assessment legislation.[49] The general reference to 'other applicable provisions' is, in these circumstances, too general.

Article 13(c) of Ley 40/2010 does not refer to hydraulic structures, but, more generally, to 'the same underground structure' ('la misma estructura subterranea'). However, as the term 'underground structure' includes hydraulic units, this constitutes a correct transposition of Article 8.

Article 11(6) of Ley 40/2010 states that an application shall be sent to the European Commission with the request to comment on the application within one month. However, nothing is said about what the permitting authority shall do with the Commission's comments, neither in Article 13 nor in other places of Ley 40/2010.

3.7 Content of storage permit

Article 9 of Directive 2009/31 stipulates that the storage permit shall contain 'at least' nine different items which are explicitly enumerated.

Article 14 of Ley 40/2010 enumerates eleven items which shall be laid down in a storage permit. They correspond very largely to the requirements of Article 9 of the Directive. Ley 40/2010 adds the approval of the plan for operating the storage site and the declaration on the environmental impact assessment. Article 14(a) requires the indication of the precise limits of the storage site and storage complex.

The approved corrective measures plan is not part of the content of the storage permit, as commented upon above under section 3.5. This omission contradicts Article 9 no 6. Article 14

[46] Directive 2000/60 establishing a framework for Community action in the field of water policy, OJ 2000, L 327, p 1.
[47] Directive 2006/118 on the protection of groundwater against pollution and deterioration, OJ 2006, L 372, p 19.
[48] Directive 92/43 on the conservation of natural habitats and of wild fauna and flora, OJ 1992, L 206, p 7.
[49] Directive 85/337 on the assessment of the effects of certain public and private projects on the environment. OJ 1985, L 175, p 40.

also does not provide for information on the hydraulic unit in the storage permit, contrary to Article 9 no 2 of the Directive.

3.8 Commission review of the permit (Directive 2009/31, Article 10)

According to Article 10 of Directive 2009/31, Member States shall make available to the Commission the storage permit application within one month after receipt, add the related material, and also send the draft storage permit to the Commission. The Commission may issue an opinion on the draft storage permit. The storage permit itself shall also be sent to the Commission, where it departs from the Commission opinion, the Member State shall state the reasons for this departure.

Article 11(6) of Ley 40/2010 provides that the application for a storage permit shall be sent to the Commission within one month after receipt. The relevant documents are part of the application, so that the Commission is to be informed of all relevant aspects.

However, Ley 40/2010 does not indicate that the granting of a storage permit must be reasoned. Therefore, it does not either indicate that the Spanish authorities have to give reasons, when they depart from the Commission opinion with regard to the storage permit.

3.9 Changes and revision of the permit (Directive 2009/31, Article 11)

The obligation that the operator shall inform the Minister for Industrial Affairs of any change in the operation of the site, is laid down in Article 15(1) of Ley 40/2010; the information is also to be sent to the affected CA. The changes must be approved by the Minister for Industrial Affairs. The authorities of the CA shall make sure that no change in the operation of the site occurs without a new (amended) storage permit, and have to inform the Minister of Industrial Affairs; in appropriate cases, they may ask for a revision (Article 15(2)) or a withdrawal of the storage permit (Article 15(3)).
The conditions of Article 11(3) of the Directive, under which a revision or withdrawal of the storage permit may take place, are completely taken over in Article 15(3) of Ley 40/2010.

Also, all provisions of Article 11(5) of Directive 2009/31 that deal with the temporary intervention of public authorities in the case of the withdrawal of a permit are fully taken over by Ley 40/2010 (Article 15(5) till (7)). Ley 40/2010 provides that in the case of the withdrawal of a storage permit and until the issuing of a new permit, it is the authorities of the CA which shall be obliged to temporarily take over all the legal obligations for injections, monitoring and corrective measures and the responsibilities under the Spanish environmental liability legislation (Article 15(6)). This is surprising, as it is the Central State (Minister for Industrial Affairs) which grants and withdraws the storage permits; one would therefore have expected that these obligations are taken over by the Central State.

3.10 CO_2 stream acceptance criteria and procedure (Directive 2009/31, Article 12)

Article 18 of Ley 40/2010 transposes almost word by word the provisions of Article 12 of Directive 2009/31 into Spanish law. There are minor deviations: while under EU law, the CO_2 stream shall consist 'overwhelmingly' of carbon dioxide, Article 18 requires that CO_2 constitutes the majority ('mayoritariamente'); no precise percentage of CO_2 is given. And while Article 12 intends to prevent the breach of requirements of applicable EU legislation, Article 18 just refers to applicable provisions ('la normativa aplicable').

