

AGGREGATES, CEMENT AND READY-MIX CONCRETE MARKET INVESTIGATION

Policy and regulation: regulations covering carbon emissions in the cement and aggregates markets

Introduction

1. Based on the submissions to us from main and third parties, a prominent area of policy and regulation in the relevant markets related to the regulation of carbon dioxide (CO₂) emissions (carbon emissions) arising primarily from cement production, but also from aggregates production. This working paper provides background information on the following carbon regulations covering the cement and aggregates markets in Great Britain:
 - (a) the EU Emissions Trading System (ETS);
 - (b) the Carbon Reduction Commitment Energy Efficiency Scheme (CRC); and
 - (a) Climate Change Agreements (CCA) and the Climate Change Levy (CCL).

2. Throughout this paper, we have incorporated comments from main and third parties, where they help to illuminate, or illustrate, the workings or implications of the relevant policy and regulation. For the purposes of this paper, we have not made an assessment (or concluded) on the effects of these policies and regulations on competition in the relevant markets, which is the subject of a separate working paper on the competition effects of policy and regulation.

The EU Emissions Trading System

Section overview

3. This section first sets out background information on the EU ETS, before examining the following areas in more detail: (a) the role of each EU member state in determining its cap on carbon emissions; (b) the ETS 'cap-and-trade' system; (c) the trading phases of the ETS (ETS Phases I to III); (d) the New Entrant Reserve and carbon

allowances for new entrants; (e) ETS compliance costs; and (f) the views of main and third parties on the overall impact of the ETS.

Background information

4. The EU ETS is a 'cap-and-trade' carbon trading system designed to limit and reduce the greenhouse gas emissions produced by its energy-intensive industry sectors and electricity generators (ETS sectors), including the production of cement clinker which is used in the manufacture of cement,¹ where carbon emissions are both a by-product of the chemical process by which clinker is created and the result of the burning of fossil fuels during the production process.² The ETS covers around 40 per cent of the EU's total greenhouse gas emissions and around half of its total carbon emissions.³

5. Whilst this section primarily focuses on the impact of the ETS on cement producers in Great Britain, namely Cemex UK Operations Limited (Cemex), Hanson, Lafarge Aggregates Limited and Lafarge Cement UK Limited (together Lafarge) and Tarmac Group Limited (Tarmac), for some of these, the ETS also covers their other business activities in Great Britain, the details of which have been set out below:
 - (a) Hanson told us that its brickworks activities (part of its 'Hanson Building Products' business division) were the only other area of Hanson's activities in Great Britain to be covered by the ETS (more specifically, since ETS Phase II—see below).
 - (b) Lafarge told us that it had owned a gypsum business, which was divested in late 2011, which was covered under the ETS.
 - (c) Tarmac told us that lime was the only other product which was covered under the ETS.

¹ The ETS covers the electricity generation and major energy-intensive sectors, including power stations, iron and steel, clinker and lime. Clinker is used in the manufacture of cement. Source: www.decc.gov.uk/en/content/cms/emissions/eu_ets/eu_ets.aspx. ETS sector coverage has gradually increased to include other sectors, such as gypsum and integrated steelworks, under ETS Phase II. Source: www.decc.gov.uk/en/content/cms/emissions/eu_ets/euets_phase_ii/euets_phase_ii.aspx.

² www.ipcc-nggip.iges.or.jp/public/gp/bgp/3_1_Cement_Production.pdf

³ www.environment-agency.gov.uk/business/topics/pollution/141019.aspx.

6. The ETS currently operates in 30 countries (in all 27 EU member states and since the start of 2008, in three non-member states, namely Iceland, Liechtenstein and Norway).⁴ The ETS forms one of the EU's key policies for meeting its commitment under the 1997 Kyoto Protocol to reduce its greenhouse gas⁵ emissions to 8 per cent below 1990 levels by the end of the first Kyoto Protocol commitment period (2008 to 2012).⁶
7. Within the ETS, clinker production is defined as the 'production of cement clinker in rotary kilns with a production capacity of more than 500 tonnes per day',⁷ or approximately 180 Kt of clinker a year. For the purpose of determining whether an installation is regulated under the ETS, 'production capacity' refers to the maximum capacity of the installation,⁸ although elsewhere in the scheme rules, 'capacity' may refer to actual historic production levels (eg in the determination of free allocation, 'initial installed capacity' is the average of the two highest months' production volumes during the baseline period).
8. The ETS threshold of around 180 Kt of clinker approximates to around 200 Kt of cement based on a broad consensus from the cement producers in Great Britain that each tonne of clinker could produce around 1.1 tonnes of CEM I cement (based on their FY11 cement production figures):
 - (a) Cemex estimated that across its two cement works and one grinding station in Great Britain, each tonne of clinker produced around [X] to [X] tonnes of CEM I cement.

⁴ http://ec.europa.eu/clima/policies/ets/index_en.htm.

⁵ The EU Emissions Trading Directive covered the six greenhouse gases (including carbon dioxide, which is the principal greenhouse gas) which were included in the Kyoto Protocol. Sources: www.doeni.gov.uk/niea/eu-ets-guidance01.pdf and http://unfccc.int/kyoto_protocol/mechanisms/emissions_trading/items/2731.php.

⁶ www.environment-agency.gov.uk/business/topics/pollution/32232.aspx.

⁷ ETS Directive 2003/87/EC, Annex I:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2003L0087:20090625:EN:PDF>.

⁸ The only technically coherent meaning of 'capacity' is, therefore, the capacity at which the installation is capable of being operated, ie the rated capacity of the installation to operate 24 hours a day, provided that the equipment is capable of being operated in that way. Source: http://ec.europa.eu/clima/policies/ets/docs/guidance_interpretation_en.pdf, p15.

- (b) Hanson estimated that each tonne of clinker produced between [x] and [x] tonnes of CEM I cement.
- (c) Lafarge estimated that across its four cement works in Great Britain, each tonne of clinker produced between [x] and [x] tonnes of CEM I cement.
- (d) Tarmac estimated that each tonne of clinker produced [x] tonnes of cement. It also provided historic production data going back to FY08, which showed that this figure ranged from [x] to [x] over the period.

9. Following the introduction of the EU Emissions Trading Directive in 2003,⁹ the ETS commenced the first of its three 'trading phases' (ETS Phase I),¹⁰ which lasted from 1 January 2005 to 31 December 2007. The ETS is currently approaching the end of its second trading phase (ETS Phase II), which started on 1 January 2008 and is due to end on 31 December 2012. The third trading phase (ETS Phase III) will commence on 1 January 2013 and end on 31 December 2020.¹¹ By the end of ETS Phase III, overall carbon emissions from ETS installations are expected to reduce to 21 per cent below 2005 levels.¹² The ETS will continue to operate beyond 2020.

(a) Role of each member state in determining its cap on carbon emissions

10. Each member state is responsible for administering the ETS for its own ETS sectors. In the UK, this responsibility is discharged by the Department for Energy and Climate Change (DECC) and the three devolved administrations, namely the respective Governments of Scotland, Wales and Northern Ireland.
11. Prior to the commencement of each of ETS Phases I and II, each member state was responsible for publishing its 'National Allocation Plan', a document which set out:
- (a) a national 'cap' on the total amount of 'EU Allowances' or 'EUAs' (carbon

⁹ www.decc.gov.uk/en/content/cms/emissions/eu_ets/legislation/legislation.aspx.

¹⁰ http://ec.europa.eu/clima/policies/ets/allocation/index_en.htm.

¹¹ http://ec.europa.eu/clima/policies/ets/index_en.htm.

¹² http://ec.europa.eu/clima/policies/package/index_en.htm.

allowances) during each relevant trading phase;¹³ and (b) the methodology by which the cap would be allocated to the different ETS sectors and their individual installations.¹⁴ Each member state's cap contributed to an overall EU cap on carbon emissions, where one carbon allowance must be surrendered to account for 1 tonne of carbon emitted. These carbon allowances, which were available free, were then distributed by each member state to its ETS installations. A proportion of the carbon allowances were also placed in a 'New Entrant Reserve' (NER) and some were available for auctioning by the member state.¹⁵ Further details on the NER are set out later in this paper.

12. Under ETS Phase III, however, many of these decisions will be determined at an EU level,¹⁶ and the system of National Allocation Plans will be replaced by a centralized EU-wide cap on carbon emissions, with allocations for all installations made according to harmonized EU rules and set out in each member state's 'National Implementation Measures'.¹⁷

(b) The ETS 'cap-and-trade' system

13. The finite number of carbon allowances for each trading phase acts as an overall cap on the ETS sectors' total carbon emissions and also maintains the scarcity of carbon allowances to facilitate their trading, eg directly between businesses, individuals and institutions,¹⁸ or on one of Europe's 'carbon exchanges'.¹⁹
14. Until January 2012, each member state was responsible for managing a registry system, which: (a) held, and tracked the movements of, its carbon allowances under

¹³www.environment-agency.gov.uk/business/topics/pollution/32232.aspx.

