



UNITED KINGDOM: AN EMISSIONS TRADING CASE STUDY



United Kingdom

The World's Carbon Markets: A Case Study Guide to Emissions Trading

Last Updated: May 2015

Brief History and Recent Developments

Date	Event
2000	Climate Change Programme established to meet Kyoto Protocol target
2001	UK ETS comes into effect
2003	UK ETS fully operational
2005	EU ETS commences
2006	UK ETS officially ends to blend legislation with EU ETS
2007	UK ETS reconciliation with EU ETS framework
2008	UK Greenhouse Gas Emissions Trading (amendment) Scheme 2008 enters into force
2008	Climate Change Act passed

Table 1: Key Dates

In 2013, the UK was responsible for 568.3 million tonnes of carbon dioxide equivalent (tCO₂e) of emissions, of which CO₂ accounted for 85%.¹ The highest emitting sector in 2013 was the energy supply sector (189.7 million tCO₂e), followed by transport (116.8 million tCO₂e).

In November 2000, the UK government established the country's Climate Change Programme, with the aims of achieving the UK's Kyoto Protocol commitment as well as a stringent unilateral UK target of reducing greenhouse gas (GHG) emissions 20% by 2010, compared to 1990 levels.¹ The programme not only aimed to reflect the importance of climate change, but also to help balance mitigation efforts between sectors while simultaneously safeguarding competitiveness.²

The programme established three instruments, the first two of which still serve as complementary measures to aid the UK in fulfilling its international obligations;

1. The Climate Change Levy (CCL), which acted as an environmental tax on fossil fuels;
2. Sectoral Climate Change Agreements (CCAs), which could discount the CCL; and,
3. The UK Emissions Trading Scheme (ETS).³

¹ The UK exceeded its pledge to reduce emissions by 12.5% under the mandate of the Kyoto Protocol but were unable to achieve a 20% reduction by 2010.

The UK ETS came into force in April 2001, to provide flexibility for firms to meet their emissions reductions targets and, at the same time, establish London's financial markets as the primary location for environmental trading. Direct participants, totalling 34 firms, took on obligatory reduction targets in exchange for government subsidies. The UK ETS was fully operational in 2003 and was the **first national, multi-sector emissions trading programme** ever established.

According to Smith and Swierzbinski (2007), the UK ETS spurred an overwhelming success in abatement against the target reductions in its first two years of operation; target reductions amounted to 0.79 million tCO_{2e} in 2002, whereas actual abatement was 4.62 million tCO_{2e}.⁴

The system was regulated under the Greenhouse Gas Emissions Trading Scheme Regulations 2003,⁵ which was transposed from the European Commission's Emissions Trading Directive⁶ (a collective response by European countries to provide the framework for the creation of an EU wide cap-and-trade programme). In 2005, the mandatory EU ETS came into effect under the mandate of the Directive. The UK ETS ended in December 2006, with the final reconciliation completed in March 2007.⁷

In December 2008, the UK Greenhouse Gas Emissions Trading (amendment) scheme 2008 came into force, which blends ETS policies and addresses any EU ETS overlap, underperformance or over performance.

The UK's first international target was to reduce emissions to a level at least 12.5% below 1990 during the Kyoto Protocol's first commitment period (2008-12); this was the UK's contribution to the EU-wide target of an 8% reduction. While the 2010 emission reduction target was not met, the UK's Kyoto Protocol target was achieved in 2012 with a 22% reduction from 1990 base year emissions.⁸ The 2008 Climate Change Act⁹ calculated four interim targets, out to 2027, and set a 2050 target to cut emissions by 80% compared with 1990 levels. The fifth carbon budget, spanning 2028-32, will be published in December 2015.¹⁰

Budget	Year	Carbon Budget (million tCO _{2e})	% Reduction from Base Year (1990)
1st	2008-12	3,018	23%
2nd	2013-17	2,782	29%
3rd	2018-22	2,544	25% by 2020
4th	2023-27	1,950	50% by 2025

Table 2: Carbon budgets & Targets

Source: Department of Energy & Climate Change, 2014. Available at: gov.uk

COMPLEMENTARY MEASURES TO THE EU ETS

Carbon Price Floor (CPF)

Due to an abundance of allowances, prices in the EU ETS have fluctuated significantly since Phase II (2008-12), resulting in uncertainty for investors, and contributing to a low level of investment in low-carbon technologies. In response, in the March 2011 Budget, the government committed to introducing a carbon floor price from 1 April 2013.¹¹ It is administered via a levy on fossil fuels used to generate electricity, taking into account their average carbon content. These rates are known as **Climate Change Levy Carbon Price Support rates**.

