

Post Implementation Review of:

- **The Storage of Carbon Dioxide (Termination of Licences) Regulations 2011;**
- **The Storage of Carbon Dioxide (Amendment of the Energy Act 2008 etc.) Regulations 2011;**
- **The Storage of Carbon Dioxide (Access to Infrastructure) Regulations 2011; and**
- **The Storage of Carbon Dioxide (Inspections etc.) Regulations 2012.**

INTRODUCTION

This document summarises the Post Implementation Review (“PIR”) of four regulations on the storage of carbon dioxide. The review examines available evidence to establish whether the regulations are meeting their objectives, whether there may be a better way of achieving them, and whether there have been any unintended consequences.

1) BACKGROUND AND SUMMARY OF OBJECTIVES

All four regulations transpose parts of European Directive 2009/31/EC (Geological Storage of Carbon Dioxide), hence are treated together for the purpose of review. The four regulations and their policy objectives are listed in the table below.

Summary of the development of Part 3 of the Regulations

Piece of legislation	Policy
The Storage of Carbon Dioxide (Termination of Licences) Regulations 2011	Provides for transfer of responsibility for closed storage sites to government and implements financial mechanisms that allow this.
The Storage of Carbon Dioxide (Amendment of the Energy Act 2008 etc.) Regulations 2011	Extends the geographical scope of the prohibition on carrying out carbon dioxide storage activities without a licence under Part 1, Chapter 3 of the Energy Act 2008 (“Chapter 3”). That prohibition is extended so that it applies onshore in England and Wales and Northern Ireland, and the adjacent internal waters.
The Storage of Carbon Dioxide (Access to Infrastructure) Regulations 2011	Ensures third parties can gain fair access to transport networks and storage sites. Establishes arrangements to settle access disputes.
The Storage of Carbon Dioxide (Inspections etc.) Regulations 2012	Establishes a scheme for routine inspection of CCUS facilities to enforce safety and environmental compliance.

2) ASSESSMENT OF IMPLEMENTATION OUTCOMES, COSTS AND BENEFITS

The activity allowable under these regulations has not commenced in the UK, though proposals for carbon capture usage and storage (CCUS) schemes have been developed with Government support. With no facilities in operation there is no activity to provide monitoring data, experiences or lessons for stakeholders to comment confidently on the burden of these regulations.

Based on the limited available evidence, the four regulations have successfully transposed requirements of Directive 2009/31/EC. With no determinations made under these regulations, no measurable impacts or unintended effects have been identified.

3) NEXT STEPS AND CONCLUSION

Whilst these regulations have not yet been used, they are needed to enable future CCUS deployment and successful carbon dioxide transport and storage operations. It is proposed that the Regulations remain unchanged until the next review cycle, or until updated international requirements come into force, whichever is sooner.

<p>Regulations reviewed: The Storage of Carbon Dioxide (Termination of Licences) Regulations 2011 (<i>IA Number: DECC0034</i>) The Storage of Carbon Dioxide (Amendment of the Energy Act 2008 etc.) Regulations 2011 (<i>No IA written</i>) The Storage of Carbon Dioxide (Access to Infrastructure) Regulations 2011 (<i>IA Number: DECC0024</i>) The Storage of Carbon Dioxide (Inspections etc.) Regulations 2012 (<i>IA Number: DECC0063</i>)</p> <p>Lead department or agency: BEIS/Oil and Gas Authority</p> <p>Contact for enquiries: CCUS Policy Team Department for Business Energy and Industrial Strategy 1 Victoria Street, London, SW1H 0ET enquiries@beis.gov.uk</p>	Post Implementation Review
	Source of intervention: EU
	Type of regulation: Secondary
	Type of review: Statutory
	Date of implementation: 11/07/2011
	Date review due (if applicable): 2021
Summary	

1a. What were the policy objectives and the intended effects? (If policy objectives have changed, please explain how.)