¹⁴www.decc.gov.uk/assets/decc/What%20we%20do/Global%20climate%20change%20and%20energy/Tackling%20Climate%20Change/Emissions%20Trading/eu_ets/phase%20iii/1016-euets-preparing-phase-III.pdf.

¹⁵ www.environment-agency.gov.uk/business/topics/pollution/141025.aspx.

¹⁶ www.decc.gov.uk/assets/decc/What%20we%20do/Global%20climate%20change%20and%20energy/Tackling%20Climate%20Change/Emissions%20Trading/eu_ets/phase%20iii/1016-euets-preparing-phase-III.pdf.

¹⁷ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:130:FULL:EN:PDF>.

¹⁸ http://ec.europa.eu/clima/publications/docs/ets_en.pdf.

¹⁹ http://unfccc.int/kyoto_protocol/mechanisms/emissions_trading/items/2731.php.

the ETS, as well as any Kyoto Protocol Units (see below); and (b) enabled installations to demonstrate their compliance with the ETS (eg by facilitating the statement of emissions and surrender of carbon allowances). The Environment Agency (EA) was responsible for managing the UK registry system.²⁰ From 20 June 2012, as part of the transition to ETS Phase III, the member states' individual registry systems were replaced by a single EU registry.²¹

15. Once an ETS installation was allocated its share of carbon allowances, it had the following non-exclusive options:²²
- (a) *Use its carbon allowances.* At the end of each year, an installation must verify its actual carbon emissions for the past year and 'surrender' the same amount in carbon allowances, which are subsequently cancelled. Failure to surrender sufficient carbon allowances to cover its 'verified' carbon emissions results in a fine of €100 per tonne of excess carbon emission.²³
 - (b) *Buy additional carbon allowances.* An installation may wish to emit more than its allocation and therefore purchase additional carbon allowances.
 - (c) *Sell surplus carbon allowances.* An installation may sell any carbon allowances it has not used.
 - (d) *Carry over its carbon allowances.* Under ETS Phases II and III, installations may carry over any unused carbon allowances in the year to use against future carbon emissions.
16. In addition to carbon allowances, the ETS also allows the use of Kyoto Protocol Units, namely: (a) the 'Emission Reduction Unit' (ERU), representing a tonne of carbon saved by a project under the 'Joint Implementation' mechanism; and (b) the

²⁰ www.decc.gov.uk/assets/decc/What%20we%20do/Global%20climate%20change%20and%20energy/Tackling%20Climate%20Change/Emissions%20Trading/eu_ets/phase%20iii/1016-euets-preparing-phase-III.pdf.

²¹ www.decc.gov.uk/assets/decc/What%20we%20do/Global%20climate%20change%20and%20energy/Tackling%20Climate%20Change/Emissions%20Trading/eu_ets/phase%20iii/1016-euets-preparing-phase-III.pdf.

²² www.decc.gov.uk/en/content/cms/emissions/eu_ets/eu_ets.aspx.

²³ This fine will rise in line with Eurozone inflation from 2013 onwards. Source: http://ec.europa.eu/clima/publications/docs/ets_en.pdf.

'Certified Emission Reduction' unit (CER)²⁴ under the 'Clean Development Mechanism'.²⁵ The ETS recognizes both ERUs and CERs as equivalents to its carbon allowances, where each type of unit equals 1 tonne of 'carbon equivalent' emissions,²⁶ and allows for their trading and use by operators for compliance with the requirements of the ETS.²⁷ The EU ETS Linking Directive allows Kyoto Protocol Units to be used by operators for compliance up to a certain limit to offset their carbon emissions in the EU.²⁸ The limit for UK cement installations during ETS Phase II is 8 per cent of their free allocation of carbon allowances.²⁹

17. The use of Kyoto Protocol Units (ie ERUs and CERs) will continue into ETS Phase III, but their use will be limited to, at most, 50 per cent of the total carbon emission reductions required under the ETS across ETS Phases II and III, compared with carbon emissions in 2005.³⁰

(c) The trading phases of the ETS: ETS Phases I to III

18. In this section, we examine each of the three trading phases of the ETS, in particular the considerations relevant to the allocation of carbon allowances to cement producers in the UK.

ETS Phase I (1 January 2005 to 31 December 2007)

19. ETS Phase I was a three-year 'pilot' phase of 'learning by doing', where at least 95 per cent of all carbon allowances were allocated to ETS sector installations free of charge, with the remaining being auctioned.³¹ In the UK, each installation received carbon allowances based on its share of the average annual carbon emissions

²⁴ One ERU or CER equals the successful reduction of 1 tonne of carbon equivalent.

²⁵ http://unfccc.int/kyoto_protocol/mechanisms/emissions_trading/items/2731.php.

²⁶ 'Carbon equivalent' (denoted by CO₂e) is a common currency denominated in CO₂ for all greenhouse gases.

²⁷ http://ec.europa.eu/clima/publications/docs/ets_en.pdf.

²⁸ www.decc.gov.uk/assets/decc/what%20we%20do/global%20climate%20change%20and%20energy/tackling%20climate%20change/emissions%20trading/eu_ets/euets_phase_2/phase_2_nap/nap-phase2.pdf.

²⁹ www.decc.gov.uk/assets/decc/what%2520we%2520do/global%2520climate%2520change%2520and%2520energy/tackling%2520climate%2520change/emissions%2520trading/eu_ets/euets_phase_2/phase_2_nap/nap-phase2.pdf.

³⁰ www.decc.gov.uk/en/content/cms/emissions/eu_ets/phase_iii/phase_iii.aspx.

³¹ http://ec.europa.eu/clima/publications/docs/ets_en.pdf.

produced by the ETS sector in which it operated over the baseline period from 1998 to 2003, but adjusted to exclude the year with the lowest carbon emissions.³² The Government published a series of summary reports on ETS Phase I, concluding that installations received an over-allocation or surplus of carbon allowances across the EU.³³

ETS Phase II (1 January 2008 to 31 December 2012)

20. ETS Phase II was set to coincide with the first Kyoto Commitment Period,³⁴ and EU emissions were capped at around 6 per cent below 2005 levels in order to meet these commitments.³⁵ Allocations of carbon allowances to installations under ETS Phase II in the UK and most other member states continued to be based on their historic carbon emissions and maintained the ETS's 'grandfathering' approach to allocation.³⁶ More than 90 per cent of carbon allowances were allocated to installations free of charge across the EU, with the remaining being auctioned.³⁷
21. Table 1 shows that over the first four years of ETS Phase II (2008 to 2011), total carbon allowances generally exceeded actual (or 'verified') carbon emissions for the UK cement producers, eg total verified carbon emissions in 2011 were 6.1 Mt against total carbon allowances of 9.4 Mt, representing a utilization rate of 65 per cent.

³²http://www.decc.gov.uk/assets/decc/what%20we%20do/global%20climate%20change%20and%20energy/tackling%20climate%20change/emissions%20trading/eu_ets/publications/ria-allocation-methodology.pdf

³³http://www.decc.gov.uk/en/content/cms/emissions/eu_ets/publications/publications.aspx#phase1

³⁴<http://www.environment-agency.gov.uk/business/topics/pollution/32232.aspx>

³⁵http://ec.europa.eu/clima/policies/ets/allocation/2008/faq_en.htm and <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/1614&format=HTML&language=EN>

³⁶http://ec.europa.eu/clima/policies/ets/allocation/2008/documentation_en.htm.

³⁷Article 10 of ETS Directive 96/61/EC:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2003L0087:20090625:EN:PDF>

TABLE 1 Carbon emissions and allowances* for the UK cement producers during the first four years of ETS Phase II