The analysis of the composition of the CO_2 stream required by Article 12 (39 of Directive 2009/31, shall be made by an accredited entity; details for this shall be laid down by regulation which were, at the end of June 2011, not yet published.

Article 18(4) of Ley 40/2010 asks the operator to take into account any guidelines which the EU Commission might issue with regard to the CO_2 stream acceptance criteria.

3.11 Monitoring (Directive 2009/31, Article 13)

The monitoring requirements laid down in Article 19(1) of Ley 40/2010 correspond completely to the requirements of the Directive; the imprecise wording of Article 13 of the Directive was literally taken over by Ley 40/2010. The monitoring plan, which the operator shall submit together with his application for a storage permit, will be sent by the Minister for Industrial Affairs to the affected CA, in order to be approved by the CA. The approved plan is then sent back to the Minister and incorporated into the storage permit (Article 19(2)). The same procedure applies to any updating of the monitoring plan (Article 19(3) of Ley 40/2010).

3.12 Reporting obligations of the operator (Directive 2009/31, Article 14)

Article 20 of Ley 40/2010 took over word by word the reporting requirements of Article 14 of the Directive. This even includes the general clause of Article 14 no 4. No further information obligation is laid on the holder of the storage permit.

3.13 Inspections (Directive 2009/31, Article 15)

Also, Article 15 of the Directive was transposed into Spanish law almost word by word (Article 21). The inspections shall be carried out by the affected CAs which shall send a copy of the inspection report (Article 15(4) of the Directive, Article 21(5) of Ley 40/2010) to the Minister for Industrial Affairs. The inspection reports shall not only have to be publicly available, as required by the Directive, but shall have to be published (Article 21(5) of Ley 40/2010 – 'se hará público').

3.14 Leakages and significant irregularities (Directive 2009/31, Article 16)

Article 22 of Ley 40/2010 fully transposes the requirements of Article 16 into Spanish Law. The operator shall notify the authorities of the affected CA of any leakage or significant irregularity. These authorities shall ensure that the necessary measures are taken or they shall take the necessary measures themselves. No participation or information of the Minister for Industrial Affaires is foreseen, though the Minister may be informed through the updating of the monitoring plan (see 3.11, above) or the request to revise or withdraw the storage permit (see 3.9, above). In any case, the procedure in cases of leakages or other significant irregularities of the storage is entirely in the hands of the CA.

3.15 Closure and post-closure (Directive 2009/31, Article 17)

Article 23 of Ley 40/2010 deals with the closure of a storage site and the post-closure obligations. The obligations of Article 17 of the Directive were fully transposed into Spanish law, including in particular the provisional and definite post-closure plan.

The provisional post-closure plan is sent by the Minister for Industrial Affairs to the authorities of the affected CA which shall approve of the plan. Then the provisional plan is incorporated in the storage permit.

The authorities of the affected CA shall ensure that after the closure of a storage site and until the transfer of responsibility to the State becomes effective, the operator complies with his obligations under Ley 40/2010, in particular the monitoring, reporting and taking of corrective measures (Article 23(4)). Where a storage permit is withdrawn, the obligations for complying with the monitoring of the site and for taking, where necessary, corrective measures are placed on the Minister for the Environment (Article 23(5)). It is not clear why this obligation was not placed on the affected CA, as in the case of a withdrawal of the storage permit (see 3.9, above). Indeed, in both cases, the obligations are put on the public authorities for a limited amount of time.

Costs borne by the public authorities may be recovered from the operator (Article 23(6) of Ley 40/2010). No further specification is given.

3.16 Transfer of responsibility (Directive 2009/31, Article 18)

Article 24 of Ley 40/2010 almost fully transposes the requirements of Article 18 of the Directive into Spanish law. The competent authority for accepting that the conditions for a transfer of responsibility are met, is the Minister for the Environment, who also shall prepare a draft transfer decision (Article 24(3)). The draft decision, together with report stating that the requirements of Article 18(1) of the Directive – Article 24(2) of Ley 40/2010 – are complied with, are sent to the Commission. The Commission's obligation to notify the Spanish authorities when it intends not to issue an opinion (Article 18(4) of the Directive), and to give reasons, was not transposed.

The decision to transfer the responsibility itself is taken by the Spanish Government (Article 24(4)). However, the provision of Article 18(5) according to which the decision of transferring the responsibility shall give reasons, where it departs from the Commission opinion, is not transposed.