These regulations are all intended to govern a process whereby captured carbon dioxide (from electricity generation and industry) is transported to be permanently stored offshore in geological formations beneath the sea-bed. All three regulations implement parts of Directive 2009/31/EC (European directive on Geological Storage of Carbon Dioxide). Objectives are as follows:

1. **The Storage of Carbon Dioxide (Termination of Licences) Regulations 2011** transfers responsibility of closed storage sites to government and implements financial mechanisms that allow this.
2. **The Storage of Carbon Dioxide (Amendment of the Energy Act 2008 etc.) Regulations 2011** extends the geographical scope of the prohibition on carrying out carbon dioxide storage activities without a licence under Part 1, Chapter 3 of the Energy Act 2008 (“Chapter 3”). That prohibition is extended so that it applies onshore in England and Wales and Northern Ireland, and the adjacent internal waters.
3. **The Storage of Carbon Dioxide (Access to Infrastructure) Regulations 2011** Ensures third parties are able to obtain fair access to transport networks and storage sites. Puts in place arrangements to expeditiously and independently settle disputes over access. Help promote strategic planning for shared transport and storage infrastructure.
4. **The Storage of Carbon Dioxide (Inspections etc.) Regulations 2012** sets up a scheme for routine inspection of carbon capture and storage facilities for enforce safety and environmental compliance

1b. How far were these objectives and intended effects expected to have been delivered by the review date? If not fully, please explain expected timescales.

The Regulations have not been fully tested as to date there are no operational CCUS projects in the UK and therefore no CO₂ transport and storage operations in the UK. There will not be any operational schemes to test these regulations before their respective review dates (ranging from July 2016 to February 2017)

2. Describe the rationale for the evidence sought and the level of resources used to collect it, i.e. the assessment of proportionality.

These reviews have been 'light touch'; whilst proposals for carbon capture and storage (CCUS) schemes have been developed, the activity allowable under these regulations has not commenced in the UK.

The PIR guidance states that the strength of evidence sought for PIRs should be proportionate to the scale of the regulation and its expected impact.

This assessment has adopted a light touch approach as:

- The Secretary of State has not been required to make a determination under these Regulations and is not expected to do so in the near future.
- The Storage of Carbon Dioxide (Access to Infrastructure) Regulations 2011 were modelled on long-standing regulations that provide for third party access to pipeline infrastructure in the petroleum industry.
- The economic cost to business of each of these regulations is expected to be very low (£10-15k) with only a very limited number of organisations affected.

3. Describe the principal data collection approaches that have been used to gathering evidence for this PIR.

No monitoring data is available for collection in the absence of any operational CCUS projects in the UK.

Informal dialogue with stakeholders representing the industry and CCUS developers was considered the most effective way to establish the impact of these Regulations. Given the limited number of stakeholders, it was not considered appropriate to undertake a formal consultation. Consultation with the industry body (CCS Association) confirmed that without operational projects, it is difficult for industry to provide a detailed perspective on the regulatory framework as whole, or whether there are any specific regulatory barriers to the delivery of projects.

4. To what extent has the regulation achieved its policy objectives? Have there been any unintended effects?

The four sets of regulations have successfully transposed requirements of Directive 2009/31/EC. The Storage of Carbon Dioxide (Access to Infrastructure) Regulations 2011 informed proposals for a number of CCUS schemes which propose shared carbon dioxide transport pipelines. With no determinations made under these regulations, no measurable impacts or unintended effects have been identified.

5a. Please provide a brief recap of the original assumptions about the costs and benefits of the regulation and its effects on business (e.g. as set out in the IA).

The original IAs assessed the administrative costs incurred by enforcing the regulations; including staff time spent preparing applications and administrative fees. Details of the underlying assumptions are given within the Appendix.

5b. What have been the actual costs and benefits of the regulation and its effects on business?

The Regulations are untested and therefore has no actual costs to review. The original assumptions and costing in the Impact Assessment are still considered reasonable by the industry body and the only company to have attempted to progress a CCUS project.

6. Assessment of risks or uncertainties in evidence base / Other issues to note

The main limitation to the evidence base is that the estimates are produced well in advance of any use of the Regulations. No monitoring data has been collected as there are no operational CCUS projects in the UK and none are likely before 2020.

7. Lessons for future Impact Assessments

No data could be collected as the activity under any of the regulations has not occurred yet. Therefore we are unable to comment on the quality of the impact assessments, save for consultation with industry, which indicates our approach remains reasonable.


8. What next steps are proposed for the regulation (e.g. remain/renewal, amendment, removal or replacement)?

Remain. Whilst these regulations have not yet been used, they are needed to enable any future CCUS deployment and successful CO₂ transport and storage operations. We do not anticipate there being any possibility of removing them as these regulations as they transpose a European Directive and doing so could incur infraction proceedings against the UK.

