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Turning an early start into a false start: Implications of the EU emissions trading Directive for the UK Climate Change Levy and Climate Change Agreements

by

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FOREWORD

This paper[1] was prepared by Steve Sorrell (SPRU – Science and Technology Policy Research, University of Sussex) for the OECD Global Forum on Sustainable Development: Emissions Trading and Concerted Action on Tradeable Emissions Permits (CATEP) Country Forum, held at the OECD Headquarters in Paris on 17-18 March 2003. The aim of the Forum was to bring representatives from OECD and non-OECD country governments together with representatives from the research community, to identify and discuss key policy issues relating to greenhouse gas emissions trading and other project based mechanisms for GHG emission reduction, such as Joint Implementation and the Clean Development Mechanism. The Forum also aimed to promote dialogue between the various stakeholder groups, and discuss policy needs in the design and implementation of tradeable emissions schemes. Forum participants included representatives from OECD and non-OECD governments, as well as from the research community. Those from industry and other institutions involved with emissions trading, joint implementation and clean development mechanism projects such as the European Commission and the World Bank were also represented.

The OECD Global Forums are one of the two pillars of the new architecture of the Centre for Co-operation with Non-Members, agreed upon by the Committee on Co-operation with Non-Members. The Global Forum on Sustainable Development (GFSD) provides a mechanism for achieving the OECD Ministers' outreach objective and will complement other work on sustainable development. Within the organisational framework of OECD, the GFSD will aim to facilitate a constructive dialogue between non-member and OECD economies on key issues on the sustainable development agenda.

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[1] An earlier version of this paper, co-written with Catherine Boemare and Philippe Quirion of the *Centre International de Recherche sur l'Environnement et le Développement (CIRED)*, compares the implications of the EU ETS for negotiated agreements in the UK and France. This paper has been submitted to the *Climate Policy* journal for publication in 2003.

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EXECUTIVE SUMMARY

The recent agreement by European environment ministers on the ground rules for an EU Emissions Trading Scheme (EU ETS) represents a landmark in the evolution of EU climate policy. But this scheme will be introduced into a crowded 'policy space' within each Member State in which complex interactions between the EU ETS and existing instruments appear unavoidable. This paper explores one aspect of the problems created by the EU ETS for the UK – namely the potential interactions with the Climate Change Levy (CCL) and associated Climate Change Agreements (CCAs). The CCL/CCA package forms the centrepiece of the UK Climate Programme and has objectives which go beyond the least-cost abatement of CO_2 emissions. In addition, the CCAs form one element of the wider UK Emissions Trading Scheme (UK ETS), which itself may be eclipsed by the development of the EU ETS. The paper explores the potential interactions between the EU ETS and the CCL/CCA package by comparing in turn the scope, timing, objectives and operation of each instrument. The coexistence of the EU ETS with CCL and CCAs is shown to raise four important issues, namely double regulation, double counting of emission reductions, equivalence of effort and the fungibility of trading commodities. The paper argues that the CCL/CCA package will need to be reformed to accommodate the EU ETS, but that the retention of some elements of this package may be justified in order to meet the non-CO_2 objectives of each instrument.

1. INTRODUCTION

The recent agreement by European environment ministers on the ground rules for an EU Emissions Trading Scheme (EU ETS) represents a landmark in the evolution of EU climate policy. The proposed scheme will initially cover some 45% of EU CO_2 emissions and is expected to expand over time to cover more sectors and greenhouse gases (GHGs). As the EU is enlarged, the scheme will cover an increasingly large proportion of total Annex I emissions under the Kyoto Protocol.

In parallel with the development of this scheme, individual Member States have introduced a range of national climate policies, including carbon/energy taxes, negotiated agreements, regulatory standards and support schemes for renewable electricity. The result is a very crowded 'policy space' in which complex interactions between the EU ETS and existing instruments appear unavoidable (Majone, 1989, p158-161). These interactions could be complementary and mutually reinforcing but there is also the risk that the instruments will interfere with one another and undermine the overall efficiency and effectiveness of the policy mix.

The problem of policy interaction applies in a particularly acute form to the UK, which has established a complex, elaborate and interdependent mix of climate policies over the last four years (DETR, 2000). These policies are operational and are delivering real emission reductions, but a range of conflicts with the EU ETS may lead to substantial changes being made (Sorrell, 2003a). None of this was anticipated when the UK Climate Programme (UKCP) was developed and the future shape of that Programme remains uncertain.[2]

This paper explores one aspect of the problems created by the EU ETS – namely the potential interactions with the UK Climate Change Levy (CCL) and associated Climate Change Agreements (CCAs). The former is an energy tax for the business and public sector, while the latter is a system of negotiated agreements with energy intensive industry that provide participants with partial exemption from the CCL. An important feature of the CCAs is that they incorporate baseline and credit trading arrangements as part of the wider UK emissions trading scheme (UK ETS). While the primary objective of the CCL/CCA package is to reduce CO_2 emissions, the design of the package reflects wider objectives such as avoiding energy price increases for low income consumers.

The paper first describes the proposed EU Directive, outlines the main features of the CCL and CCAs and introduces the concepts of 'direct', 'indirect' and 'trading' interaction. It then explores the potential interactions between the EU ETS and the UK instruments by comparing in turn their scope, timing, objectives and operation. The coexistence of the EU ETS with the CCL/CCA package is shown to raise four important issues, namely double regulation, double counting of emission reductions, equivalence of effort and the fungibility of trading commodities. The paper concludes with some general recommendations for the future development of UK climate policy.

[2] The recent Energy White Paper (DTI, 2003) acknowledged the central importance of the EU ETS for future UK climate policy, but provided few details on how the existing policy mix could evolve. In April 2003 the government set up an interdepartmental working group to examine this question.

2. THE EU EMISSIONS TRADING SCHEME

On the 23rd October 2001, the European Commission issued a proposal for an EU-wide scheme for greenhouse gas emissions trading (European Commission, 2001). This was approved, although in different terms, by the European Parliament on the 10th October 2002 and European Council on the 9th December 2002. The proposed Directive will be sent to the European Parliament for a second reading in 2003, with remaining differences to be resolved through conciliation between the Council and the Parliament. The Directive should be adopted in late 2003, which means that there is a good chance that the scheme will come into force in 2005 as planned.

The design of the EU ETS represents a pragmatic compromise between economic efficiency and political acceptability. The Council text accommodates the concerns of key Member States such as Germany and has won the broad support of both industry lobbyists and mainstream environmental groups. There is much work still to be done, notably in devising acceptable allocation rules at the national level (Harrison and Radov, 2002). But the key elements are now in place for a historic leap forward in the implementation of market-based environmental instruments.

The EU ETS is a downstream 'cap and trade' scheme along the lines of the US Acid Rain Program. The ~5000 participants in the scheme include electricity generators, oil refineries and energy intensive manufacturing installations in sectors such as iron and steel, paper and minerals. Estimates made on behalf of the Commission suggest that the scheme will reduce total abatement costs by some 24%, leading to cost savings of some €2.1billion/year by 2010 (Capros and Mantzos, 2000). Table 1 summarises the main features of the December 2002 Environment Council agreement (Council of the European Union, 2002) and compares it to the European Parliament proposals (European Parliament, 2002).