	2008			2009			2010			2011		
	Allow (Mt)	Used (Mt)	% used	Allow (Mt)	Used (Mt)	% used	Allow (Mt)	Used (Mt)	% used	Allow (Mt)	Used (Mt)	% used
<i>Lafarge</i>												
Dunbar	0.7	0.6	88	0.7	0.4	61	0.7	0.4	60	0.7	0.5	70
Cauldon	0.7	0.6	85	0.7	0.5	76	0.7	0.6	84	0.7	0.6	88
Westbury†	0.7	0.6	82	0.7	0.0	7	0.7	-	0	0.7	-	0
Aberthaw	0.4	0.3	80	0.4	0.2	69	0.4	0.3	79	0.4	0.3	89
Cookstown	0.4	0.3	93	0.4	0.2	60	0.4	0.2	59	0.4	0.2	57
Hope	1.1	0.9	90	1.1	0.9	82	1.1	0.9	87	1.1	1.0	94
Northfleet†	<u>1.2</u>	<u>0.3</u>	<u>27</u>	<u>1.2</u>	-	0	-	<u>-0.0</u>	<u>N/A</u>	-	<u>-0.0</u>	<u>N/A</u>
	<u>5.1</u>	<u>3.7</u>	<u>73</u>	<u>5.1</u>	<u>2.4</u>	<u>46</u>	<u>3.9</u>	<u>2.4</u>	<u>63</u>	<u>3.9</u>	<u>2.7</u>	<u>68</u>
<i>Hanson</i>												
Ketton	1.0	0.9	84	1.0	0.7	64	1.0	0.7	65	1.0	0.7	68
Padeswood	0.8	0.5	65	0.8	0.3	37	0.8	0.2	21	0.8	0.2	29
Ribblesdale	<u>1.2</u>	<u>0.5</u>	<u>45</u>	<u>1.2</u>	<u>0.4</u>	<u>31</u>	<u>1.2</u>	<u>0.5</u>	<u>43</u>	<u>1.2</u>	<u>0.5</u>	<u>44</u>
	<u>2.9</u>	<u>1.9</u>	<u>64</u>	<u>2.9</u>	<u>1.3</u>	<u>44</u>	<u>2.9</u>	<u>1.3</u>	<u>45</u>	<u>2.9</u>	<u>1.4</u>	<u>48</u>
<i>Cemex</i>												
Rugby	0.9	1.1	123	0.9	1.1	117	0.9	1.1	115	0.9	1.1	120
South Ferriby	0.6	0.5	85	0.6	0.3	59	0.6	0.3	53	0.6	0.3	50
Barrington†	<u>0.3</u>	<u>0.3</u>	<u>90</u>	<u>0.3</u>	-	0	<u>0.3</u>	-	0	<u>0.3</u>	-	0
	<u>1.8</u>	<u>1.9</u>	<u>106</u>	<u>1.8</u>	<u>1.4</u>	<u>80</u>	<u>1.8</u>	<u>1.4</u>	<u>77</u>	<u>1.8</u>	<u>1.4</u>	<u>79</u>
<i>Tarmac</i>												
Tunstead	<u>0.7</u>	<u>0.5</u>	<u>72</u>	<u>0.8</u>	<u>0.5</u>	<u>70</u>	<u>0.8</u>	<u>0.6</u>	<u>75</u>	<u>0.8</u>	<u>0.6</u>	<u>78</u>
	<u>0.7</u>	<u>0.5</u>	<u>72</u>	<u>0.8</u>	<u>0.5</u>	<u>70</u>	<u>0.8</u>	<u>0.6</u>	<u>75</u>	<u>0.8</u>	<u>0.6</u>	<u>78</u>
Cement works total	10.6	8.0	76	10.6	5.6	53	9.4	5.7	61	9.4	6.1	65

Source: European Commission (http://ec.europa.eu/clima/policies/ets/registries/documentation_en.htm).

*Carbon emissions are measured in Mt. Since one carbon allowance allows for 1 tonne of carbon emissions, the number of carbon allowances can also be measured by the tonnage of carbon emissions they permit.

†During ETS Phase II, Cemex's Barrington cement works and Lafarge's Westbury and Northfleet cement works were closed. Explanations from Cemex and Lafarge for how these closures affected the carbon allowances allocated to these closed cement works are set out in the main body of this paper.

Note: N/A = 'Not applicable'.

34. During the period covered in Table 1 above, Lafarge's Westbury and Northfleet cement works and Cemex's Barrington cement works were closed. DECC told us that under ETS Phase II, UK cement producers could transfer carbon allowances from one cement works to another, such that where one 'inefficient' cement works was either closed or mothballed, all of its carbon allowances could be transferred to another 'more efficient' cement works. However, under ETS Phase III, EU-wide rules around cessation of regulated activities at an installation will mean that any closure of a cement works will result in the forfeit of its carbon allowances for the years after closure.³⁸ Should the rationalization result in physical changes at the surviving cement works that meet the criteria of a 'significant capacity extension', then that

³⁸ Article 22 of Commission Decision 2011/ 278/EU:
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:130:FULL:EN:PDF>.

installation could apply to the NER for an increase in its free carbon allowance allocation.

35. Table 1 above shows that for Cemex: [REDACTED].³⁹
36. During the period considered in Table 1 above, following the closures of Lafarge's Westbury and Northfleet works, Lafarge was able to [REDACTED]. In each case, Lafarge [REDACTED]. Lafarge's explanations are set out below:
- (a) In relation to its Westbury works, Lafarge told us that [REDACTED]. However, Lafarge told us that its Westbury works was a wet-process plant and therefore had a higher 'carbon emission footprint' than its dry-process cement works. [REDACTED]
- (b) In relation to its Northfleet works, [REDACTED].

ETS Phase III (1 January 2013 to 31 December 2020)

37. As mentioned above, ETS Phase III will move away from an EU cap based on an aggregation of individual member state caps to setting an EU-wide cap top-down in line with an overall trajectory for ETS carbon emissions, as well as place certain restrictions on the extent to which Kyoto Protocol Units can be used to offset EU carbon emissions. The EU-wide cap for the start of ETS Phase III has been set at around 2 billion tonnes of carbon emissions (or 2GtCO₂),⁴⁰ which will decline linearly each year, such that by 2020 the EU would deliver an overall reduction of its carbon emissions to 21 per cent below 2005 levels, with a cap of around 1.7 billion tonnes of carbon emissions (1.7GtCO₂).⁴¹ Figure 1 shows the declining EU-wide cap on carbon allowances during ETS Phase III.

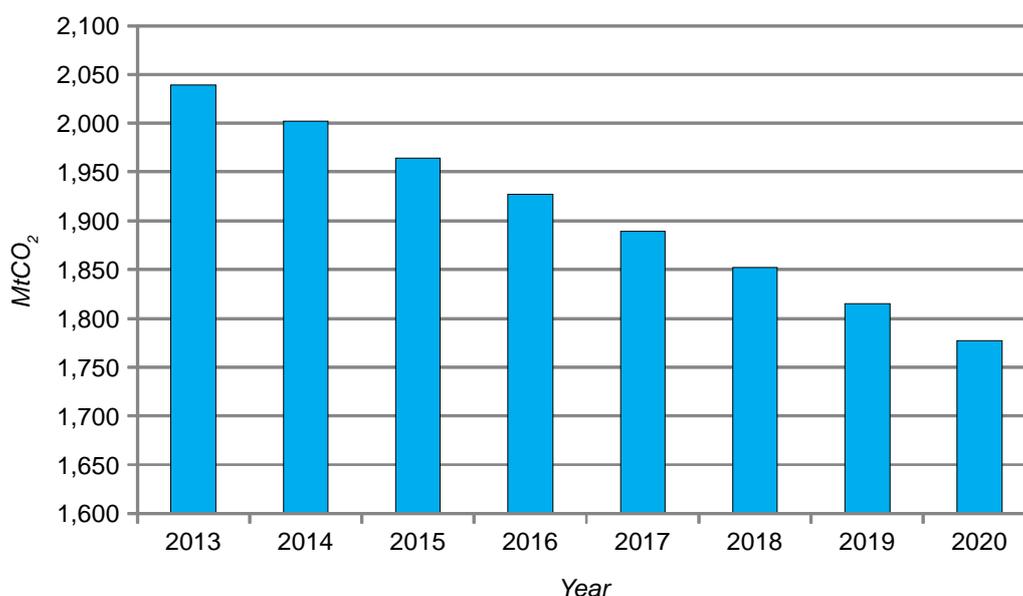
³⁹ [REDACTED]

⁴⁰ http://ec.europa.eu/clima/policies/ets/cap/index_en.htm

⁴¹ www.decc.gov.uk/en/content/cms/emissions/eu_ets/phase_iii/phase_iii.aspx.

FIGURE 1

ETS Phase III: EU-wide cap on carbon allowances (million)—ETS cap trajectory



Source: Latest estimates from the European Commission, available at:

http://ec.europa.eu/clima/policies/ets/cap/index_en.htm.

Note: This excludes international aviation. The European Commission's estimate of the EU-wide cap for 2013 has been determined at 2,039,152,882 carbon allowances. The cap will decrease each year by 1.74 per cent, which in absolute terms means that the number of carbon allowances will reduce annually by 37,435,387.

38. The 'grandfathering' approach to the allocation of carbon allowances under ETS Phases I and II had the result of allocating more carbon allowances to installations which produced higher carbon emissions without taking into account their 'carbon emissions efficiency'. This approach was changed for ETS Phase III.⁴²

39. ETS Phase III will bring about the following major changes to the current system:

(a) *Product benchmarking approach.* Under ETS Phase III, carbon allowances will either be auctioned or distributed free of charge. In relation to the latter, each eligible installation will receive its free allocation based on a combination of its historic activity levels and an EU 'benchmark' of 'carbon efficiency' for the production of a particular product, eg clinker. This represents a move away from the previous 'grandfathering' approach adopted under ETS Phases I and II.

⁴² http://ec.europa.eu/clima/policies/ets/benchmarking/index_en.htm.