Sign-off For Post Implementation Review:

I have read the PIR and I am satisfied that it represents a fair and proportionate assessment of the impact of the policy.

Signed:



Date: 7 June 2018

Claire Perry

Minister for Energy and Clean Growth

Appendix

In Carbon Capture and Storage (CCUS), carbon dioxide from electricity generation and industry is captured at source then transported to a site for permanent storage. In the UK, storage is proposed to occur offshore in geological formations beneath the sea-bed. This appendix summarises the legal context and evidence of costs and benefits of the Post Implementation Review in more detail than would be possible in the standard template.

Legal background

The Storage of Carbon Dioxide (Termination of Licences) Regulations 2011

- These Regulations form part of the implementation by the United Kingdom of Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide (“the Directive”). In particular, they implement Articles 18 and 20 on the transfer of responsibility to the State for a closed storage site and the associated financial mechanism the Government will require before accepting responsibility. This means that once a commercial operation storing carbon dioxide has finished, it becomes the responsibility of the government to make sure the greenhouse gases remain stored safely.

The Storage of Carbon Dioxide (Amendment of the Energy Act 2008 etc.) Regulations 2011

- This instrument is part of the transposition of Directive 2009/31/EC of the European Parliament and of Council of 23 April 2009 on the Geological Storage of Carbon Dioxide (the “Directive”), and extends the geographical scope of the prohibition on carrying out carbon dioxide storage activities without a licence under Part 1, Chapter 3 of the Energy Act 2008 (“Chapter 3”). That prohibition is extended so that it applies onshore in England and Wales and Northern Ireland, and the adjacent internal waters.

The Storage of Carbon Dioxide (Access to Infrastructure) Regulations 2011

- These Regulations are part of the transposition of Directive 2009/31/EC of the European Parliament and of Council of 23 April 2009 on the Geological Storage of Carbon Dioxide (the “Directive”). The policy objectives were to:
 - Ensure third parties are able to obtain fair and open access to transport networks and storage sites (Article 21), and put in place arrangements to expeditiously and independently settle disputes over access (Article 22);
 - To help promote strategic approach to planning CCUS infrastructure to maximise access to risk/cost reduction opportunities offered by shared transport and storage networks
- These regulations are intended to balance the interests of the owners and potential users of assets, to ensure smaller third parties are not disadvantaged or overcharged when seeking access, and to promote collaborative planning to ensure capacity meets demand.
- These Regulations have already fully implemented the requirements in Articles 21 & 22 of the Directive to provide a specific regime for fair and transparent access by third parties to carbon capture and storage infrastructure.
- A guidance document has been published which sets out the approach the Secretary of State would expect to follow if required to make a determination under these Regulations, providing the basis on which developers can seek access to third party transport and storage networks.

The Storage of Carbon Dioxide (Inspections) Regulations 2011

- These Regulations form part of the implementation by the United Kingdom of Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide (“the Directive”). In particular, they amend The Storage of Carbon Dioxide (Licensing etc.) Regulations 2010 (S.I.2010/2221) to implement Article 15 of the Directive on the inspection of carbon dioxide storage complexes.

Review of the IA and Evidence Used

To date, no transport and storage networks are operational or are being constructed in the UK, meaning potential cost/risk reduction benefits have not yet been realised.

This limits the number of stakeholders able to feedback on these Regulations, and also increases the risk for the establishment of early CCUS projects, driving up the costs of development.

The Storage of Carbon Dioxide (Termination of Licences) Regulations 2011

- **Costs** The Impact Assessment (DECC0034) provided estimates of the potential costs associated with the measure. In summary, Article 18 requires the owner of the Licence to prepare a Transfer Report before they can be released from the licence. The information that needs to be contained in the report will be known to the business from their activities undertaken in order to meet the requirements of the licence, therefore the only burden on business will be the preparation of the report.

It was estimated that the preparation of each report would cost around £3,500 (Annual Survey of Hours and Earnings 2009 prices), based on the salary costs of a manager, an engineer, a lawyer and an accountant working full-time, for one week, to prepare the report, which contains information that the licensee would be expected to have in their possession. The termination of the licence will only occur once injection of carbon dioxide (CO₂) has ceased and enough time has elapsed so the CO₂ is deemed stable in the storage site, referred to as the post closure phase. For the purposes of the analysis, it was assumed that the termination of the licence for the first CCUS demonstration project would occur in 2050, based on an indicative post closure phase of 20 years. The resulting cost to business in Net Present Value (NPV) terms was therefore estimated at £1,050 (2009 prices, NPV base year 2009).