The Directive was the subject of intense negotiation and the Commission found it necessary to compromise in several areas in order to secure political agreement. Four particularly contentious issues were:

1. *Opt-outs (Article 23a-Parliament, 25a-Council)*: The Commission proposed a mandatory scheme, but this was opposed by the UK and Germany. The Parliament text allows installations to opt-out during Phase 1 (2005-2007), but participation is mandatory during Phase 2 (2008-2012). The Council text extends this temporary exemption to 'activities' (sectors). According to both texts, opt-outs will only be permitted if installations/activities can demonstrate equivalence in terms of emission reductions, monitoring, reporting and verification requirements and the penalties for non-compliance.

2. *Opt-in and phase-in (Article 2a-Parliament, 23a Council)*: The Parliament text contains two provisions for an early extension of the ETS. First, Member States shall be able to extend the scheme to additional sectors, activities and installations (opt-in) from 2005, although the Commission may reject these proposals. Second, other gases shall be phased in as soon as methods of measurement, monitoring and calculation are developed by the Commission. The Council text allows unilateral extensions only from 2008, while harmonised extensions require an amendment to the Directive.

3. *Allocation (Article 9 and Annex III)*: The Council text requires free allocation during Phase 1, while Member States are allowed (but not required) to auction up to 10% of allowances during

Phase 2. The Parliament text demands 15% auctioning for both Phases. In both texts, national allocation plans are subject to approval by the Commission and must be consistent with national burden sharing targets, progress towards meeting those targets, national energy and climate change policies, the technological potential of the installation to reduce emissions and state aid and internal market rules. This mixture of top-down and bottom-up requirements will be difficult to interpret and disputes over allocation could lead to delays.

4. *Interfaces (Article 26):* Another directive will develop 'modalities' governing links between the EU ETS and the Kyoto project-based mechanisms (JI and CDM) during 2003, while mutual recognition agreements may be signed between the EU ETS and trading schemes created by other Parties to the Kyoto Protocol. The prospect of such links could reopen the supplementarity debate, as there is a risk that the purchase of 'hot air' will substitute for domestic abatement (Climate Action Network Europe, 2003).

Table 1 Key elements of the EU ETS – comparing Council and Parliament proposals

Feature	EU ETS proposals
Compliance periods	Phase 1: 2005-2007 Phase 2: 2008-2012 (i.e. the first Kyoto Protocol commitment period)
Type of target	Absolute targets (Council) Mixture of absolute and relative targets (Parliament). New entrants and extending installations to receive allowances in the same way as other participants. Closing plants will not continue to receive allowances
Allocation of allowances	Phase 1: Free (Council); 15% auctioning (Parliament). National allocation plans subject to approval by the Commission Phase 2: maximum 10% auctioning (Council); 15% auctioning (Parliament)
Sectors included	All combustion plant >20MW thermal input, including electricity generators Oil refineries, coke ovens, ferrous metals, cement clinker, pulp from timber, glass and ceramics. Parliament: also Chemicals Based on IPPC, but some IPPC sectors excluded (e.g. food and drink, waste incineration) Sites below IPPC size thresholds in eligible sectors may also be included
Size of market foreseen	4000-5000 installations 45% of all EU carbon dioxide emissions
Basis	Phase 1: only direct CO_2 emissions (Council); other gases may be included (Parliament) Phase 2: other gases may be included, provided adequate monitoring and reporting systems are available and provided there is no damage to environmental integrity or distortion to competition
Links with JI/CDM	Emission credits from JI and CDM projects to be recognised from 2005 (Council) or 2008 (Parliament), subject to 'modalities' to be adopted by the EU by 2005
Links with other schemes	Agreements with third parties listed in Annex B of the Kyoto Protocol may provide for the mutual recognition of allowances between the EU ETS and other schemes
Monitoring, Reporting & Verification	Common monitoring, verification and reporting obligations to be elaborated Verification through third-party or government authority
Allowance tracking	Linked/harmonised national registries with independent transaction log
Sanctions	Phase 1: 40 €/tCO_2 penalty (Council), 50 €/tCO_2 (Parliament) + restoration in next period Phase 2: 100 €/tCO_2 penalty + restoration in next period
Banking	Banking across years within each compliance period Member States can determine banking from Phase 1 to Phase 2 (Council) Banking allowed (Parliament)

Source: European Parliament (2002), Council of the European Union (2002).

3. THE UK CLIMATE CHANGE LEVY AND CLIMATE CHANGE AGREEMENTS

3.1 The Climate Change Levy

The Climate Change Levy (CCL) was introduced in April 2001 and is a downstream, revenue-neutral energy tax for business, commerce and the public sector. The CCL is levied at different rates on coal, gas and electricity use, with oil products, CHP fuel and renewable electricity being exempt. The government chose a downstream tax, combined with indirect treatment of electricity,[3] in order to avoid energy price increases for households living in 'fuel poverty' – defined as those spending more than 10% of their income of energy. Similarly, the government chose an energy tax rather than a carbon tax to protect what remains of the UK coal industry. These decisions have influenced the entire shape of the UKCP and have created serious compatibility problems with the EU ETS.

The size of the levy represents a compromise between climate and competition policy objectives, reached in the context of heavy industrial lobbying. Table 2 illustrates that the CCL corresponds approximately to a €11.4/tCO_2 tax for natural gas, a €6.4/tCO_2 tax for coal and a €13.1/tCO_2 tax for the primary fuel input to electricity generation. Together with the exclusion of oil, these figures illustrate the variance of the CCL from a straightforward carbon tax and the disincentive it creates for switching to fuels with a low carbon content. Oil is subject to excise duties, which correspond to an equivalent carbon tax of €12.5/tCO_2 for heavy fuel oil and €16.2/tCO_2 for gasoil.[4] Excise duties are a legacy of policies imposed in the 1970s to reduce dependence upon imported oil, and have been retained despite the UK being a net exporter of oil for nearly two decades. While the CCL improves the competitiveness of oil compared to gas and coal, it still leaves it taxed at a higher rate on a carbon equivalent basis.

Table 2 CCL rates and equivalent carbon tax rates

Fuel	Rate c/kWh	Equivalent in €/tCO_2	Equivalent in €/tC
Gas	0.21	11.4	41.7
Coal	0.21	6.4	23.4
Delivered electricity	0.60	13.1	48.0

Notes:

- Converted to € assuming £1 = €1.4
- Assumed emission factors: Gas = 51.3kgCO_2/GJ; Coal = 91.5kgCO_2/GJ. Assumed delivered to primary conversion factor = 2.60. Assumed average carbon emissions factor for primary electricity = 0.17kgCO_2/kWh. These assumptions correspond to those used for the CCAs.

[3] Downstream means the tax is applied to energy consumers, rather than upstream to suppliers of primary energy commodities. Indirect means that the tax is applied to electricity consumers, rather than directly to the fuel input to electricity generation.

[4] Current excise duties are €38.7/tonne for HFO and €51.1/tonne for gasoil. The combustion of one tonne of HFO leads to emissions of 3.11tCO_2, while the corresponding figure for gasoil is 3.14tCO_2.