- (b) *Carbon leakage.* Certain sectors and subsectors which are deemed by the European Commission to be at ‘significant risk’ of ‘carbon leakage’ (carbon leakage is discussed in further detail later in this paper), including cement production, will continue to receive 100 per cent of their benchmark allocations free during 2013 and 2014; those not considered at risk will receive 80 per cent of their benchmark allocation in 2013, declining to 30 per cent by 2020. In 2014 and 2019, the list of sectors and subsectors deemed to be at ‘significant risk’ of carbon leakage will be reviewed. At these review points, sectors and subsectors can be added or removed from the list depending on whether the sector or subsector meets the criteria and thresholds set in the ETS Directive.
- (c) *Auction process.* Carbon allowances which are not freely distributed will be auctioned, including 100 per cent auctioning to the power sector in the UK.⁴³ During the course of ETS Phase III, the proportion of carbon allowances which will be auctioned will increase marginally, with the result that marginally fewer carbon allowances will be distributed free of charge.
- (d) *Small emitter exemptions.* An opt-out clause for ‘small emitters’ and hospitals from ETS Phase III.

40. We examine each of the above three changes in further detail below.

Product benchmarking approach

41. ETS sectors not at risk of carbon leakage will receive 80 per cent of its benchmark allocation of carbon allowances free in 2013, declining to 30 per cent in 2020 and 0 per cent in 2027 (ie full auctioning). Exceptions are: (a) the electricity generation and production sectors (in the majority of EU member states), where all carbon allowances will be auctioned; and (b) the ETS sectors deemed at ‘significant risk’ of

⁴³ Article 10 of ETS Directive 2003/87/EC:
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2003L0087:20090625:EN:PDF>.

carbon leakage, which will receive 100 per cent of their benchmark allocation free (see the subsection on 'carbon leakage' below).⁴⁴

42. Free allocation of carbon allowances to each installation will be determined by multiplying the installation's historic activity level (HAL) by the relevant EU benchmark of carbon efficiency for a particular product.⁴⁵ Taking each component in turn:

(a) *HAL*. An installation's HAL is calculated by taking the median of its annual production levels during the baseline period,⁴⁶ either 2005 to 2008 or, where historic activity levels are higher, 2009/10, eg if an operator uses a baseline period of 2009/10, and clinker production tonnages were 400 Kt in 2009 and 600 Kt in 2010, then the HAL is the median value of 500 Kt. ETS guidance from the European Commission states that the baseline period should yield the highest HAL for the installation.⁴⁷

(b) *Product benchmark*. The product benchmark is based on the average carbon emissions of the top 10 per cent most 'carbon efficient' EU installations for a particular product during 2007/08, where carbon efficiency is measured by carbon intensity, or carbon emissions per tonne of product.⁴⁸ In the case of clinker production, the product benchmark was set at 0.766 tonnes of carbon emissions per tonne of grey cement clinker, which was based on the top 10 per cent most efficient clinker kilns in the EU.⁴⁹

⁴⁴ www.decc.gov.uk/en/content/cms/emissions/eu_ets/phase_iii/phase_iii.aspx.

⁴⁵ http://ec.europa.eu/clima/policies/ets/benchmarking/docs/gd2_allocation_methodologies_en.pdf.

⁴⁶ European Commission decision 2011/278/EU Article 9:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:130:FULL:EN:PDF>.

⁴⁷ Whilst a simplified explanation of the calculation methodology has been presented, there are a number of adjustments which may be required, eg for partial year operations, and 'significant' changes in capacity during the baseline period. Source: http://ec.europa.eu/clima/policies/ets/benchmarking/docs/case_heat_en.pdf.

⁴⁸ European Commission decision 2011/278/EU Article 10a:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:130:FULL:EN:PDF>.

⁴⁹ http://hal-polytechnique.archives-ouvertes.fr/docs/00/67/29/07/PDF/cahier_de_recherche_2012-05.pdf and European Commission Decision 2011/278/EU Annex I: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:130:FULL:EN:PDF>

43. Given this benchmark of 0.766 tonnes of carbon emissions per tonne of grey cement clinker, we set out below the same ratios for each of the cement producers in Great Britain based on their FY11 production data:
- (a) Cemex estimated that across its two cement works in Great Britain, the ratio of carbon emissions per tonne of clinker was [X] (Rugby works) and [X] tonnes (South Ferriby).
 - (b) Hanson estimated that the ratio of carbon emissions per tonne of clinker for its most efficient and least efficient cement works were [X] and [X] tonnes respectively.
 - (c) Lafarge estimated that across its four cement works in Great Britain, the ratio of carbon emissions per tonne of clinker ranged from [X] to [X] tonnes.
 - (d) Based on FY11 production data, Tarmac estimated its ratio of carbon emissions per tonne of clinker at [X] tonnes. Based on its historic production data going back to FY08, this ratio reduced from [X] tonnes in FY08 to [X] tonnes in FY11. Tarmac explained that the decrease in the amount of carbon emissions per tonne of clinker over time was due to its introduction of alternative fuels to replace coal which reduced its carbon emissions.
44. The product of an installation's HAL and its relevant product benchmark will yield an installation's annual preliminary allocation. This preliminary level of allocation incorporates both the carbon leakage factor and the linear reduction factor. The final level of allocation to each installation will be modified by application of a cross-sectional correction factor (should this be required) to bring the total level of free allocation to all installations across the EU to within the level provided for. The purpose of the

product benchmarking approach was to reward installations which had taken early action to reduce their carbon emissions, and to encourage further reductions.⁵⁰

45. Having determined an installation's allocation of free carbon allowances, an installation can only receive its full allocation if it is also deemed to have not partially ceased under the 'partial cessation rule'. Partial cessation applies whereby one sub-installation which contributes at least 30 per cent of the installation's final annual amount of emissions allowances allocated, or contributes to more than 50,000 allowances, reduces its activity level by at least 50 per cent of its HAL. Where this rule does not apply or had applied but then ceased to apply, an installation may receive 100 per cent of its free allocation. If activity levels are reduced to between 50 and 75 per cent of the HAL, then the amount of free carbon allowances it will receive will reduce by half in the following year. The partial cessation rule also allows that should the HAL increase back above the 50 per cent threshold, then the level of free allocation is restored accordingly in following years.⁵¹
46. Under ETS Phase II, partial cessation does not result in any reduction in the level of free allocation, but an installation is no longer entitled to a free allocation from the following year if it has permanently ceased operating. Under ETS Phase II, 'temporary closure', ie a closure that occurs in the normal course of business, does not affect the level of free allocation, and regulators have discretion to distinguish between a temporary and permanent closure. However, under ETS Phase III, there will be no regulator or member state discretion around the procedures for reducing allocations following partial cessation.⁵²

⁵⁰ www.decc.gov.uk/assets/decc/What%20we%20do/Global%20climate%20change%20and%20energy/Tackling%20Climate%20Change/Emissions%20Trading/eu_ets/phase%20iii/1016-euets-preparing-phase-III.pdf

⁵¹ Article 23 of the free allocation decision:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:130:FULL:EN:PDF>.

⁵² Article 23 of the free allocation decision:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:130:FULL:EN:PDF>.

47. However, there is some very limited conditionality included in the rules around temporary cessations, eg an installation is deemed to have ceased operations and therefore forfeit its allocation, if the installation ceases to operate and cannot establish that it will resume operations within six months, except under certain circumstances.⁵³
48. Lafarge, Tarmac and Cemex commented on the effect of the partial cessation rule on their cement production decisions. Lafarge told us that forgoing these free carbon allowances by producing below 50 per cent of the HAL would represent a 'significant loss of revenue' since carbon allowances are also tradable. Lafarge added that in countries which already exported to Great Britain where domestic demand was 'extremely low' relative to recent production levels, eg Spain, Greece and the Republic of Ireland, cement producers would have a strong incentive to export in order to meet both their 50 per cent threshold and sell any unused allocations of carbon allowances. Lafarge also noted that some operators which imported cement into Great Britain, namely CRH, Titan, CPV and Quinn, were 'tied with producing plants' in those named exporting countries.⁵⁴
49. Tarmac and Cemex also made similar arguments that under ETS Phase III, cement works in other EU countries would have an incentive to export cement in order to ensure that their production exceeded 50 per cent of their HALs. Tarmac argued that importers would therefore impose an 'even greater competitive constraint on domestic cement producers going forward'.⁵⁵ Cemex argued that during ETS Phase II, cement works in EU countries which had been subject to 'significant building booms and busts', such as the Republic of Ireland, Portugal and Spain in particular, had

⁵³ According to Article 22, 1(e) of the free allocation decision: 'Member states may extend this period up to a maximum of 18 months if the operator can establish that the installation cannot resume operations within six months due to exceptional and unforeseen circumstances that could not have been avoided if all due care had been exercised, and that are beyond the control of the operator of the installation concerned.'

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:130:FULL:EN:PDF>.

⁵⁴ Lafarge response to the issues statement, 27 April 2012, Section F.

