This publication was withdrawn on 19 April 2023

The CRC Energy Efficiency Scheme has closed.

See the closure information for participants.

briefing note

Environment Agency

The CRC Energy Efficiency Scheme (CRC): Coverage, Abatement and Future Caps

Key messages

1. **This study finds that potential emissions savings under the CRC are significantly higher than previous estimates.**

   Up to 11.6 million tonnes of carbon dioxide emissions ($MtCO_2$) per year could potentially be avoided by 2020 by sectors included in the CRC, with overall cost savings or no net financial cost to participants as initial costs are offset by reduced energy bills. This would result in emissions reduction from this sector of around 28 per cent from 1990 levels.

   For simplicity this estimate does not assume any reduction in the carbon intensity of electricity generation. If the carbon intensity is reduced by around half by 2020 as advocated by the Committee on Climate Change (CCC) then the overall emissions from the CRC sector would be lower still but the saving that could be attributed directly to the CRC would be up to 27 per cent less.

2. **Emissions coverage by the CRC is likely to be higher than previously thought.**

   The study estimates that the CRC will initially cover about 57.5 $MtCO_2$ compared to previous estimates of 52 $MtCO_2$. When the NHS is included this could increase scheme coverage by around a further 3.3 $MtCO_2$, to about 60.8 $MtCO_2$.

3. **The largest opportunities for carbon reduction identified are from the service sector.**

   The service sector accounts for more than 75 per cent of the estimated cost effective emissions savings. In the service sector the most cost effective abatement measures are typically better management of heating and air conditioning, energy management for IT systems and better management of lights.

4. **We recommend that from 2013, CRC caps are best set based on the projected carbon price in the European Union Emissions Trading System (EU ETS).**

   In order to provide consistency across sectors and to ensure that the potential cost effective emissions reductions available to CRC sectors are achieved we recommend that caps are set at a level at which the marginal price of allowances would be expected to roughly match the ETS carbon price.

Introduction

The CRC Energy Efficiency Scheme (CRC) is a pioneering emission trading scheme aimed at large organisations in the services, public administration and non-energy intensive industry sectors. Under the scheme, participants will have to buy allowances to reflect the carbon emissions resulting from the heat and power that they use. The scheme will come into force in April 2010 with a three-year introductory phase in which there will be no cap on emissions from the scheme. The first year of the Introductory Phase will be a reporting-only year. In the following two years of the introductory period an unlimited number of allowances will be sold to participants at a fixed price. From April 2013, total emissions from the CRC sector will be limited through a cap on the number of allowances, which will be auctioned to participants. The scheme is designed to encourage energy efficiency measures which will reduce overall

carbon emissions and help the UK meet its target of reducing green house gas emissions by at least 34% by 2020 (relative to 1990 levels).

The revenue raised from selling emission allowances each year will be redistributed back to participants, and those who reduce emissions the most will receive a financial bonus.

This study provides the first independent quantification of the emission abatement potential specific to the CRC sector.

Emissions covered by the CRC

Previous estimates of the emissions covered by the CRC suggest the scheme would cover emissions of nearly 52 $MtCO_2$ per year, around 8 per cent of UK emissions (652$MtCO_2$, 2006). We approached CRC sectors, trade bodies, energy companies, and Carbon Trust to take a view on current coverage.

Our findings suggest that this figure is too low. We estimate coverage of at least 57.5 $MtCO_2$. Our study did not include coverage for the NHS (which has now been incorporated into the scheme) as its emissions figures were too uncertain. However, if the estimates are assumed to be broadly correct, this would increase scheme coverage by a further 3.3 $MtCO_2$, to 60.8 $MtCO_2$.

Emission abatement and cap setting

The study concludes that the potential to reduce carbon emissions from the organisations in the CRC is significantly higher than the 7.5 $MtCO_2$ previously estimated in 2006 (this study also did not incorporate assumptions on increasing decarbonisation of the electricity mix). The final impact assessment on the order to implement the CRC published by the Department of Energy and Climate Change (DECC) in October 2009 suggests that the actual emissions savings could be up to 3.6 $MtCO_2$, which includes the effect of the Energy Performance of Buildings Directive.

Our study shows cost effective potential abatement of up to 11.6 $MtCO_2$/yr that could be realised at a benefit to the sector (i.e. through measures with a net cost of zero or below) by 2020. A number of factors are likely to account for this increase: updated scheme coverage; fuel price and economic growth forecasts; and differences between models and therefore the measures considered and assumptions about the rate of uptake of measures.

As the price of carbon rises, more abatement measures become cost effective. At a carbon price of £40/tCO_2, cost effective abatement of 11.9 Mt CO_2/yr is identified. The relatively small difference between this and zero cost abatement is due to the limited mid-range abatement identified in the modelling and, and is similarly evident in the Committee on Climate Change (CCC) report *Building a low carbon economy* (December 2008).

From 2013, CRC caps are best set based on the projected EU ETS carbon price – i.e. set at a level at which the marginal price of allowances would be expected to roughly match the ETS carbon price. Taking this approach would provide:

- consistency with the budget setting approach used by the Committee of Climate Change;
- consistency between the CRC and the EU ETS trading sectors;
- a significant effort towards meeting the key environmental effectiveness goals of the CRC; potentially providing an emission reduction of 28% against 1990 levels.

Abatement potential was modelled for all 22 CRC sub-sectors for a range of carbon prices. This study identified that cost effective carbon abatement opportunities are much higher in the service sub sectors as opposed to industry sub sectors (table 1).

Table 1. CRC allowance prices and cost-effective abatement.

£/tCO2	Cost effective abatement (Mt CO2)			Proportion of 2012 emissions	Potential reduction against 1990 emissions
	Industry	Services	CRC Total		
0	2.50	9.06	11.56	21.0%	28.09%
40	2.61	9.30	11.91	21.6%	28.63%
57*	2.64	9.30	11.93	21.7%	28.67%
100	2.73	9.30	12.03	21.9%	28.83%
200	2.74	9.44	12.18	22.1%	29.07%

*****This is the average central non-traded carbon price over the period 2013 to 2020 taken from the July 2009 Carbon Valuation in *UK Policy Appraisal: A Revised Approach*.

The figures presented for emissions reduction are the technical potential achievable, and assume that all cost effective abatement options identified in 2012 are delivered by 2020. The CRC delivers the right financial and behavioural incentives to drive this, so following the CCC approach we suggest that the full technical potential could be realised.

The abatement potentials calculated here are made up of fossil fuel demand reduction measures, renewable heat and combined heat and power generation measures, in addition to electricity demand reduction measures. For simplicity this estimate does not assume any reduction in the carbon intensity of electricity generation. If the carbon intensity is reduced by around half by 2020 as advocated by the CCC then the overall emissions from the CRC sector would be lower still but the saving that could be attributed directly to the CRC would be up to 27 per cent less.

Areas for further work

The report recommends a number of areas for further work. These include;

- Development of a more accurate model for simulation of abatement potential in the non-domestic building sector (similar to the ENUSIM model for the industry sector);
- Investigation into the realistic timescales for the uptake of the measures available to more accurately predict how quickly abatement can be realised;
- A more detailed review of the applicability of energy efficiency measures listed in the industrial abatement curves for the size of organisation participating in the scheme; and
- Determining assumptions on the rate of decarbonisation of the electricity sector in order that this can be accounted for in the cap setting process.

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