The CCL increases average industrial coal, gas and electricity prices by 32%, 27% and 12% respectively compared to 1999 levels (DTI, 2002). The price impact of the Levy has been undermined, however, by trends in industrial electricity prices. These fell by 23% between 1995 and 2001 while the fall between 2000 and 2002 more than offset the increase from the CCL.

The CCL is intended to raise around £1 billion each year, but overall revenue neutrality is achieved through a 0.3% reduction in employers national insurance contributions. Some 15% of the revenue is used to fund an R&D programme and a system of enhanced capital allowances for energy efficiency investment. The perception of revenue neutrality has been undermined by the subsequent increase in employers national insurance contributions in 2003. The fact that industry has been a net loser from the CCL while the service sector has been a net winner, coupled with the economic difficulties faced by UK manufacturing industry have ensured continuing opposition to the CCL from industry lobby groups (CBI, 2002).[5]

The price incentive of the CCL is anticipated to contribute a reduction of 7.3MtCO_2/year between 2000 and 2010, 'including the exemption for CHP and renewables', while the capital allowances are expected to contribute an additional 1.83MtC. The total figure of 9.2MtC/year corresponds to ~5.8% of emissions from the fuel and electricity use that is subject to the full CCL.

3.2 The Climate Change Agreements

The Climate Change Agreements (CCAs) are negotiated agreements between energy intensive 'facilities'[6] and the government and cover the period 2001 to 2013. CCAs give facilities exemption from 80% of the CCL, provided they take on binding targets for energy use or CO_2 emissions. The targets are defined for two-yearly intervals up to 2010 and may be either absolute or relative. The penalty for non-compliance is a return to paying 100% of the CCL for the following two years. Eligible facilities are those located in sectors which are regulated under the Integrated Pollution Prevention and Control (IPPC) Directive and include many facilities which lie below the IPPC size threshold.[7] CCAs have been negotiated with 44 industrial sectors representing around 6000 industrial facilities, and the government initially estimated that these would reduce CO_2 emissions by 9.2 MtCO_2/year by 2010. This corresponds to ~12% of baseline emissions (DETR, 2000).

The CCAs vary widely in their choice of base year, the improvement required over a business as usual baseline, the assumptions used about production levels and product mix, and the provisions for 'risk management'.[8] In all cases, the targets are based upon a percentage of the 'cost effective' energy efficiency potential, identified through modelling work by AEA Technology (ETSU 2001). Several commentators have argued that the targets are weak, as a consequence of information asymmetry, limited sectoral and technology disaggregation in the AEA database, the restriction to currently available technology, the choice of simple paybacks rather than discounted cash flow for investment appraisal, the very short paybacks used (2 to 4 years) and the fact that only a percentage of cost effective improvements are required

[5] In addition, many firms failed to connect the money saved on staff costs with the increased expenditure on energy (Ekins et al, 2002).

[6] A facility comprises one or more IPPC installations and may also include other activities. For example, where an installation (or group of installations) consumes more than 90% of a site's energy use, then all of the energy use at the site will be covered by a CCA.

[7] Regulation under IPPC is a poor proxy for energy intensive industry, but was chosen for administrative convenience. Some energy intensive sites in non-IPPC sectors (e.g. horticulture) are also included.

[8] Some sectors are allowed to adjust their targets if there are changes in product mix or output level, while others have adopted a 'tolerance band' around their target.

(Sorrell and Smith, 1999; Waller, 2001). In response, industry has emphasised the importance of hidden costs, such as management time and constraints on capital availability (ETSU, 2001). However, the ease with which most CCA facilities have met their first milestone targets in 2003 suggests that the perception of weak targets is correct.[9]

In addition to the basic agreements, the CCAs incorporate trading arrangements as part of the UK ETS. These arrangements allow individual CCA facilities to generate 'allowances' if they perform better than their target, and to use allowances for compliance if they perform worse than their target. Sale of allowances is only possible ex-post, once compliance with the milestone targets has been verified. Allowances can be traded with other CCA facilities and also with the 'direct participants' in the UK ETS. The latter have been subsidised to adopt absolute emission targets, thereby forming a cap and trade scheme in the UK (DEFRA, 2001). A third component of the UK ETS, for domestic emission reduction projects, is currently under development (Begg et al, 2002).

The inclusion of CCA trading arrangements is to the benefit of CCA facilities but has complicated the design of the UK ETS. Relative targets create problems as increases in output can lead to increases in emissions – although this is constrained in the short term by production capacity. To prevent any violation of the emissions cap for direct participants, a 'Gateway' had to be established to prevent the net sale of allowances from the CCA sector to the direct participant sector (Sorrell, 2001a).

Trading offers CCA facilities a highly cost effective route to avoiding non-compliance penalties, since the cost of purchasing allowances to cover marginal exceedances of the CCA target is much less than the cost of CCL payments on all fuel and electricity use over a two-year period.[10] This is especially the case in the oversupplied UK market, where 'hot air' surpluses from several of the direct participants have helped to push UK ETS allowance prices as low as €4.2/MtCO_2. Trading also creates an incentive for overcomplying facilities to sell allowances outside their sector, rather than subsidise their competitors by contributing to overall sector compliance.[11] As a consequence, the incentive for individual facilities to free ride is much diminished. Overall the trading arrangements have both increased the incentive for individual facilities to comply with their targets, and provided a cheap mechanism with which to do so.

[9] Overall, CCA facilities reduced emissions by 15.8MtCO_2/year below the baseline, or 13.5MtCO_2/year below an 'equivalent' 2000 baseline (FES, 2003). This is more than three times the cumulative target for the first milestone and significantly greater than the final target for 2010. Some 70% (9.5 MtCO_2/year) of this was contributed by plant closures and output reductions in the steel industry, but the rest of industry reduced emissions by 4MtCO_2/year, or 25% more (1MtCO_2) than required by the first milestone target.

[10] As an illustration, assume a firm with an annual electricity consumption of 1GWh. Its CCL liability for electricity is €6020. Assume it agrees to a CCA with a target of 10% saving in electricity use (100MWh) in return for a CCL exemption worth €4816 (80% of €6020). Assume it only achieves a 5% improvement (50MWh). To make up the shortfall, the company needs to buy allowances for 50MWh or 21.5tCO_2 (assuming a carbon intensity of delivered electricity 0.43tCO_2/MWh). At an allowance price of €5/tCO_2, that would cost €108. In contrast, the cost of losing the exemption for two years would be 111 times greater at €12040.

[11] This was reflected in the results for the first milestone period (FES, 2003), where most overcomplying facilities 'ring fenced' their surplus. Karen Gilbert of the National Farmers Union comments that: "Emissions trading moved the goalposts, and went against the ethos of collaboration which we'd used to sell the CCA idea to our members" (ENDS, 2003).

4. PROBLEMS OF POLICY INTERACTION

The existence of the CCL/CCA package will significantly complicate the implementation of the EU ETS in the UK and lead to complex problems of policy interaction. In exploring these interactions, a distinction should be made between directly and indirectly affected target groups. A directly affected target group has obligations and incentives imposed upon it directly by a policy instrument, while an indirectly affected target group is influenced in some way by the behavioural changes that are made by the directly affected group.[12] While indirect effects permeate throughout the economy, it is the first order impacts on electricity consumers that are of particular interest.