⁵⁵ Tarmac response to the issues statement, Section 5.4.

been operating well below the capacity for which they had been allocated carbon allowances, and if their carbon emissions fell below 50 per cent of their allocation, they would automatically lose carbon allowances without compensation. Cemex added that many cement exporters were already 'aggressively targeting Great Britain'.⁵⁶

50. We investigated whether there were any limits on the 'shelf life' of cement which would disincentivize overproduction and stockpiling. The responses of the cement producers in Great Britain are set out below:

(a) Cemex told us that the shelf life for bulk cement was 61 days, and for bagged cement, 90 days for cement packed in paper bags, and 120 days for cement packed in plastic bags. It added that cement could not be produced and stockpiled indefinitely, and that its UK storage for cement and clinker was not sufficient to allow indefinite stockpiling.

(b) Hanson told us that newly-produced clinker could be stored almost indefinitely with little deterioration. However, once clinker was manufactured into cement, the shelf life of cement was dependent on the effective life of a reducing agent which was required to be added to the grey cement under EU Directives. Hanson told us that it would not be able to 'guarantee' compliance with EU Directives for bagged cement stored for more than six months, and bulk cement stored for as short as two months. It added that in a bulk silo, if cement had not been 'circulated' for a period of 21 days, this shelf life would be considerably reduced.

(c) Lafarge told us that whilst there was no theoretical limit to the shelf life of cement if it was stored correctly and in a very low humidity environment, the actual shelf life would depend on the effective life of a reducing agent that was added to grey

⁵⁶ [Cemex response to the issues statement](#), 24 April 2012, Section 8.

cement (as required by EU Directives),⁵⁷ or its intended method of storage (eg silos for bulk cement and bags for bagged cement).

(d) Tarmac told us that the shelf life was 60 days for bulk cement and 90 to 120 days for bagged cement. It added that clinker could be stored for long periods if needed, and therefore companies would hold clinker and only grind the clinker to produce cement to meet demand.

51. Lafarge provided an illustration of the financial impact of the partial cessation rule on a cement producer's production incentives. A single cement works with a HAL of 1 Mt of clinker will have a total allocation of free carbon allowances of 766,000 (ie HAL of 1 Mt multiplied by the product benchmark of 0.766). Under the partial cessation rule, it must produce at least 500 Kt (or 50 per cent of its HAL) to receive 100 per cent of its free carbon allowances. If current production was 450 Kt (50 Kt below its HAL), then the cement works would receive only half of its carbon allowances, ie 383,000, or 50 per cent of 766,000. Assuming a market price of €[redacted] for each carbon allowance, the monetary value of the carbon allowances it forgoes is around €[redacted] million, or €[redacted] multiplied by 383,000 in forgone carbon allowances. Therefore, by producing an extra 50 Kt of cement, it gains additional carbon allowances valued at around €[redacted] million. Lafarge told us that the '[profit] margin associated with producing, and exporting, an additional 50Kt of clinker production would increase substantially, thereby providing it with stronger incentives to increase export volumes'.⁵⁸

52. Given that the amount of free carbon allowances each installation receives will be based on the 10 per cent most efficient EU companies for a particular product, this is likely to mean that around 95 per cent of companies in industrial sectors, including those deemed to be at 'significant risk' of carbon leakage (therefore receiving 100 per

⁵⁷ For example, Lafarge told us that EU Directives placed limits on the natural soluble chromium content in cement, and therefore for cement with a high natural soluble chromium content, regulations required cement producers to add a 'reducing agent'. In these circumstances, the shelf life of the cement depended on the effective life of the reducing agent.

⁵⁸ [Lafarge response to the issues statement](#), 27 April 2012, Section F.

cent of the allocation indicated by the benchmarks free), will need to reduce carbon emissions or buy additional carbon allowances.⁵⁹ Cemex also told us that it was 'likely' that its proposed allocation of carbon allowances under ETS Phase III would be 'insufficient' to cover its carbon emissions, and that it would therefore need to buy additional carbon allowances in the secondary market.⁶⁰

Auction process

53. Those emission allowances which are not distributed free of charge will be auctioned. DECC estimated that by 2020, it would be auctioning more than 60 per cent of its carbon allowances,⁶¹ with the aim that by 2027, all carbon allowances would be auctioned subject to carbon leakage considerations.⁶²

Carbon leakage

54. The European Commission describes 'carbon leakage' as the prospect of an increase in global greenhouse gas emissions when companies shift production outside the EU because they cannot pass on the cost increases induced by the ETS to their customers without significant loss of market share.⁶³ Therefore, 'carbon leakage' refers to the risk that operators will 'offshore' or relocate their production operations to countries outside the EU due to the cost of purchasing carbon allowances to permit production within the EU,⁶⁴ which would otherwise reduce their competitiveness in favour of countries with no such regulatory constraints.
55. Whilst under a scenario where the relocation from the EU to a 'modern' plant outside the EU could lead, as some environmental non-governmental organizations have

⁵⁹ www.decc.gov.uk/assets/decc/What%20we%20do/Global%20climate%20change%20and%20energy/Tackling%20Climate%20Change/Emissions%20Trading/eu_ets/phase%20iii/1016-euets-preparing-phase-III.pdf.

⁶⁰ Cemex response to the issues statement, 24 April 2012, Section 8.

⁶¹ www.decc.gov.uk/assets/decc/What%20we%20do/Global%20climate%20change%20and%20energy/Tackling%20Climate%20Change/Emissions%20Trading/eu_ets/phase%20iii/1016-euets-preparing-phase-III.pdf.

⁶² http://ec.europa.eu/clima/publications/docs/ets_en.pdf.

⁶³ [http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52012XC0605\(01\):EN:NOT](http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52012XC0605(01):EN:NOT).

⁶⁴ www.decc.gov.uk/assets/decc/What%20we%20do/Global%20climate%20change%20and%20energy/Tackling%20Climate%20Change/Emissions%20Trading/eu_ets/phase%20iii/1016-euets-preparing-phase-III.pdf.

argued, to some decrease in emissions as a more modern and more efficient plant outside the EU replaces an ageing EU plant, the DECC told us that it took the view that new non-EU plants with a competitive advantage (were it to exist) might have higher production levels, and therefore increase emissions. It therefore considered that the relocation of production to 'less regulated' countries would result in no overall decrease in global carbon emissions, and that it would not necessarily lead to an increase in carbon emissions.

56. One study by the Boston Consulting Group in June 2008 on behalf of Cembureau⁶⁵ estimated that during ETS Phase III, if the price of a carbon allowance were to exceed €35 per tonne and EU cement producers received no relief under the ETS, then this would lead to the 'complete offshoring' of the EU cement industry, whilst a price of €25 would result in more than 80 per cent of EU clinker production being at risk of offshoring by 2020.

57. To put the above figures into context, Figure 2 shows the average monthly futures⁶⁶ prices for carbon allowances since the start of ETS Phase I. The price of carbon allowances in ETS Phase I was zero towards the end of the period as the market recognized that there was a surplus of carbon allowances relative to carbon emissions for that phase. Carbon allowances were not permitted to be 'banked' into the next phase and so had no value beyond March 2008. From ETS Phase II onwards, the system now permits holders of carbon allowances to 'bank' them between phases.⁶⁷ The average price of a carbon allowance during ETS Phase I (January 2005 to December 2008) for ETS Phase I was €15.10, ranging from €0.03 to €28.01.

⁶⁵ Cembureau is the European trade association for cement based in Brussels.

⁶⁶ DECC told us that when analysing carbon allowance prices, it was more informative to focus on prices based on the futures market for carbon allowances. It told us that the futures market was far more liquid than the spot market (ie there was more futures trading as installations acted to hedge their risks in the energy market, often taking a three-year future view when making investment decisions).