The carbon floor price was intended to be updated annually and is calculated to be the difference between the EUA price and the annual carbon price floor target.¹² However, in March 2014, the government froze the price at £18/tCO₂ from 1 April 2016 to 31 March 2020.¹³ In the 2015-16 fiscal year, the floor price is set at £18.08/tCO₂.

The **Carbon Price Support** (CPS) rates are used as the basis for setting individual CPS rates for each of the taxable commodities. The CPS rates and indicative rates (for the third and fourth year out) are announced two years in advance to provide certainty.

The CPS applies to fossil-fuels based electricity generators, including electricity that is also subject to the Climate Change Levy (CCL) regime. The covered fossil fuels are natural gas, Liquefied petroleum gas (LPG), coal and other taxable solid fossil fuels, gas oil, fuel oil and other heavy oil.

	Confirmed Rates	Indicative rates	
	2016-17	2017-18	2018-19
Carbon floor price (£/tCO ₂)	18	18	18
Supplies of commodity liable to CPS rates of climate change levy			
Natural gas (£/kilowatt hour)	0.00331	0.00331	0.00331
Liquefied petroleum gas (LPG) (£/kilogram)	0.0528	0.0528	0.0528
Coal and other taxable solid fossil fuels (£/gross gigajoule)	1.0528	1.0528	1.0528
Supplies of commodity liable to CPS rates of fuel duty			
Gas oil; rebated bio-blend; kerosene (£/litre)	0.04916	0.04916	0.04916
Fuel oil; other heavy oil; rebated light oil (£/litre)	0.05711	0.05711	0.05711

Table 3: CPS rates for fuels²

Source: UK HM Revenue and Customs, 2014. Available at: gov.uk.

Climate Change Agreements (CCAs) are voluntary agreements made by UK industry and the Environment Agency to reduce energy consumption and CO₂ emissions¹⁴ and were introduced alongside the CCL to help energy-intensive industries to lower emissions while maintaining international competitiveness.

In return for meeting their targets, operators receive a discount on the CCL. For operators who hold a CCA, the CCL will be reduced by 90% on electricity bills and 65% on other fuels. CCAs are available to a range of industry sectors from major energy-intensive processes such as chemicals, to paper, supermarkets and agricultural businesses.¹⁵

Over 9,000 facilities across 53 industrial sectors have CCAs and have signed up to targets from 2013-20. If these targets are met, the participants will achieve a 19 million tCO₂ emission reduction as well as a 100TWh reduction in electricity consumption, ultimately saving participants £300 million each year.¹⁶ Operators who fail to meet their targets must pay a 'buy-out-fee'³ in order to continue receiving discounts.¹⁷ Cumulatively, CCAs are expected to deliver 11% energy efficiency gains across all industry sectors (against agreed baselines) by 2020.¹⁸ CCA targets are currently under review with updates on new sector-level commitments expected in 2016.¹⁹ The scheme is scheduled to run until 2023.²⁰

The CRC Energy Efficiency Scheme (CRC Scheme) is a mandatory UK programme aimed at improving energy efficiency and reducing CO₂ emissions in large public and private sector organizations which are responsible for around 10% of the UK's CO₂ emissions (2011-12 data).²¹ The system is designed to reduce CO₂ emissions not already covered by CCAs or the EU ETS. It came into force under the CRC Energy Efficiency Scheme Order 2010 and was later replaced by CRC Energy Efficiency Scheme Order 2013 (CRC Order 2013). It targets non-energy intensive organisations which typically spend at least £0.5 million a year on electricity and currently covers approximately 2000 participants and 10% of UK emissions.²²

² The indicative rates are shown on the basis that £18 is the maximum CPS rate per tCO₂, and is expected to be in force in these years.