The potential interactions between the EU ETS and CCL/CCA package relate to both directly and indirectly affected target groups. *Direct interaction* occurs when a target group is directly affected by two of the policies, while *indirect interaction* occurs when a target group is indirectly affected by one policy and either directly or indirectly affected by a second. So, for example, there is indirect interaction between the EU ETS and the CCL, since both will lead to higher electricity prices for all consumers.

The participation of the CCAs in the UK ETS creates the additional possibility of *trading interaction* or 'linking' (Haites and Mullins, 2001). Here, the two policies may influence one another by the exchange of a GHG allowance. Article 24 of the EU ETS allows for the exchange of GHG allowances with other national/regional GHG trading schemes, which may include the UK ETS. Any such links would need to be governed by transfer and exchange rules, which in combination would define the *fungibility* of the different commodities.

The direct, indirect and trading interactions between the EU ETS, CCL and CCAs can be explored by examining in turn:

1. the *scope* of each instrument, including the sectors, sites and emission sources but that are directly or indirectly affected;

2. the *timing* of each instrument in relation to each other and the Kyoto commitment period;

3. the *objectives* of each instrument and the extent to which these reinforce or conflict with one another; and

4. the *operation* of each instrument and the manner in which obligations and incentives interact.

Issues of scope, timing and objectives are discussed briefly below, while the subsequent section provides a detailed examination of instrument operation.

[12] Of particular interest is the extent to which the additional costs imposed by a policy instrument on the business sector are indirectly borne by either consumers, suppliers or shareholders (Cramton and Kerr, 1998). So for example, electricity generators participating in the EU ETS may either increase wholesale electricity prices (pass to consumers), reduce the consumption or unit price paid for supply inputs (pass to suppliers) or reduce dividends and capital gains (pass to shareholders). In each case, the extent to which costs can be passed on will depend upon the market situation of the firm and the elasticities of demand and supply in each market.

4.1 Comparison of scope

The differences in the scope of the CCL, CCAs and EU ETS arise at four levels (Sorrell, 2002, p31-67):

1. *Sectoral coverage*: Differences in the sectoral coverage of the CCL, CCAs, IPPC and EU ETS suggest that individual sites in the public, commercial, manufacturing and energy sectors may face one of ten combinations of the four instruments (Figure 1). While the numbered regions in Figure 1 vary in size and importance, each represents real sites and real physical emissions.

2. *Site coverage*: Differences in the coverage of individual technologies *within* an individual site expands the number of possible combinations of instrument coverage from ten to eighteen**.** The differences relate to the coverage of combustion plant and process plant emissions, the distinctions between core process and ancillary activities, the aggregate size of combustion plant, and the interpretation of regulatory terms such as 'directly associated'.[13] Of particular difficulty is the use of an aggregate 20MWth threshold for inclusion of combustion plant in the EU ETS, compared to a 50MWth threshold for IPPC. This brings in a portion of emissions from sectors which are excluded from Phase 1, such as chemicals,[14] together with many unregulated plant which national authorities will have difficulty in identifying.[15]

3. *Emissions coverage*: Further complications are introduced by the differences in coverage of CO_2 versus other GHGs, combustion versus non-combustion CO_2 emissions, and combustion emissions from different fossil fuels. For example, the EU ETS covers non-combustion CO_2 but the CCAs do not. Similarly, the EU ETS covers all fossil fuels, but the CCL excludes oil products.

4. *Electricity coverage*: A final layer of complexity is provided by the differing incentives each instrument creates for reducing emissions from electricity generation. Each instrument gives a different mix of direct and indirect incentives to both the supply and demand side of the electricity market, with the result that each instrument incentivises a different mix of abatement options (Table 3). Conflicting definitions of 'renewable' electricity (e.g. energy from waste) complicate this picture still further (Sorrell, 2003b).

Such differences create a complex set of boundary issues that could lead to substantial administrative costs. Also, differential treatment of competing sources could create distortions to competition.

[13] There are differences between the definition of an 'installation' under IPPC, a 'facility' under the CCAs, and the boundaries of a 'participant' under the EU ETS, with further complications associated with sites having more than one IPPC installation (Sorrell, 2002).

[14] Combustion plant at these sites with an aggregate gross thermal input >20MW will be included in the EU ETS. In most cases, the associated process plant will *not* be included since (in UK law) they will not be considered as being 'directly associated' with the combustion plant and hence will not form part of the combustion plant installation. Conversely, if a process plant is included in the EU ETS – on the grounds of being regulated under IPPC in a sector which is eligible for Phase 1 - the associated combustion plant *will* be included in the process plant installation. These distinctions are subtle, require a judgement to be made at the site level, and hinge upon the interpretation of the term 'directly associated' in UK legislation (Environment Agency, 2002).

[15] This provision looks set to create substantial administrative difficulties which are out of proportion to the environmental gain.

Figure 1 Overlaps between the target groups for the EU ETS, IPPC, CCL and CCAs - showing ten potential combinations of the four policy instruments

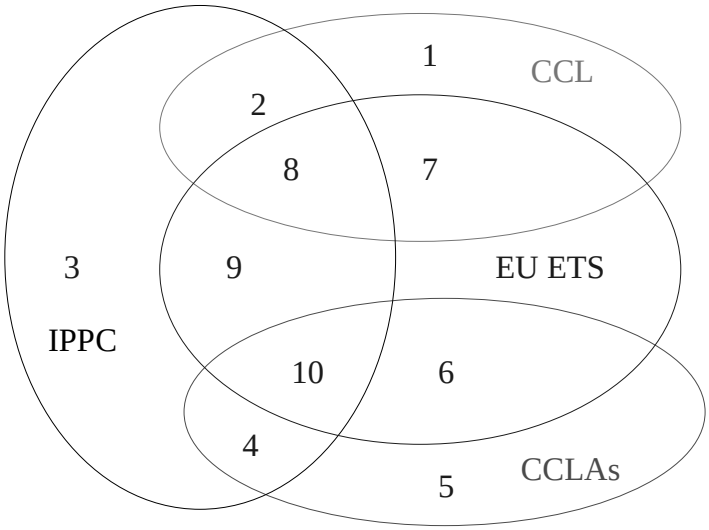

Table 3 Incentives for lower carbon emissions from electricity generation in the UK

	Measure	IPPC	EU ETS	CCL	CCA
Supply side incentives	Switch to generation from lower carbon fossil fuel	-	Direct via generator's emissions cap	-	-
	Improve thermal efficiency of generation	Direct via energy efficiency provisions	Direct via generator's emissions cap	-	-
	Invest in nuclear or large hydro	-	Direct via generator's emissions cap	-	-
	Invest in new renewable generation sources	-	Direct via generator's emissions cap	Indirect via increased demand from consumers who have switched to gain CCL exemption	-
Demand side incentives	Purchase electricity from new renewable sources	-	Indirect via price advantage of zero carbon electricity	Direct by exemptions for new renewable electricity	-
	Purchase electricity from nuclear, large hydro or lower carbon fossil sources	-	-	-	-
	Improve efficiency of electricity consumption	Direct via energy efficiency provisions	Indirect via electricity price increases from generators	Direct via CCL on electricity purchases	Direct via energy/carbon targets
	Invest in CHP	Direct via energy efficiency provisions and encouragement of CHP	Indirect via electricity price increases, offset by direct requirement for additional allowances for CHP fuel	Direct via exemptions for CHP fuel	Direct via energy/carbon targets and requirements to assess CHP potential

Note: The table shows the *additional* incentives created by the CCA targets. CCA sites still pay 20% of the CCL.