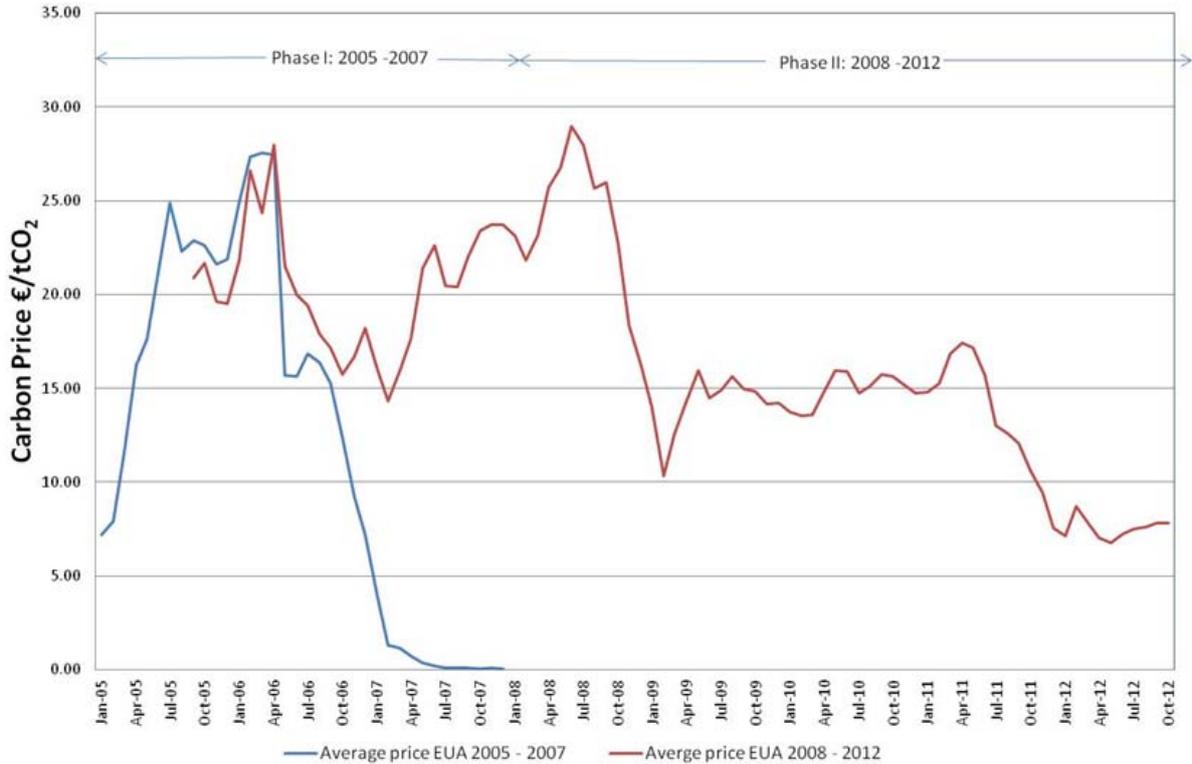
⁶⁷ Article 13 of the EU ETS Directive 2003/87/EC:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2003L0087:20090625:EN:PDF>.

So far for ETS Phase II (January 2008 to 9 October 2012), the average price of a carbon allowance was €18.04 (ranging from €6.78 to €30.84).

FIGURE 2

The € price per carbon allowance since ETS Phase I



Source: Thomson Reuters Point Carbon.

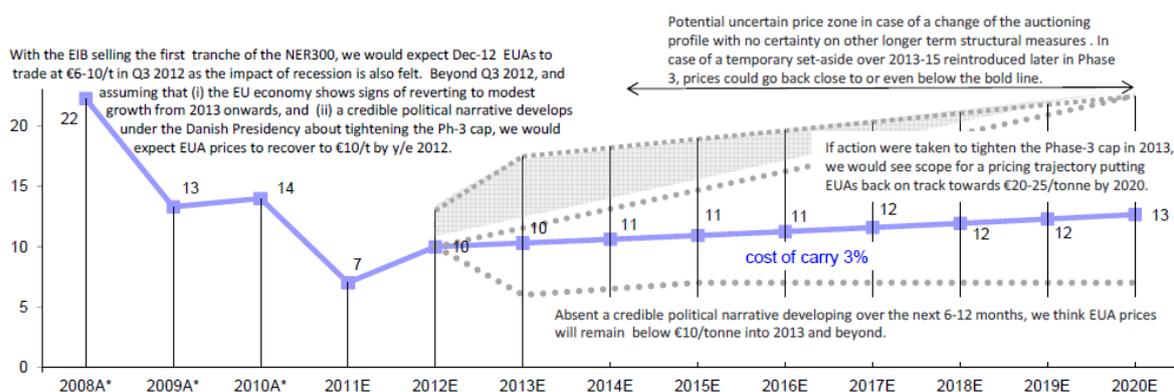
Note: Carbon allowance prices are based on futures market prices. Whilst average carbon allowance prices for ETS Phase I fall towards the end of the phase, the two lines illustrate that carbon allowances under ETS Phase I being replaced by carbon allowances under ETS Phase II.

58. We set out below some analyst forecasts and commentary in relation to the price of carbon allowances during ETS Phase III, ie until 2020. Based on current market expectations, analysts generally expected carbon allowance prices to be depressed, with some analysts expecting prices to remain below €15 per tonne until 2020. Factors for these price expectations included the current EU sovereign debt crisis; a weaker economic outlook for the Eurozone; and surplus carbon allowances not only under the ETS, but also under the international Kyoto Protocol emissions trading scheme.

59. Carbon allowance price forecasts by Deutsche Bank (July 2012) (see Figure 3 below) showed that under its base case scenario, carbon allowance prices would not exceed €13 per tonne during ETS Phase III. Prices could reach €20 to €25 per tonne if the EU-wide cap during ETS Phase III was ‘tightened’ in 2013, but prices could fall to below €10 per tonne absent a ‘credible political narrative developing over the next 6–12 months’.⁶⁸ These forecasts represent a significant downgrade on its previous forecasts as at November 2011, where the reasons for its downward reforecasts include Deutsche Bank’s increasingly ‘bearish’ stance since the previous forecast in relation to the impact of the EU sovereign debt crisis on the Eurozone and the EU.

FIGURE 3

Deutsche Bank forecasts for carbon allowance prices under ETS Phase III



Source: Deutsche Bank Global Markets Research: *EU Emissions: Q3 Risk Balance Tilting To The Upside* (3 July 2012).

Note: Carbon prices shown for 2008–10 are actual average prices over the course of the year. All other prices are either year-end outcome (2011), or year-end forecasts.

60. Reuters Point Carbon forecast back in November 2010 that carbon allowances would cost €30 per tonne in 2016. However, this figure was revised down to €22 per tonne in July 2011 because renewable energy was being deployed earlier and in greater quantities than previously assumed. In December 2011, Reuters Point Carbon issued

⁶⁸ Deutsche Bank Global Markets Research: *EU Emissions: Q3 Risk Balance Tilting To The Upside*, 3 July 2012.

a statement predicting that the average carbon allowance price was expected to be €12 per tonne from 2013 to 2020.⁶⁹

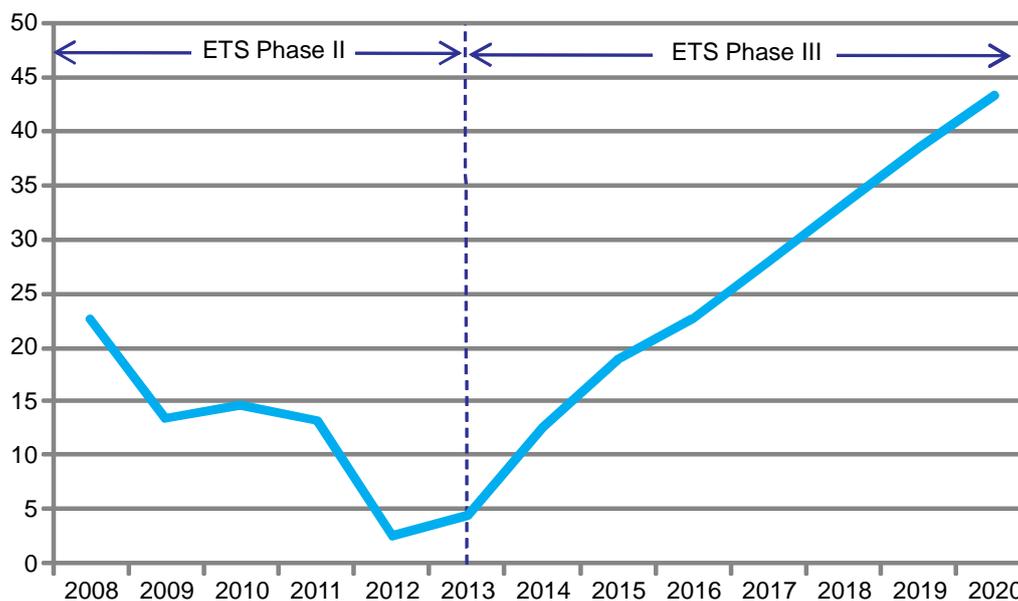
61. On 17 January 2012, French bank Société Générale predicted that carbon allowance prices would not trade above €15 per tonne until 2020, stating that the 'growth outlook for this year and beyond has been revised down by our economists ... The stagnation in the Eurozone will drive emissions down'.⁷⁰
62. Bloomberg's carbon allowance price forecasts, however, showed a somewhat different, and more optimistic, outlook, for carbon allowance prices (see Figure 4 below).

⁶⁹ www.pointcarbon.com. Point Carbon is a research arm of Reuters.

⁷⁰ www.reuters.com.

FIGURE 4

The average annual €price per carbon allowance under ETS Phases II (actual) and Phase III (forecast)



Source: Bloomberg New Energy Finance (BNEF).*

*Forecasts for the ETS Sectors' carbon emissions for ETS Phase III were taken from Bloomberg New Energy Finance (BNEF). BNEF generates forecasts using its CARX European Carbon Model, which is a sophisticated fundamental forecasting model specifically designed to assess future demand, supply and carbon prices in the ETS with forecast emissions deficit or surpluses and carbon prices out to 2020. The model takes into account supply and demand within the ETS to arrive at its carbon prices and forecasts factors such as cross-border fuel switching. The model also assesses how power and industry participants may behave for a given EUA price scenario with both short-term responses (eg fuel switching) and long-term responses (eg changes to capital investments). The medium-term model also takes into account secondary market supply, for example that resulting from auctions and different hedging strategies.

