

# 10. Carbon

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## 10.1 Introduction

10.1.1 This chapter summarises the current position on the EU Emissions Trading Scheme, considers the impact on security of supply of the introduction of a carbon price and sets out some pointers as to likely future directions in the emerging carbon market.

## 10.2 How it works<sup>131</sup>

10.2.1 The electricity generation sector in the UK and EU, along with other carbon-intensive industries such as steel, glass and paper production, now faces a price for emitting carbon dioxide under the EU Emissions Trading Scheme<sup>132</sup>. This covers the emissions from all generation plants above 20MW in the EU, and requires the owners of such plants to monitor and report their emissions of CO<sub>2</sub> on an annual basis. Plant owners must also ensure that at the end of each year they surrender to the regulators one EU ETS allowance (EUA) for each tonne of CO<sub>2</sub> (tCO<sub>2</sub>) emitted in that year.

10.2.2 Each installation (including large electricity generation plant) is allocated allowances for each phase of the EU ETS. Phase I ran from 2005 – 2007; Phase II began on 1 January 2008 and runs until 31 December 2012. The number of allowances allocated for Phases I and II have been determined through National Allocation Plans, which each Member State produces.

10.2.3 EUAs can be traded between participants in the scheme throughout the EU. Because EUAs are the same in every EU country, and can be freely traded between them, there is a single EU carbon price<sup>133</sup>. If the cost of reducing carbon emissions for an individual EU ETS participant is less than the cost of EUAs in the market place, it is economically rational for a participant to reduce carbon emissions and either sell allowances on the market or avoid having to buy

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131 <http://www.defra.gov.uk/environment/climatechange/trading/eu/index.htm>

132 The Directive is available in several languages from [http://ec.europa.eu/environment/climat/emission/implementation\\_en.htm](http://ec.europa.eu/environment/climat/emission/implementation_en.htm)

133 Current prices can be found on a number of websites, including <http://www.pointcarbon.com/>

allowances. As a result, market participants now have a strong commercial incentive to consider the costs of emissions in their investment and production decisions; and carbon emissions will be reduced where it is least costly to do so.

10.2.4 As well as using EUAs, companies can also make some use<sup>134</sup> of carbon credits from the Clean Development Mechanism<sup>135</sup> and Joint Implementation<sup>136</sup> processes set up under the Kyoto protocol. These credits come from emission reduction projects in so called Annex B countries (mainly developing countries), or in the case of Joint Implementation, outside the UK (mainly Eastern European countries). Buying carbon credits under these processes pays for carbon reductions outside the EU, so helping to transfer funds and clean technology to developing nations.

10.2.5 The EU ETS Directive was reviewed during 2008 in order to establish a revised set of rules for Phase III (2013-2020). A proposal<sup>137</sup> was made by the European Commission on 23 January 2008 and is currently making its way through the European legislative process.

### 10.3 Impact on security of supply

10.3.1 The introduction of an explicit commercial price for emitting carbon is intended to influence decisions as to what kind of electricity generating capacity to invest in and deploy. Carbon-intensive forms of generation, such as coal-burning generators, become relatively less competitive compared to lower-carbon technologies, such as renewable or nuclear generation. To the extent that the cost of carbon is passed through to the final consumer, the existence of a carbon price should also have an impact on demand for electricity (as well as other products that use carbon-intensive industrial processes).

10.3.2 The introduction of a carbon price should also encourage investment in new, low carbon and more efficient electricity generating capacity. This is because the carbon price increases the difference between the cost of running efficient new plant and the cost of running less efficient, and therefore more carbon-intensive, older plant. In a

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134 In the UK, up to 7%

135 <http://cdm.unfccc.int/about/index.html>

136 <http://ji.unfccc.int/>

137 The full proposal can be found at: [http://ec.europa.eu/environment/climat/emission/ets\\_post2012\\_en.htm](http://ec.europa.eu/environment/climat/emission/ets_post2012_en.htm)

competitive generation market, the wholesale price of electricity at any one time is set by the short-run marginal costs of the most expensive generator which is running at that particular time.

- 10.3.3 The difference between the running costs of the marginal plant and the cost of less expensive plant represents profit for the latter. Increasing this profit therefore enables quicker recovery of the capital costs of investment and so increases the attractiveness of building new plant. It may also bring forward the closure of less efficient older plant. This would be beneficial in terms of the Government's climate change objectives, but the net impact on security of supply is less clear-cut.
- 10.3.4 Uncertainty as to the future of carbon policy could make it more difficult for investors to assess the long-term costs and likely returns from investment in different forms of generating capacity. If this uncertainty leads to delay in the construction of new plant while investors wait for a clearer picture to emerge, this could lead to supply tightness as demand rises and supply does not; and consequent higher prices and greater risk of inadequate generating capacity.

## 10.4 Experience in practice

- 10.4.1 The ETS started on 1 January 2005. The first phase ran from 2005-2007 and the second phase runs from 2008-2012 to coincide with the first Kyoto Commitment Period. The UK's plan for 2008-2012<sup>138</sup> includes a total allocation of 246 million allowances per year. 107 million allowances per year<sup>139</sup> will be distributed to the electricity generating industry, which equates to some 70% of this industry's projected CO<sub>2</sub> emissions over the same period.
- 10.4.2 While there was an excess of supply of EUAs in Phase I, the European Commission and individual Member States have taken a more stringent approach to allocation in Phase II and this has so far been reflected in the price of EUAs. Additionally, with banking for future phases being allowed in the 2008-2012 trading period, expectations of rising carbon prices support the Phase II price.