4.2 Comparison of timing

The EU ETS is in phase with the Kyoto commitment period, but is due to begin well before the CCAs end. In contrast, the CCAs extend beyond the end of the Kyoto commitment period, but targets are only negotiated up to 2010. The emissions trading provisions for the CCAs continue (in principle) up to 2013, but the UK market may diminish significantly in size after 2006 when the direct participant scheme comes to an end.

The timing problems will be reduced by the opt-out provisions of the EU ETS, since these may allow many of the existing CCAs to continue unchanged up to 2007. But, as described below, this may create problems in demonstrating equivalence of effort and the opt-out provisions are unlikely to be continued into Phase 2. Most importantly, the electricity generators and other sectors such as oil refineries will need to join the EU ETS in 2005 since these are not subject to 'equivalent' national regulations. The coexistence of direct treatment of electricity in the EU ETS with indirect treatment in the CCL/CCA package will lead inevitability to double regulation.

4.3 Comparison of objectives

The primary objective of the EU ETS, CCL and CCAs is to reduce CO_2 emissions. But they differ in terms of their relative stringency and the importance they give to various subsidiary objectives.

The stringency of the UK targets under the EU ETS will depend upon the UK government's interpretation of the allocation criteria, while allowance prices in the EU scheme will depend upon Member State interpretation of the allocation criteria and the resulting size of the EU cap relative to the overall abatement cost curve. Allocation should be consistent with both top-down criteria, such as national targets under the burden sharing agreement, and bottom-up criteria such as the technological potential to reduce emissions.[16] In contrast, the CCA targets are based upon a percentage of the 'cost effective' potential to reduce emissions within a sector. In principle, an EU ETS allocation consistent with 'technological potential' could be more stringent than the CCA targets, while an allocation guided by top-down criteria and allowing credit for early action could be less stringent. The situation is complicated, however, by the differences in scope between the instruments and the conversion from relative to absolute targets. In practice, the UK government may seek to use the EU ETS allocation to contribute towards its domestic 'goal' of a 20% reduction in CO_2 emissions by 2010, which may lead to the UK becoming a net buyer of allowances.

The design of the CCL/CCA package reflects multiple explicit and implicit objectives, including the desire to protect domestic consumers, energy intensive industry, and UK coal producers, together with promoting energy efficiency and avoiding a 'windfall' to nuclear generators (Sorrell, 2002). Each of these objectives is threatened by the introduction of the EU ETS. The Directive will disadvantage coal-fired electricity generation and accelerate its decline, raise electricity prices for household consumers, including the fuel poor, improve the economics of nuclear power and impose potentially significant costs on energy intensive industry. The political importance of each of these objectives has changed since the CCL was introduced and is likely to have changed further by 2005 or 2008.[17] But it is clear that the EU ETS is in direct conflict

[16] An earlier requirement (European Commission, 2001) that installations should not be allocated more allowances than they 'need' was dropped in the Council text in favour of a requirement to 'accommodate early action'. While rewarding early action may be a desirable objective, this does create a potential route for introducing 'hot air' into the scheme.

[17] For example, falling wholesale electricity prices led the government to extend an emergency loan to the UK nuclear generator in 2002, in order to save it from insolvency. In this context, a price on carbon could be of benefit to government objectives.

with several of the objectives which have shaped the design of the CCL/CCA package and wider UK climate policy.

5. INTERACTIONS IN INSTRUMENT OPERATION

How the instruments interact in practice will depend upon how the EU ETS is finally framed and implemented, and whether and how the CCL and CCAs are modified. Coexistence of the EU ETS with an unchanged CCL/CCA package appears unlikely.[18] Instead, the main options for eligible CCA facilities during Phase 1 will be to join the EU ETS and terminate all or part of their CCAs, or to opt-out of the EU ETS and continue with their CCAs unchanged. Eligible facilities appear most likely to choose the second option (subject to a satisfactory demonstration of 'equivalence'), but this still leaves a large number of non-eligible facilities continuing with their CCAs and complex issues in relation to the treatment of electricity. These in turn may lead to additional options being considered such as removing the CCL from electricity, and modifying both the non-eligible and opted-out CCAs so that their targets refer to direct emissions only.

The choice of policy options will be shaped by the relative importance that is given to four issues:

1. double regulation;
2. compliance obligations and double counting;
3. differential treatment and equivalence of effort; and
4. the fungibility of trading commodities.

The following sections discuss these issues in turn.

5.1 Double regulation

Double regulation may be loosely defined as a situation where a target group is directly or indirectly affected by two instruments that have very similar objectives. The existence of double regulation may be seen as imposing unfair burdens upon particular target groups. While 'double regulation' is a negative term, there may be instances where the interaction between policy instruments is either acceptable or positively beneficial (Johnstone, 2002).

[18] This unlikely situation has been analysed in theoretical terms by Sorrell (2002) who examines two cases: first, where there is no trading in the CCAs; and second where there is trading. In the first situation, if the CCA target is binding relative to the EU ETS allocation, both marginal and total abatement costs are increased relative to a situation with no CCA target. In the second situation, marginal abatement costs for the affected installation are equal to the sum of the allowance prices in the two separate markets, while total abatement costs are less than in the non-trading scenario but higher than in the absence of the CCA. The only circumstances in which this situation would be beneficial for the affected installation is when the CCA provides exemption from the CCL, but membership of the EU ETS does not. To avoid such a situation, it appears sensible to extend exemption from the CCL to EU ETS participants.

In the present context, double regulation arises as a result of fossil-fuel electricity generators participating in the EU ETS. This will lead to price increases for electricity consumers, many of whom are either subject to the CCL on electricity, or signatories to CCAs that include targets for indirect emissions from electricity consumption. Price increases from the EU ETS should be independent of the method of allowance allocation,[19] but the absence of auctions means there is no revenue-neutral mechanism to compensate consumers. This could lead to pressure to remove the CCL from electricity or to modify the CCAs so that (as with the EU ETS) they cover direct emissions only (Sorrell, 2002).

Double regulation may also arise for non-CCA participants in the EU ETS who are subject to the full CCL on their fuel use, leading to pressure to exempt these participants from the CCL. In each case, the economic consequences of the double regulation will depend in part upon the allowance price in the EU ETS. High prices (from a stringent cap) could lead to substantial economic impacts for the affected groups, while low prices (from a weak cap) could lead to relatively small economic impacts. Low allowance prices could also result from trading links between the EU ETS and the international carbon market, since the latter is expected to be heavily oversupplied (den Elzen and de Moor, 2003).

The impact of the EU ETS on electricity prices will depend upon the carbon intensity of the marginal generating plant on the UK system. During Phase 1, this is expected to be coal fired. Under a number of simplifying assumptions,[20] an allowance price of €7/tCO_2 could increase average electricity prices by some 0.7c€/kWh, approximately equivalent to the current level of the CCL on electricity (Table 1).