63. In 2009, a list of ETS sectors deemed to be at 'significant risk' of carbon leakage was formally adopted by the European Commission following agreement by member states and the European Parliament. This list included the cement production sector.⁷¹ There are three separate quantitative assessment methodologies for determining under the ETS Directive whether a sector is at 'significant risk' of carbon leakage.⁷² The cement sector has been assessed as meeting one of these: requiring that the additional costs imposed by the ETS would lead to a 30 per cent or more

⁷¹www.decc.gov.uk/assets/decc/What%20we%20do/Global%20climate%20change%20and%20energy/Tackling%20Climate%20Change/Emissions%20Trading/eu_ets/phase%20iii/1016-euets-preparing-phase-III.pdf.

⁷²Article 10a of ETS Directive 2003/87/EC:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2003L0087:20090625:EN:PDF>.

increase in production costs as a proportion of the 'gross value added'.⁷³ As a result, under ETS Phase III, the cement sector will receive 100 per cent of its benchmark allocation free of charge.⁷⁴

64. In one publication by the Minerals Products Association (MPA), a trade association for the construction and building materials industry in the UK, it stated that these arrangements for ETS sectors that were exposed to 'carbon leakage' risks would remain in place until such time as 'similar carbon reduction commitments' applied outside the EU. It added that the 'benchmarks' used were 'extremely challenging' and therefore if insufficient carbon allowances were provided, and in the absence of global rules on greenhouse gas emissions, there might in some cases still be a risk of carbon leakage.⁷⁵

65. Member states will also have the option to compensate ETS sectors and subsectors which the European Commission has deemed to be at significant risk of 'indirect carbon leakage', for additional costs arising from 'indirect emissions', eg through increased electricity prices as a result of the ETS,⁷⁶ up to the maximum levels set out by the European Commission.⁷⁷ The European Commission has published the list of sectors eligible for such compensation which did not include the cement sector.⁷⁸ Cemex told us that it conceded that it was unlikely that the UK Government would adopt such a compensation scheme, and that its operations in Great Britain would be 'disadvantaged against competitors from outside the UK', eg France, Germany,

⁷³ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:001:0010:0018:EN:PDF>.

⁷⁴ www.decc.gov.uk/en/content/cms/emissions/eu_ets/phase_iii/phase_iii.aspx.

⁷⁵ MPA, *Policy Briefing: Energy Carbon Taxes and Market Mechanisms*, August 2011.

⁷⁶ www.decc.gov.uk/assets/decc/What%20we%20do/Global%20climate%20change%20and%20energy/Tackling%20Climate%20Change/Emissions%20Trading/eu_ets/phase%20iii/1016-euets-preparing-phase-III.pdf.

⁷⁷ [http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52012XC0605\(01\):EN:NOT](http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52012XC0605(01):EN:NOT).

⁷⁸ [http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52012XC0605\(01\):EN:NOT](http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52012XC0605(01):EN:NOT).

Spain and Egypt, where, according to Cemex, 'more benign electricity price regimes' exist.⁷⁹

Small emitter exemptions

66. Under ETS Phase III, 'small emitters' (ie installations which produced less than 25 Kt of annual carbon emissions and 'thermal capacity' from any combustion activities of less than 35 MW during ETS Phase II) and hospitals may be able to opt out from the ETS to 'reduce regulatory burden',⁸⁰ but only where they comply with 'alternative emission reduction legislation'.⁸¹
67. The UK is seeking to take advantage of the opt-out for eligible installations,⁸² and that whilst no cement clinker producing installations were eligible, around 50 incumbent installations in the mineral products sector have applied to opt out representing around 60 per cent of incumbent ETS installations in the sector.⁸³ DECC is currently seeking European Commission approval of these installations as 'opted out'.⁸⁴

(d) The New Entrant Reserve and carbon allowances for new entrants

68. Under ETS Phases I and II, new entrants, or capacity extensions on existing sites, were granted carbon allowances using a benchmark methodology. The new entrant benchmarks reflected technology, load and fuel specific factors.⁸⁵
69. Under ETS Phase III, 5 per cent of all free carbon allowances has been set aside in an NER for new installations, including capacity extensions to existing plants, which

⁷⁹ Cemex response to the issues statement, 24 April 2012, Section 8.

⁸⁰ www.decc.gov.uk/en/content/cms/emissions/eu_ets/phase_iii/phase_iii.aspx.

⁸¹ www.decc.gov.uk/assets/decc/What%20we%20do/Global%20climate%20change%20and%20energy/Tackling%20Climate%20Change/Emissions%20Trading/eu_ets/phase%20iii/1016-euets-preparing-phase-III.pdf.

⁸² www.decc.gov.uk/en/content/cms/emissions/eu_ets/phase_iii/small_emit/small_emit.aspx.

⁸³ www.decc.gov.uk/assets/decc/11/cutting-emissions/eu-ets/6095-list-installations-submitted-eu-com-exc.pdf.

⁸⁴ www.decc.gov.uk/en/content/cms/emissions/eu_ets/phase_iii/small_emit/small_emit.aspx.

⁸⁵ www.decc.gov.uk/assets/decc/what%20we%20do/global%20climate%20change%20and%20energy/tackling%20climate%20change/emissions%20trading/eu_ets/euets_phase_2/newentrants/file38391.pdf.

commence operations after 30 June 2011.⁸⁶ If the NER is exhausted, new installations will be required to purchase any carbon allowances they require.⁸⁷

70. Whilst the European Commission will administer the NER, new entrants will apply through each member state's 'competent authorities'. In the UK, they are the EA and its devolved equivalents.⁸⁸
71. Cemex told us that allocations to new entrants were made on the same basis as existing installations, provided the NER had sufficient carbon allowances available, and therefore, new entrants were 'not prejudiced in any way'.⁸⁹ However, Tarmac told us that in ETS Phase III, any new entrant would only be able to apply for carbon allowances from the NER once it had built and commenced operations at its new plant.⁹⁰
72. New entrant installations will also be able to apply to receive free carbon allocations in line with incumbents, where, instead of the HAL, its allocation will be based on multiplying the relevant product benchmark by the installation's activity level and a 'standard capacity utilization factor',⁹¹ where this is specified as the average of the two highest months' production volumes in the six months following the start of normal operation (specified as the point at which actual production exceeds 40 per cent of the maximum capacity of the installation). Carbon leakage status is also taken into account, as with incumbent installations.

⁸⁶ DECC initial submission, 10 April 2012.

⁸⁷ Hanson response to the issues statement, Section 12, footnote 105.

⁸⁸ DECC initial submission, 10 April 2012.

⁸⁹ Cemex response to the issues statement, 24 April 2012, Section 8.

⁹⁰ Tarmac response to the issues statement, Section 5.4.

⁹¹ http://hal-polytechnique.archives-ouvertes.fr/docs/00/67/29/07/PDF/cahier_de_recherche_2012-05.pdf.

(e) ETS compliance costs

73. Compliance with the ETS requires an installation to monitor, report and verify its carbon emissions. A survey-based study to estimate the total annual administrative costs⁹² of complying with the ETS in 2009 incurred by the UK's ETS sectors arrived at an average annual cost of £21,000 per installation (ranging from around £7,500 for a small electricity producing installation to around £134,000 for an oil refinery installation⁹³). A separate annual cost figure for cement installations was not disclosed in the study, but was included in an aggregated 'other sectors' figure of around £27,500 per installation. Whilst the study stated that the costs associated with the purchase of new equipment to monitor and report activities had been excluded, it stated that these constituted a very small proportion of the total costs, and did not materially change its estimates.⁹⁴
74. DECC noted that the administrative costs of the EU ETS for a large installation was relatively small when spread over total emissions. However, it perceived the administrative cost per tonne of carbon emission for smaller emitters to be relatively high and had pursued the option for an opt-out policy for ETS Phase III for these installations to reduce the administrative burden.⁹⁵
75. Cemex told us that since carbon allowances were received free of charge under ETS Phases I and II, and its carbon emissions had remained within its allocations during those Phases, its only costs in relation to the ETS were in relation to the 'administrative costs of participating in the scheme', and therefore Cemex had not needed to consider passing on any of the 'costs of carbon' to its customers. Cemex added,

⁹² The study based its cost estimates on both: (a) the costs associated with the annual monitoring, reporting and verification activities, and the surrendering of carbon allowances; and (b) one-off costs, eg those associated with variations in carbon allowances, and any fees, eg annual subsistence fees:

www.decc.gov.uk/assets/decc/What%20we%20do/Global%20climate%20change%20and%20energy/Tackling%20Climate%20Change/Emissions%20Trading/eu_ets/publications/895-cost-euets-uk-operators-compliance.pdf.

⁹³ Minimum and maximum cost estimates are averages for the sector category.

⁹⁴ www.decc.gov.uk/assets/decc/What%20we%20do/Global%20climate%20change%20and%20energy/Tackling%20Climate%20Change/Emissions%20Trading/eu_ets/publications/895-cost-euets-uk-operators-compliance.pdf.