³ £12 per tonne of CO₂e

Participants are required to monitor their energy use and submit a report each year to determine the number of allowances to be surrendered. The scheme is currently in Phase 2, which runs from April 2014-March 2019 and is divided into compliance years which mirror the UK's financial calendar (1 April-31 March). The Allocation Regulations 2013 set allowance prices for 2014-15 at £15.60 /tCO₂ in the forecast sale and £16.40/tCO₂ in the buy to comply sale (one CRC allowance=one tonne of CO₂). The penalty for non-compliance is £16.40/tCO₂ ²³

The Renewables Obligation (RO) was introduced in 2002 to provide incentives for the deployment of large-scale renewable electricity in the UK.²⁴ The policy requires licensed UK electricity suppliers to source an annually increasing share of electricity from eligible renewables.²⁵ Obligations are met with Renewables Obligation Certificates (ROCs), which the Office of the Gas and Electricity Markets (Ofgem) issues to renewable energy generators. ROCs are tradable commodities with no fixed price. Suppliers which do not surrender enough ROCs must pay a buy-out price, set at £43.30 per ROC for 2014-15 and £44.33 in 2015-16. Although the system will close to new generators from 1 April 2018, it will continue until 2037. The government is legally bound to meet 15% of energy demands with renewable resources by 2020.²⁶

Electricity Market Reform. The Energy Act 2013 established Emissions Performance Standards (EPS) to limit CO₂ emissions from new fossil fuel power stations. Facilities that meet the EPS will be eligible for CCL exemptions.²⁷ At the end of 2014, two new reforms were introduced to the energy market: Contracts for Difference (CfDs) and the Capacity Market. The CfD supports and encourages new investment in low-carbon energy generation such as renewables or carbon capture and storage; these contracts help to stabilise costs and reduce exposure to volatile electricity prices. Currently, the RO is transitioning to apply the CfD as the new support mechanism for encouraging low-carbon investment.²⁸ The Capacity Market aims to enhance the security of energy supply by providing revenue to capacity providers to ensure that the level of supply continues to meet the level of demand and will be running in 2018/19. The first auction for future energy generation contracts closed on 18 December. Those that win contracts must ensure that they will be available to provide electricity if and when needed; in return, they will receive payment on top of the electricity sold.²⁹

What Distinguishes This Policy?

UNIQUE ASPECTS

1. In 2002, the UK **developed its ETS without the benefit of examples of similar programmes elsewhere** (with the exception of a voluntary emissions trading programme only covering the electricity sector which had commenced in Denmark in 2001). Its development required significant agreement from environmental groups and the private sector to take on emissions reductions using an unproven instrument, voluntarily.
2. The UK **played a pivotal role in extending economy-wide ETS throughout the European Union**, as the development of the EU ETS was largely based upon the UK and Denmark's pilot programmes.
3. The introduction of the carbon price floor in 2013 is the first initiative from an EU member state to implement a complementary domestic climate policy to the EU ETS.

CHALLENGES

1. Two prices for CO₂ within the same ETS system can lead to distortionary impacts on the wider EU carbon market, in terms of demand and the price of EUAs. Furthermore, according to Sartor et al.,³⁰ the impact of the CPS on the rate of decarbonisation in the UK could lead to additional emissions abatement in Phase III the UK power sector of between 26.6 million tCO₂ and 37.6 million tCO₂ by 2020 which could impact the demand of EUAs from UK emitters.
2. One of the main risks of the CPS initiative is its tendency to increase the fragmentation of harmonised EU climate change policy in the energy and industrial sectors.

LESSONS

1. A national programme can become part of a wider regional market in the future.
2. A significant number of companies prefer the option of greatest flexibility to achieve an emissions reduction target, rather than an arbitrary levy with no flexibility for compliance.

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The authors would like to thank Joan MacNaughton, Emilie Alberola, Marion Afriat, Ruben Lubowski, Pedro Piris-Cabezas, Jos Cozijnsen, Jennifer Andreassen, Joe Billick, Clayton Munnings, and Henry Derwent for very helpful comments and information for this case study. We take full responsibility for any remaining errors.

Disclaimer: The authors encourage readers to please contact CDC Climat Research, EDF and IETA Contacts with any corrections, additions, revisions, or any other comments, including any relevant citations. This will be invaluable in strengthening and updating the case studies and ensuring they are as correct and informative as possible.

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