The Directive requires the EU ETS allowance allocation to be 'consistent' with the national climate programme, including the CCL and CCAs, and the UK government is proposing to use emission forecasts as a basis for allocation (DEFRA, 2003). The implications of this can be illustrated with reference to the emissions from electricity generation. Assume, first, that it is possible to forecast emissions from electricity generation with complete accuracy, including the emission reduction contributed by the CCL and CCAs. Assume further that the generators' allocation in each year of Phase 1 is based upon this forecast and that the sole objective of each instrument is to reduce CO_2 emissions. Then, once the EU ETS is in place, it should be possible to *remove* both the CCL on electricity and the indirect emissions from the CCA targets. This is because the expected CO_2 abatement from these instruments will be fully reflected in the allowance allocation to the generators (Sijm, 2003).[21] In meeting their obligations, the generators will equate their marginal abatement costs with the allowance price and either purchase additional allowances from UK or overseas participants or sell their surplus. In the aggregate, emissions from the UK generators, and from the UK overall, may either be greater or less than in the original forecast, but the total emissions covered by the EU ETS will remain unchanged. The UK will remain in compliance with its obligations, since all emissions will be covered by allowances.

If, however, the CCL on electricity and the indirect emissions in the CCA targets are *retained*, the generator's flexibility to trade allowances will be constrained and the overall cost to the UK of complying with the EU ETS will be increased. It follows that, if the allowance allocation reflects the forecast abatement from the CCL and CCAs, and if we assume perfect markets, accurate emission forecasts and the sole objective of least cost CO_2 abatement, both the electricity component of the CCL and the indirect

[19] Freely allocated allowances carry an opportunity cost, so they should be treated identically to real accounting costs in pricing decisions (Harrison and Radov, 2002).

[20] Namely: a) the trading scheme is introduced overnight without companies having the opportunity to change behaviour; b) the full costs of meeting the emission target are passed on to consumers through electricity price rises, with none being passed on to suppliers or absorbed through lower returns; c) the impact on electricity prices is independent of the method of allowance allocation; and d) the price impact is proportional to average carbon intensity of UK coal fired plant, which is ~1.0MtCO2/TWh (Sorrell, 2002).

[21] The author is indebted to Jos Sijm (Energy Research Centre of the Netherlands) for the discussion in this section.

emissions component of the CCA targets should be *removed* once the EU ETS is in place. This is because these contribute nothing to the *effectiveness* of CO_2 abatement (i.e. meeting the overall cap) and may potentially undermine the *efficiency* of abatement (i.e. achieving that cap at least cost) (Sijm, 2003).

An identical conclusion follows for other policy instruments which directly or indirectly affect emissions that are covered by the EU ETS cap (Sijm, 2003). This includes the CCL on fuel use by EU ETS participants and coexisting CCA targets for direct emissions. Again, using the above assumptions, these policies should no longer be applied to EU ETS participants. However, the same conclusion does *not* apply to policy instruments which affect emissions that are outside the EU ETS cap. These, include both the CCL on fuel use for non-participants and the CCA targets on direct emissions for non-participants. Both should be retained.

In practice, forecasts are inaccurate, allowance markets are imperfect and the CCL/CCA package has multiple objectives. The question then becomes whether these *additional* objectives can justify the retention of the CCL/CCA package for EU ETS participants, despite the resulting double regulation. As Sijm (2002) has argued, there are two broad circumstances where this may be the case:

1. the policies help overcome market failures other than CO_2 externalities, thereby improving the static or dynamic efficiency of the EU ETS; and

2. the policies achieve objectives other than efficiency, including equity and distributional objectives.

Both sets of arguments could potentially provide a rationale for retaining the CCL on electricity and the CCA targets on indirect emissions, particularly if fossil fuel and EU ETS allowance prices were expected to be low. This double regulation would not contribute further to CO_2 abatement within the EU,[22] but improvements in electricity efficiency may, for example: i) contribute to UK energy security by reducing overall energy needs; ii) contribute to mitigating the non-CO_2 externalities of electricity production; iii) mitigate the risk of 'lock-in' to environmentally damaging technologies in a context of uncertainty and ignorance about the risks of climate change and iv) put the UK on course for achieving much greater reductions in CO_2 over the next half century. Implicit in the last objective is a set of assumptions regarding the severity of climate threats, the inadequacy of the existing Kyoto and burden sharing targets and the consequent threat of high adjustment costs in the future. While these assumptions can be questioned, the 'pathways' objective is explicit within UK climate policy through both the UK 'goal' of reducing UK CO_2 emissions to 20% below 1990 levels by 2010 (DETR, 2000) (a target which goes beyond requirements under the EU building sharing agreement) and the 2003 Energy White Paper commitment of 'putting the UK on a path' to reducing CO_2 emissions by some 60% below current levels by 2050 (DTI, 2003). These domestic objectives could not be achieved solely through allocation under the EU ETS, since participants could simply purchase additional allowances from other Member States.

A second advantage of retaining the CCL on electricity is that this will fully maintain the *income* objectives of the CCL, together with the R&D and tax allowance programmes that the CCL supports (which in turn may improve both static and dynamic efficiency). Allowance auctioning in the EU ETS could provide an alternative source of revenue to the CCL, but neither the Council or Parliament texts foresee more than 15% auctioning in Phase 2. The absence of allowance auctions could be argued to violate the polluter pays principle, since polluters only pay for the marginal damage of CO_2 emissions, while residual emissions remain unpriced. Retaining the CCL provides partial compensation for this, while distorting the substitution objectives of the EU ETS at the margin.

[22] This could only be achieved through tightening the overall EU ETS cap or restricting the links between the EU ETS and the international carbon market.

The rationale for double regulation may also be understood in relation to risk. The EU ETS gives certainty in achieving the cap (subject to the use of penalty provisions), but uncertainty in the associated costs. The CCL does the opposite: providing an upper limit on the marginal cost of abatement but uncertainty in the environmental outcome. Hybrid schemes, along the lines proposed by Roberts and Spence (1976), provide a compromise between the two. Retaining the CCL on electricity has some analogies with a hybrid scheme, since it effectively imposes a floor on marginal abatement costs, in order to meet objectives other than those represented by the emissions cap. A more common hybrid proposal is to impose a ceiling on marginal abatement costs, in order to improve the political acceptability of the cap (McKibbin and Wilcoxen, 2002). Both proposals mitigate the cost uncertainty of the emissions cap in order to achieve wider policy objectives, but at the expense of economic efficiency.

A final issue is the relative effectiveness of indirect electricity price increases versus direct targets in incentivising electricity efficiency. The UK government's view is that price signals alone are relatively ineffective, given the range of other barriers that inhibit energy efficiency. This view is backed up by modelling studies (ETSU, 2001) and was one reason for choosing an indirect treatment of electricity in the CCL/CCA package.[23] If correct, it means that replacing the CCA targets for indirect emissions with a cap on the electricity generators could lead to less improvement in electricity efficiency and consequently more abatement through fuel switching and other means. If this is considered undesirable, it may justify the retention of the CCA targets for indirect emissions. This argument relies on a mix of (questionable) behavioural assumptions and a judgement that electricity efficiency is more desirable than alternative forms of abatement. The latter, in turn, is based on wider objectives such as the promotion of energy security through fuel diversity and concerns about the risk of increasing UK dependence upon imported gas.