⁹⁵ www.decc.gov.uk/assets/decc/11/cutting-emissions/eu-ets/5372-euets-small-emitter-hospital-optout-sch.pdf.

however, that this would remain the case under ETS Phase III only if its allocation was sufficient to cover its carbon emissions. If its proposed allocation of carbon allowances under ETS Phase III was insufficient to cover its carbon emissions, it would need to buy additional carbon allowances from the secondary market.⁹⁶

(f) Views of main and third parties on the overall impact of the ETS

76. A literature review, commissioned by DECC, of the evidence on the effectiveness of the ETS concluded that the recession and slow economic recovery had resulted in a fall in industrial activity and associated emissions, and that much of the reduction in carbon emissions had been effected by companies reducing production rather than making their production processes more carbon efficient.⁹⁷

77. Hanson argued that the ETS had continued to provide incentives for cement producers to retain capacity,⁹⁸ for example:

(a) Under ETS Phase III, a mothballed cement works that was closed for more than six months would lose its allocation of carbon allowances for the remaining years of ETS Phase III, eg a closure in 2014 would mean the loss of carbon allowances for 2015 to 2010. Hanson added that if the cement works were to restart, then it would be treated as a new entrant and would be required to apply for carbon allowances from the NER. Therefore, Hanson considered that mothballing cement works became a more costly strategy.⁹⁹

(b) [REDACTED]¹⁰⁰

78. Tarmac told us that the ETS had been a 'contributing factor' to the closure of less 'carbon efficient' cement works, in particular the 'wet process' plants (eg Lafarge's

⁹⁶ [Cemex response to the issues statement](#), 24 April 2012, Section 8.

⁹⁷ DECC, *An Evidence Review of the EU Emissions Trading System, Focussing on Effectiveness of the System in Driving Industrial Abatement*, 2012.

⁹⁸ [Hanson response to the Issues Statement](#), Section 12.

⁹⁹ [Hanson response to the Issues Statement](#), Section 11.

¹⁰⁰ [Hanson response to the issues statement](#), Section 12.

Westbury and Cemex's Barrington cement works) which required more heat and generated more carbon emissions than 'dry process' plants. This resulted in cement producers in Great Britain closing down wet process plants and transferring their carbon allocations to their remaining cement works.¹⁰¹ Tarmac added that this transfer of carbon allowances would not be carried over into ETS Phase III.

79. Cemex argued that the ETS was an example of 'regulation which only applied to larger operators' since installations with a production capacity of less than 500 tonnes of clinker per day would not be caught by it.¹⁰² However, it told us that the ETS 'drives efficiencies in the sector and encourages, rather than distorts, competition'. It also stated that it saw no basis for the assertion that the ETS was advantageous to existing cement producers; distorted 'patterns of production'; and drove increased concentration, within the EU, and noted that the rationale of the ETS was that it was a 'market mechanism that allowed participants to achieve reductions in their carbon emissions where it was most cost-efficient for them to do so', except for the potential distortions caused by the '50 per cent rule', ie the partial cessation rule.¹⁰³

The Carbon Reduction Commitment Energy Efficiency Scheme

Section overview

80. This section on the CRC first sets out background information before setting out the following areas in more detail: (a) the 'CCA exemption'; and (b) CRC compliance costs.

¹⁰¹ [Tarmac response to the issues statement](#), 13 April 2012.

¹⁰² [Cemex response to the issues statement](#), 24 April 2012, Section 8.

¹⁰³ [Cemex response to the issues statement](#), 24 April 2012, Section 8.

Background information

81. The CRC is a government scheme which started in April 2010¹⁰⁴ to improve energy efficiency for large organizations whose electricity consumption exceeds 6,000 MWh.¹⁰⁵
82. The CRC does not apply to those carbon emissions that are already covered by the ETS,¹⁰⁶ and therefore excludes cement producers in the UK. However, the CRC does cover large aggregates sites. Cemex told us that only an operator which extracted more than around 1 Mt of aggregates each year would be likely to exceed this energy consumption threshold and be covered by the CRC.¹⁰⁷
83. The CRC operates as a UK-wide ‘emissions trading’ scheme and requires each participating organization to:
- (a) report its energy consumption to the EA, which is then converted into carbon emissions;¹⁰⁸ and
 - (b) purchase allowances from the Government to cover its emissions for the previous year.¹⁰⁹ In the first year of the scheme, there was no requirement for participants to buy allowances.¹¹⁰ However, purchases of allowances must be made for emissions generated in the second year of the scheme (from April 2011 to March 2012),¹¹¹ for which period the price for an allowance was £12 per tonne of carbon emitted.¹¹²

¹⁰⁴ MPA, *Policy Briefing: Energy Carbon Taxes and Market Mechanisms*, August 2011.

¹⁰⁵ [DECC initial submission](#), 10 April 2012.

¹⁰⁶ MPA, *Policy Briefing: Energy Carbon Taxes and Market Mechanisms*, August 2011.

¹⁰⁷ [Cemex response to the issues statement](#), 24 April 2012, Section 8.

¹⁰⁸ [DECC initial submission](#), 10 April 2012.

¹⁰⁹ [DECC initial submission](#), 10 April 2012.

¹¹⁰ [Cemex response to the issues statement](#), 24 April 2012, Section 8.

¹¹¹ [Cemex response to the issues statement](#), 24 April 2012, Section 8.

¹¹² [DECC initial submission](#), 10 April 2012.

84. Each organization's energy efficiency performance is then published and ranked in a league table.¹¹³

(a) The 'CCA exemption'

85. There are certain overlaps between the CRC and CCAs (which are explained later in this paper), such that if over 25 per cent of an organization's emissions are covered by a CCA, it will be exempt from certain aspects of the CRC, also known as a 'CCA exemption', including the purchase of allowances.¹¹⁴

86. As explained later in this paper, CCAs cover cement, ground granulated blastfurnace slag (GGBS) and lime producers, but not aggregates producers. DECC told us that this could result in 'differential impacts' within the regulated sector, where an integrated aggregates and cement producer which had a CCA will be exempt from the CRC, but a stand-alone aggregates company would have to comply with the CRC in full. DECC told us that it was currently in the process of simplifying the CRC, including changes to the current 'CCA exemption' rules,¹¹⁵ with the possibility that the CRC could be replaced by another form of environmental tax.¹¹⁶

(b) CRC compliance costs

87. In relation to compliance costs, DECC told us that CRC participants incurred administrative costs (eg through reporting) and the cost of purchasing allowances.¹¹⁷ Cemex told us that the cost of purchasing allowances was considerable, and estimated that had Cemex been required to pay for allowances in the first year of the CRC, it would have paid around £2 million, based on its total carbon emissions of around 176 Kt at an assumed carbon price of £12 per tonne (the applicable price for

¹¹³ DECC initial submission, 10 April 2012.

¹¹⁴ DECC initial submission, 10 April 2012.

¹¹⁵ DECC initial submission, 10 April 2012.

¹¹⁶ Cemex response to the issues statement, 24 April 2012, Section 8.

¹¹⁷ DECC initial submission, 10 April 2012.

the second year of the CRC). Cemex estimated that it would spend a similar amount on allowances for the 12 months to March 2012.¹¹⁸

Climate Change Agreements and the Climate Change Levy

Section overview

88. This section provides background information on CCAs and the CCL.

Background information

Climate Change Agreements

89. A CCA is a voluntary agreement entered into with the Government by a sector.

Under a sector ‘umbrella agreement’, any operator (that meets the eligibility criteria) in certain energy-intensive industries can enter the sector agreement. The participation in a sector CCA by an operator requires the operator to have an ‘underlying’ CCA with the Government.

90. Cement/clinker production, slag grinding (eg GGBS) and lime production have all entered into CCAs with the Government. As set out above under the ‘CCA exemption’, operators with a CCA may be exempt from certain aspects of the CRC.¹¹⁹

91. A CCA sets out agreed targets for improvements in the operator’s energy efficiency. Once these targets are met, the operator will benefit from a discount on its CCL (see below), an ‘energy tax’¹²⁰ of up to 65 per cent from April 2011 (prior to which the discount was 80 per cent). The Government announced in its 2011 Autumn

¹¹⁸ [Cemex response to the issues statement](#), 24 April 2012, Section 8.

¹¹⁹ [DECC initial submission](#), 10 April 2012.

¹²⁰ MPA, *Policy Briefing: Energy Carbon Taxes and Market Mechanisms*, August 2011.

Statement that the discount for electricity would be increased to 90 per cent from April 2013.¹²¹

Climate Change Levy

92. The CCL was introduced to help the UK meet its national commitment under the Kyoto Protocol, and is a levy on the use of energy in industry, commerce and the public sector, where power consumption exceeds 2,000 kWh. The CCL is collected by the electricity supplier.

¹²¹www.hm-treasury.gov.uk/d/ccl_electricity_and_metal.pdf.