In addition, it was assumed that a further three demonstration projects would be progressed on newly built power stations (either coal or gas) with an assumed operating life of 40 years, each with its own storage site. The total cost to business for the three transfer reports was estimated to be £10,500, resulting in an NPV of £1,300 (2009 prices, NPV base year 2009) based on an assumption that the licences would be terminated in 2080.

The total cost for all four projects was therefore estimated at £14,000 (2009 prices) and £2,350 in NPV terms (2009 prices, NPV base year 2009). The assumptions were informed by a consultation with industry and are still considered reasonable. The total cost to business updated to 2015 prices is around £15,700 and £2,700 in NPV terms.

- **Benefits** No benefits were identified or valued from the regulations under the IA. In order for the licence to be terminated, the licensee must pay a transfer fee, which is estimated to be equal to the cost of the monitoring for the following 30 years that would have needed to be carried out by the licensee if the licence had not been terminated. It was considered reasonable to assume that there would be no difference in expertise or efficiency between a

business or government carrying the maintenance work on the storage site once the CO₂ stored is deemed to be in a stable state

The Storage of Carbon Dioxide (Access to Infrastructure) Regulations 2011

- **Costs** Average Annual Total Cost = £10k Total Transition Cost = £15k.

The cost represents an estimate of the cost to one storage site operator of preparing a response to a case brought by a third party trying to gain access to the site. The exact cost would depend on the nature of the storage site, access requested and the dispute.

The cost is based on the assumption that a dispute involving storage is only referred to the Secretary of State once and this happens in 2020.

Owners of pipelines and storage sites will also be required to provide information on capacity and technical specifications once a year. This is estimated to cost approximately £150 per year per owner.

It is not possible to estimate the future number of carbon dioxide pipes and storage sites containing carbon dioxide, to estimate the full costs to business.

- **Benefits** The benefits of the scheme were not quantified in the IA; the principle effect of the legislation is to prevent undue delays caused by refusals by owners to allow access to infrastructure to competitors.

It is not yet possible to evaluate whether these estimates are correct, as no determinations have been made under these Regulations

The Storage of Carbon Dioxide (Inspections) Regulations 2011

- **Costs** The IA assumed costs to the operator for the time and associated expenses to undertake routine and non-routine inspections of all storage complexes within the scope of this Directive, with inspections being undertaken by existing oil/gas facility inspectors. Costs were estimated based on the all in staff cost of one inspector working full time, for three days including two nights hotel accommodation and were given in the IA as £960 per inspection (costs estimated by the Department and presented in 2010 prices). The cost to the operator of the visit will be in transporting the inspector out to the installation on the regular helicopter flights undertaking shift changes. This cost will not be additional as the helicopter will be in use whether there is an inspection or not. The regulation requires BEIS to carry out annual inspections of storage sites for the duration of the injection period (assumed to be 12 years for the first CCUS demonstration project) and three years into the post closure phase and thence every five years in the post closure phase thereafter (post closure phase indicatively given as 20 years in the EU Directive). The IA therefore estimated the total cost of inspection for this one storage site to be approximately £18,000. There is a Government commitment to support a further three demonstration projects by 2020, each assumed to inject carbon dioxide into separate storage sites for 40 years with the same inspection regime as described above, the total cost for all four demonstration projects is estimated to be approximately £155,000. The cost estimates did not include the costs of non-routine inspections which would only take place under special circumstances such as if a leakage is reported. No cost was given in the IA for non-routine inspections.
- **Benefits:** The transposition of Article 15 of the Directive completes the licensing regime needed to ensure the safe and economic storage of carbon dioxide. This will allow the CCUS

industry to develop within the UK and help deliver the UK's climate change commitments. The benefits of such a CCUS industry are estimated to be £4.8-14 billion.

The Regulation is thus far untested so no actual costs are available. However the costs for BEIS oil & gas inspections are now higher than in the original IA and are currently £1250 / day (based on 2015 rates). On this basis costs for inspection for the first CCUS site would be approximately £24,650 rather than £18,000. For the further three demonstration sites for 40 years of operation the estimated cost would be approximately £205,000 rather than £155,000. The cost increases are due to changes in how BEIS must recover and charge its costs since the IA was undertaken in 2011.