In sum, the acceptability of double regulation is likely to depend upon a range of factors, including: the clarity, legitimacy and relative importance of different policy objectives; the appropriateness of different policy instruments to meet those objectives; and contextual factors such as the expected allowance price in the EU ETS. These arguments raise both theoretical and empirical issues and are likely to prove highly contentious. But if the carbon benefits of the CCL on electricity and CCA targets for indirect emissions are largely accounted for when establishing the generator's allocation under the EU ETS, the justification for retaining the former must rely more heavily on their contribution to, first, policy objectives other than efficiency; and second, overcoming market failures other than carbon externalities. In turn, the attainment of these objectives needs to outweigh the higher abatement costs, distortions to the EU allowance market and additional administrative costs that double regulation creates.

5.2 Double counting

Double counting problems arise when compliance obligations for particular emission sources are disputed between two trading schemes. As with double regulation, this applies in particular to the treatment of emissions from electricity generation. The EU ETS gives compliance obligations for these emissions to power stations, while much of UK climate policy effectively gives obligations for a portion of these emissions to electricity consumers. The control that these two groups can exercise over these emissions is very different. For example, electricity generators have full and direct control over the carbon intensity of electricity generation but only indirect and partial control over electricity demand. In contrast, electricity

[23] ETSU (2001) estimate that the CCAs will deliver 9.2MtCO_2 annual reductions by 2010, compared to 14.6MtCO_2 if 'all cost effective measures' were adopted. In contrast, ETSU estimate that the reductions resulting from the price effect of the CCL on its own (i.e. with no agreements and no associated discounts) would be only 0.9MtCO_2. However, the behavioural assumptions that underlie these 'bottom-up' modelling results are open to question.

consumers have full and direct control over their electricity demand but, in the absence of disclosure[24] provisions, no control over the carbon intensity of electricity generation.

Disputes may arise where an individual source is simultaneously participating in two emissions trading schemes, or where fuel or electricity is being traded between participants in two separate trading schemes with different designs. In these situations, compliance obligations for the same physical emissions may be either given to two separate parties, or given to the same party under two separate terms. Such disputes may have two consequences (Zapfel and Vanio, 2001):

1. *double coverage:* where two separate carbon allowances or carbon credits are surrendered for a one-tonne increase in physical emissions; and

2. *double crediting:* where two separate carbon allowances or carbon credits are generated from a one-tonne decrease in physical emissions.[25]

Such disputes introduce complexity into the regulatory situation. But it is important to distinguish between: a) situations where double coverage and double crediting are present simultaneously and where the first effectively cancels out the second; and b) situations where only double crediting is present and there is scope for inflation in the number of allowances. Both are possible, but the second is more important as it could threaten the environmental integrity of an emissions trading scheme.

The CCAs give compliance obligations for electricity emissions to industrial consumers, but the EU ETS gives compliance obligations for these emissions to electricity generators. The coexistence of the two creates double counting problems. If all the CCA facilities had absolute targets and all allowances were used to cover emissions, an emissions increase (decrease) in electricity-related emissions from CCA facilities would lead to a decrease (increase) of twice the size in the total emissions covered by the CCAs and EU ETS (Sorrell, 2002, pp 103-109). This is because allowances would be bought (sold) in *each* scheme to cover the increase (decrease) in CCA emissions. The final total of emissions covered by the CCAs and EU ETS may be greater or less than the initial total of emissions before the change. But it will always be less than or equal to the sum of the allowance cap in the EU ETS and the target emissions for the CCAs. This sum provides an overall cap on the total emissions from the combined schemes.

The double counting does not breach the cap in the EU ETS and if all the CCAs had absolute targets, total emissions from the CCA sector would remain below the target emissions. Environmental integrity would be maintained even if there were fungibility between EU ETS allowances and those in the national trading schemes. In effect, the double crediting is cancelled out by the double coverage.

In practice, most CCAs have relative targets so aggregate emissions in the CCA sector and hence the UK trading scheme overall could increase. But this is an inherent feature of a scheme with relative targets and is not due to the double crediting. In the absence of Gateway arrangements, fungibility of UK and EU

[24] Carbon labelling of electricity, or disclosure, would allow consumers to discriminate between high and low carbon sources and to identify zero carbon and nuclear sources.

[25] An example of double coverage is the export of electricity from country A, which has an emissions trading scheme with direct accountability (electricity generators hold allowances), to country B, which has an emissions trading scheme with indirect accountability (electricity consumers hold allowances). Both the seller of the electricity (generators) in country A and the purchaser of the electricity (consumers) in country B would need to surrender allowances to cover the emissions associated with this electricity, which means the emissions would be covered twice by two separate trading schemes. A primary motivation for introducing a harmonised EU trading scheme was to avoid such problems (Zapfel and Vanio, 2001).

allowances would undermine the environmental integrity of the EU ETS. But again this is due to the relative targets and not the double crediting.

In sum, the double counting of electricity emissions creates some confusion, particularly in assessing the relative contribution of each instrument to UK carbon targets. But it does not threaten the environmental integrity of either the CCAs or the EU ETS. As Sorrell (2003) argues, the same result does not apply to the coexistence of the EU ETS with the UK emission reduction project scheme. In this case, double crediting is not cancelled out by double coverage and any trading of project credits into the EU ETS could undermine the environmental integrity of the scheme.[26]

5.3 Equivalence of effort

Problems may arise when the economic impact of environmental regulation appears to be different for competing firms, or when the apparent differential treatment of non-competing firms is perceived to be inequitable. Differential treatment may be challenged on legal grounds through competition law at the national, EU and international level; on political grounds through rent seeking behaviour or challenging such behaviour; and on environmental grounds if there appears to be a risk of carbon leakage between installations, sectors or countries.

The demonstration of 'equivalence of effort' may be required in order to avoid differential treatment when an emission source, installation, company, sector or Member State is exempted from a particular policy instrument. But in practice, equivalence of effort may be extremely difficult to assess owing to differences in the scope of the instruments, the nature of the targets (e.g. relative or absolute), the provisions for modifying and updating those targets and the marginal abatement costs under each instrument. For many instruments, abatement costs may be difficult to estimate ex-ante or to observe ex-post. Industry has private information on abatement costs, together with an incentive to reduce the stringency of regulation by exaggerating cost estimates (Bailey and Haq, 2002). While trading schemes provide a clear signal of marginal abatement costs in the allowance price, there is no comparable signal from measures such as CCAs. At the same time, the importance of equivalence of effort may be overstated, given the large differences in factor prices, fiscal policies and other regulatory requirements that distort the level playing field (Sorrell, 2002, pp 28-29).

The opt-out provisions of the EU ETS raise these issues in a particularly acute form. For example, CCA facilities may choose to minimise the expected sum of abatement and transaction costs by opting-out of Phase 1. If by opting-out the CCA facility avoids a 'stringent'[27] target, this should lower allowance demand in the EU ETS, lower allowance prices and reduce overall marginal abatement costs. Conversely, if by opting out the CCA facility avoids a non-stringent target, this will lower allowance supply, increase allowance prices and increase marginal abatement costs. The choice to opt out will depend upon expectations regarding abatement and transaction costs in each scheme, the future evolution of the CCAs, UK ETS and EU ETS, and the fungibility of EU ETS and UK ETS allowances.