Article 25 of Ley 40/2010 deals with the monitoring and other costs after the transfer of responsibility. It provides that the Government shall take the necessary measures for regulating the details of the period following the transfer of responsibility and shall, in particular, adopt a financial instrument to ensure the necessary monitoring. The operator of the storage site shall contribute to this financial instrument before the transfer of responsibility takes place; these costs shall cover at least the monitoring costs for a period of thirty years (Article 25(2)).

The details of all this shall be determined by way of Regulation. As of the end of June 2011, no such Regulation had been published.

3.17 Access to transport and storage facilities (Directive 2009/31, Article 21)

Article 26 of Ley 40/2010 states that the Minister for Industrial Affairs will adopt a Regulation to guarantee access of third parties to the transport system of CO_2 and to the storage site. No such Regulation had been published by the end of June 2011. For the rest, Article 26 transposes the requirements of the different provisions of Article 21 of the Directive word by word. The only addition in Ley 40/2010 is that the operator of a storage site may charge a price for access to the site, respecting the principles of transparency and non-discrimination. A Regulation by the Minister for Industrial Affairs shall lay down details; as of the end of June 2011, no such Regulation had been published.

3.18 Dispute settlement (Directive 2009/31, Article 22)

As mentioned above, the Minister for Industrial Affairs is normally responsible for settling cases of dispute concerning access to the transport system or the storage site (see section 3.9). Nothing is said in Ley 40/2010 with regard to judicial procedures in the case where the dispute settlement by the Minister is not successful.

3.19 Transboundary cooperation (directive 2009/31, Article 24)

Article 24 of Directive 2009/31 is vague with regard to the way in which the Member States concerned shall 'jointly meet the requirements' of Directive 2009/31 and of EU legislation in general.

Ley 40/2010 does not contain detailed provisions on transboundary cooperation. The only mentioning of transboundary issues is made in Article 27(2) and concerns third parties access to the transport system or the storage facility (see section 2.9, above).

3.20 Registers (Directive 2009/31, Article 25)

Article 28 of Ley 40/2010 requests the Minister for Industrial Affairs to establish and maintain a register of

a) all exploration permits;
b) all storage permits granted;

c) storage sites that were closed.

The CAs and the Minister for the Environment shall submit the necessary information.

The Minister for the Environment shall keep a register of all closed storage sites and surrounding storage complexes, which includes maps and information that allows the assessment of whether the stored CO_2 will be completely and permanently contained.

The information contained in the registers shall be taken into account by the different local, regional and national authorities in their planning or permitting procedures (Article 28(4) and First Additional Article).

3.21 Penalties (Directive 2009/31, Article 28)

Ley 40/2010 contains a detailed list of administrative ('Infracciones administrativas') penalties, differentiating between very serious, serious and light infringements. Very serious infringements are sanctioned with amounts between two and five million euro, serious infringements with penalties between 200,000 and two million euros, and light infringements with penalties up to 200,000 euros (Article 35).

Very serious infringements are injections of CO_2 without a permit, a serious threat caused for human health or the environment by omitting to comply with provisions of Ley 40/2010, and the falsifying of information with regard to the transfer of responsibility (Article 31).

The penalties are pronounced by the CAs, except where the permits concern sites which are monitored by the Central State Administration (Article 38).

4 Conclusions

- Spain transposed Directive 2009/31 on carbon capture and storage on time. 'Ley 40/2010 de 29 de diciembre, de almacenamiento geológico de dioxide de carbone' entered into force on 31 Decembre 2010 (BOE 317 of 30 December 2010, section I, p.108419).

- Ley 40/2010 principally deals with the storage of CO_2; capture and transport of CO_2 are only very marginally discussed. It is not foreseen that the Spanish regions (Comunidades Autónomas) will adopt legislation on CCS of their own.

- Ley 40/2010 applies to the storage of CO_2 in the underground, including the territorial sea, the Spanish Exclusive Economic Zone and the continental shelf.

- Ley 40/2010 does not apply to the storage of CO_2 for investigation, development or experimentation purposes for new products or processes, provided such storage is for less than 100 kilotonnes. The Ley does not provide for any provision on enhanced hydrocarbon recovery (EHR).

- The legal basis of the Act is Article 149(1) no 23 of the Spanish Constitution (environment protection), except Articles 10, 11, 13 to 15, 24 and 25 which are based on Article 149(1) no 13 (economic activities), and Articles 3, 6 to 9, 16,17, 26 and 27 which are based on Article 149(1) no 25 (mining and energy). The Government of the Comunidad Autónoma of Aragón introduced an application for unconstitutionality of Ley 40/2010 with the argument that the Ley did not respect the division of competencies between central government and the Comunidades Autónomas, foreseen in the Spanish Constitution.