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138 The full UK allocation plan is available from <http://www.defra.gov.uk/environment/climatechange/trading/eu/operators/phase-2.htm>

139 The UK will allocate 246 million allowances per annum in the second phase of the EU ETS (2008-2012), including those to be auctioned or sold. This equates to a cap of 1230 million allowances over the whole period. This figure includes 219 million allowances per annum for activities that were covered by the Scheme in Phase I, 9 million allowances to cover emissions from expansion of scope in Phase II and 17million allowances to be auctioned or sold in Phase II.

## 10.5 Future directions

10.5.1 The EU already has the following targets:

- 8% reduction in greenhouse gas emissions by 2008-2012 compared to 1990 levels (from the Kyoto protocol<sup>140</sup>);
- at least a 20% reduction of greenhouse gas emissions by 2020 compared to 1990, and the objective of a 30% reduction by 2020 compared to 1990 as its contribution to a global and comprehensive post-2012 agreement;<sup>141</sup>
- 20% of the EU's energy to be from renewable sources by 2020.

10.5.2 The UK already has the following targets:

- 12.5% reduction in greenhouse gas emissions by 2008-2012 compared to 1990 levels (from the Kyoto protocol);
- A 20% reduction in carbon dioxide emissions by 2010, compared to 1990 levels.

The Government has also signalled its commitment to delivering the UK's share of the EU target for 20% of the EU's energy to be from renewable sources by 2020.

10.5.3 The Climate Change Bill<sup>142</sup>, which received Royal Assent on 26 November 2008, will commit the UK to achieving reductions of at least 26% in CO<sub>2</sub> emissions by 2020, compared to 1990 levels. This corresponds to a reduction in greenhouse gas emissions of around 32-37% by the same date.

10.5.4 All of these factors tend in the same direction, indicating continuing political, regulatory and commercial pressure for significant reductions of carbon emissions in the EU. At the June 2007 Environment Council, the Conclusions on the Review of the ETS underlined the importance of the EU ETS in achieving significant emissions reductions as an essential part of an integrated climate and energy policy.

10.5.5 The UK Government has also signalled its commitment to carbon trading as a crucial mechanism for delivering that reduction, en route to a low carbon economy. The UK's vision<sup>143</sup> for the future of the ETS (i.e. the structure from

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140 <http://unfccc.int/resource/docs/convkp/kpeng.html>

141 Provided that other developed countries commit themselves to comparable emission reductions and economically more advanced developing countries contribute adequately according to their responsibilities and respective capabilities

142 <http://www.official-documents.gov.uk/document/cm70/7040/7040.asp>

143 [http://www.hm-treasury.gov.uk/d/environment\\_emissionstrading301006.pdf](http://www.hm-treasury.gov.uk/d/environment_emissionstrading301006.pdf)

2013 onwards) was set out in October 2006, following the publication of the Stern Review<sup>144</sup>. It emphasised a more harmonised, transparent scheme with a move towards greater predictability and more auctioning of allowances. UK industry, working with Government and NGOs, has also produced a manifesto with its view on the future of the scheme<sup>145</sup>.

10.5.6 The UK Government is actively engaged in the European Commission's current review of the EU Emissions Trading Scheme. The European Commission's legislative proposal for amending the EU Emissions Trading scheme was published on 23 January 2008, and negotiations have already begun. The UK published its public consultation on the Commission's proposals on 7 May 2008<sup>146</sup>. The Government Response<sup>147</sup> was issued on 6 November.

10.5.7 The Government's key priorities for the future EU ETS include an EU-wide central cap that creates real scarcity in the carbon market and drives emissions reductions; and increased certainty in the scheme through longer-term carbon price signals and clarity over the policy.

10.5.8 The future structure of EU ETS will become clearer with the Directive being agreed. The proposals will help to meet the UK's priorities:

- An EU-wide cap, set out to 2020 with a predictable, downward trajectory.

The proposal is for a cap in 2020 that is 21% below 2005 emissions for those sectors covered by the EU ETS. To get there, the cap will decrease in a linear manner from 2013-2020. Access to Clean Development Mechanism/Joint Implementation (CDM/JI) credits will be reduced and the number of EUAs auctioned to industry will increase. Under this proposal, the supply of EUAs would decrease over time and a higher price than that seen in Phases I and II might be expected.

- The proposals afford a longer-term carbon price signal.

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144 [http://www.hm-treasury.gov.uk/sternreview\\_index.htm](http://www.hm-treasury.gov.uk/sternreview_index.htm)

145 <http://www.defra.gov.uk/news/latest/2007/climate-0306.htm>

146 <http://www.defra.gov.uk/corporate/consult/euets-2013amendments/index.htm>

147 <http://www.defra.gov.uk/corporate/consult/euets-2013amendments/government-response.pdf>

The European Commission have set out proposed annual caps from 2013-2020. In addition, it is proposed that the downward trajectory seen in Phase III would continue beyond 2020, giving some indication of cap levels even further into the future.

- 10.5.9 Other countries such as New Zealand<sup>148</sup> and Australia<sup>149</sup> are also starting to consider introducing emission trading schemes, and the current proposal allows for the EU ETS to link to such schemes. This would clearly have implications for the price of carbon in the EU.

## 10.6 Conclusions

- 10.6.1 The reform of EU ETS and business confidence that there will continue to be a meaningful carbon price are key to future investment decisions. The current proposals for reforming the EU ETS go some way towards providing a longer-term carbon price signal and increased certainty for investors. They point to increasing scarcity in the carbon market (due to reduced supply) as the EU moves towards its 2020 emissions reduction target. This should support the carbon price, thus encouraging research, development and investment into innovative low-carbon energy technologies to take an increasingly large place in the UK's overall energy supply mix.

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<sup>148</sup> Details at: <http://www.climatechange.govt.nz>

<sup>149</sup> Details at: <http://www.greenhouse.gov.au/emissionstrading/index.html>