The opt-out provisions may have facilitated political consensus but they have reduced the environmental effectiveness of the EU ETS, reduced the market size in Phase 1, created additional administrative costs, and (arguably) distorted competition. Equivalence of effort will be very difficult to demonstrate owing to differences in:

1. *Scope*: The EU ETS and CCAs cover different emission sources in different ways. For example, the EU ETS covers process CO_2 emissions while the CCAs do not.

[26] In practice, the volume of double-crediting from this route is likely to be small and hence could be ignored.

[27] Defined here as one which would make it a net buyer of allowances in the EU ETS.

2. *Form*: Relative targets are not equivalent to absolute targets because they give no certainty in the environmental outcome and lead to higher emissions for the same level of marginal abatement cost (Gielen et al, 2002). Furthermore they distort competition by creating an incentive to locate in Member States with relative rather than absolute targets.

3. *Stringency*: The basis on which CCA and EU ETS targets are derived and the process through which they are developed is different. The CCA targets appear weak, but their stringency compared to the EU ETS will depend upon how the allocation criteria are interpreted.

The process of demonstrating equivalence of effort could be costly and time-consuming. One option would be to estimate the allocation to different installations under the EU scheme and to assess whether their existing targets are equivalent to this estimated allocation. But this implies considerable effort to assess bottom-up allocations, which seems unnecessary when the intention is not actually to allocate allowances. Conversely, if the UK chose to interpret equivalence in a loose way, this may leave it open to challenge under EU competition law.

The opt-out provisions of the EU ETS also require equivalence in the monitoring, verification and compliance provisions. The CCAs are much better in this regard, with high standards for monitoring and with verification by independent bodies accredited by the UK Accreditation Service (UKAS). While the penalty rate of the CCL (7 to 14 €/tCO_2) is lower than the penalty in the EU ETS, it applies to *all* emissions for a two year period and not only to missing tonnes.

In sum, many if not most CCA facilities may seek to use the opt-out provisions. A combination of severe information asymmetry, the tight time schedule for approving allocation plans and the desire of all parties to minimise the obstacles to implementing the EU ETS may allow such opt-outs to proceed unchallenged. But there is a risk that allowing opt-outs could lead to distortions of competition.

5.4 Linking and fungibility

The Directive allows for linking to third party schemes. Although the idea is to link the EU ETS to non-European schemes, there is also the possibility of linking the EU ETS to the UK ETS. This may create a number of problems (Essex, 2002).

If the CCAs chose to opt-out of the EU ETS, they will gain the advantage of (arguably weak) relative targets. In many cases these are denominated in energy use rather than carbon emissions and have generous 'risk management' provisions that allow targets to be adjusted if (for example) the product mix changes. Permitting these companies to secure the benefits of EU-wide trading as well may be seen as an unacceptable distortion to competition. In addition, the use of relative targets means that production increases could inflate the number of allowances in circulation and violate the emissions cap. Such problems could be avoided through the use of Gateway arrangements to interface the CCAs to the EU scheme, but this would add to administrative costs. In addition, the use of a fixed factor for the carbon intensity of electricity leads to a discrepancy between the estimated and actual emissions from electricity consumption, the size of which will increase over time.

The CCAs are already linked to the wider UK ETS, including the direct participant scheme and the project scheme. Interfacing these to the EU ETS raises further issues. First, there may be objections to trade with the direct participants, since these have been given a competitive advantage through subsidised abatement.[28] Second, several of the emission targets adopted by the direct participants are caught up in an

[28] On the other hand, the number of direct participants is relatively small, most do not complete with the sectors covered by the EU ETS and the UK scheme has been given state aid clearance by the Commission.

ongoing controversy over 'hot air' (ENDS, 2002). Third, the inclusion of credits from the project scheme leads to a double crediting problem which may violate the environmental integrity of the EU scheme. And finally, over half the emission reductions in the UK scheme result from non-CO_2 GHGs which are not at present included in the EU scheme.

Some of these problems may be avoided by allowing sales from the EU ETS to the UK ETS, but not trades in the other direction. Alternatively, the Commission may decide to prevent any linking between the schemes. A likely consequence of this would be a decline in the liquidity of the UK scheme and a faster transition to the EU ETS. The rationale for linking – expanding emission coverage and reducing overall abatement costs - may best be achieved through opt-in provisions or by expanding the sectoral coverage of the EU ETS over time.

The fungibility problems become greater after 2008 when the interfaces with International Emissions Trading (IET) need to be addressed. For example, UK ETS participants that bank allowances into the commitment period may wish to convert them into either EU ETS allowances or Assigned Amount Units (AAUs). If UK ETS allowances are converted to AAUs and these are then sold into the EU ETS, the two schemes effectively become linked. In all cases, banking significant volumes of allowances into the commitment period may create difficulties for UK compliance with Kyoto commitments.

6. SUMMARY AND CONCLUSIONS

While the UK government has welcomed the EU scheme, it has not provided details on how it will interact with existing instruments, or how this transition will be achieved. As this paper has demonstrated, this question now requires urgent consideration. While a number of scenarios are possible, each leads to complex problems of double regulation, double counting of emission reductions, equivalence of effort and fungibility of trading commodities.

The scale of these problems will depend upon a range of factors including the allowance price in the EU ETS. A combination of low electricity prices, generous allocation criteria and the strong desire of all parties to minimise the obstacles to implementing the EU ETS may allow these problems to be circumvented in the short term. But there is a risk that such expediency will add complexity to an already overcrowded policy mix.

While the opt-out provisions of the EU ETS allow some policy changes to be postponed, these provisions are only available up to 2008 and do not resolve core issues such as the double regulation of electricity emissions. Furthermore, such provisions create potential distortions to competition and undermine the environmental effectiveness of the EU scheme.

The allowance allocation under the EU ETS is required to be consistent with national energy and climate policy, including the CCL and CCAs. But if the 'carbon benefits' of these instruments are reflected in the number of allowances distributed, the rationale for maintaining these instruments must rely more heavily on either their contribution to policy objectives other than efficiency, or their ability to overcome market failures other than carbon externalities. These wider policy objectives are mentioned in government documents, but are rarely subject to critical scrutiny. The existence of the EU ETS requires more attention to be paid to such wider objectives and to the trade-offs between these objectives and the efficient operation of the EU ETS.

While the UK must inevitably face a range of complex transitional issues, it is likely that the CCAs will be progressively displaced as the EU ETS is extended to cover more sectors and gases. Similarly, it is likely that the CCL will eventually be modified to apply solely to direct emissions from non-participants - preferably as a carbon tax on all fuels. The speed with which this occurs will depend upon the final interpretation of the opt-in and phase-in provisions of the Directive. However, such displacement is only desirable from an environmental perspective if the EU ETS provides a real incentive for emission reduction. This incentive could potentially be threatened by over-generous links between the EU ETS and the Kyoto mechanisms. In this context, the UK may be reluctant to abandon national policy instruments that are potentially in conflict with the EU ETS, but which provide real incentives to reduce emissions.

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