- It is not clear, whether Ley 40/2010 would allow a Comunidad Autónoma to prohibit the storage of CO_2 on its territory altogether. Ley 40/2010 is silent on this question. As all

permits for storage of CO_2 are granted by the Minister for Industrial Affairs, it must be presumed that Ley 40/2010 did not intend to give such a possibility to the Comunidades Autónomas. The Spanish Constitutional Court might, in the case mentioned above, indirectly pronounce itself on this question.

- With regard to the selection of storage sites, Ley 40/2010 took over Article 4 of Directive 2009/31. It does not determine, who decides on the suitability of a geological formation as a storage site. As a permit is needed for the storage of CO_2 and this permit is granted by the Minister for Industrial Affaires, it is in the last instance the Minister who decides on the suitability of a site, though private companies may make proposals.

- A permit is also needed for examining the suitability of a geological formation as a storage site. This permit is granted by a Comunidad Autónoma, where the exploration is limited to the territory of that Comunidad. Where more than one Comunidad Autónoma is affected, the permit is granted by the Minister for Industrial Affairs. An applicant has to submit documentation, in particular an exploration plan and evidence of his technical and economical capacity to explore geological formations. The permit gives an exclusive right to explore the underground. It is normally granted for a period of four years; a prolongation of two times two years is possible.

- A storage permit may be granted on application. An application must be accompanied by extensive documentation, though a corrective measures plan, required by Article 7 no 7 of Directive 2009/31, need not be submitted. Furthermore, a non-technical summary of the environmental impact assessment made and a description of the measures to avoid, reduce or correct significant negative environmental effects of the project, need not be submitted with the application. Details of the application procedure are to be regulated in a future Regulation.

- The application for a storage permit is transmitted to the affected Comunidades Autónomas which may comment on it. The application shall also be sent to the European Commission. The storage permit is granted by the Minister for Industrial Affairs, provided he is satisfied that all applicable legislation is complied with; a reference to EU legislation, required by Directive 2009/31, is not made. Ley 40/2010 does not either require the Minister to state its reasons, where he departs from the Commission's opinion.

- The storage permit is granted for a period of maximum 30 years; a prolongation of two times ten years, exceptionally for further ten years, is possible. The granting of the permit includes the declaration that the storage is in the public interest and that expropriation may eventually occur.

- As regards changes in the operation of the site and the corresponding obligations to inform the authorities, the CO_2 stream acceptance criteria and procedure the monitoring, inspections, and leakages and significant irregularities, Ley 40/2010 took over the provisions of Directive 2009/31 almost word by word. In a number of cases, though, executive regulations are foreseen, in order to work out the details of the different activities and obligations. The monitoring of the storage site and the inspections are laid into the hands of the Comunidades Autónomas.

- The Spanish provisions on closure and post-closure of a site follow those of Directive 2009/31. The Comunidades Autónomas shall ensure that the operator complies with his legal obligations.

- Also the provisions of Ley 40/2010 on the transfer of responsibility very largely correspond to those of Directive 2009/31. The minimum period, before transfer may take place, is 20 years, though a shorter period may be fixed by Central Government when all legal

requirements are complied with. The proposal for transfer is to be sent to the European Commission; nothing is said about the obligation to justify the decision not to follow the Commission's opinion, contrary to Article 18(5) of Directive 2009/31.

- The Spanish Government shall regulate the question of costs which incur after the transfer of responsibilities.

- Liability is limited to environmental damage, as in Directive 2009/31 which refers to Directive 2004/35. Liability for bodily injury or economic loss is thus excluded. Such damage follows the ordinary liability provisions of Spanish law.

- The financial security which the applicant for a storage permit has to submit, shall be established by the Minister for Industrial Affairs who has to take into consideration the storage capacity of the site, the cost of saved greenhouse gas emissions, the dismantling of the storage facilities and the closing of the storage site. This financial security is supplementary to the financial security which an operator has to submit under the Spanish Ley 26/2007 on environmental liability.

- Ley 40/2010 contains several provisions with the objective to avoid conflicting uses of the underground, during the exploration stage, the storage stage and with regard to access to the transportation system and the storage facilities. The final responsibility in this regard is generally given to the Minister for Industrial Affairs.

- Nothing is said about dissemination of information on CO_2 storage, though access to information on request is ensured. A register for exploration permits, storage permits and closed storage sites is foreseen, though not yet operational.