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CLIMATE, COMPANIES AND CONTEXT: THE PROSPECTS FOR POLICY TO INSPIRE SUSTAINABLE BUSINESS STRATEGIES

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ABSTRACT

Sustainable development rests on, among other things, the ability of policy to stimulate corporate actors to improve their environmental performance. Yet policy design and implementation is a challenging task in this area. This paper investigates this issue by examining the ability of the UK Emissions Trading Scheme to foster corporate sustainability from two perspectives: (a) its institutional framework and (b) the rationale for firm participation.

Taking our conceptual point of departure in institutional and stakeholder theories about corporate behaviour, we assume that firms, if given the appropriate incentives, will engage in schemes that lead to more sustainable practices. The paper explores the extent to which the trading scheme provides an institutional framework for firms to adopt strategies for corporate sustainability.

The paper argues that the UK Emissions Trading Scheme was successful in so far as it was voluntary in nature and offered substantial financial incentives for participation. The scheme did however establish a 'pay-the-polluter' principle and thus may arguably be said to have violated the spirit of Kyoto and the general rule established in other schemes such as the EU ETS which are based on a 'polluter pays' principle. While firms listed diverse reasons for participation the foremost was the prospect of collecting incentive monies, suggesting primarily economistic motivations for selecting environmental strategies.

Keywords
Climate Policy, Emissions Trading, Corporate Sustainability, Stakeholders, Institutions, Incentives.

INTRODUCTION

The Kyoto mechanisms have created a unique international framework for market-based regulation which is stimulating the development of greenhouse-gas (GHG) emissions-trading schemes at the national and international levels. The UK emissions trading scheme (UK ETS), introduced in 2002, was among the first of the Kyoto inspired national mechanisms for GHG emissions trading. The scheme is important not least because it may be regarded as having provided British industry with some clear signals as to what may be expected regarding future rules of the game. The objective of this paper is to assess the way in which the UK ETS has provided incentives for firms to participate in emissions trading and how the scheme's institutional framework stimulates sustainability within industry by improving environmental performances.

This paper is divided into four sections of which this is the first. The second section situates the issue of emissions trading scheme in the context of institutional and stakeholder theories of firm response to market and regulatory signals. The third section outlines the origins of the UK ETS before describing its function along with other interwoven aspects of UK climate policy. We conclude with an analysis of the performance of the scheme and an analysis of its implications for improving policy in the relevant area.

Firm Rationales for Adoption of Environmental Strategies

There are two main categories of theories about how firms respond to regulation. One is the view grounded in neo-classical economic theory, which holds that firms are single-minded profit-maximisers and would not voluntarily internalise costs that they might be able to impose on others. Another is that which draws on the work of Sen and others which holds that firms are embedded in a socioeconomic context which implies that firms may be willing to internalise some costs that may be imposed on others for reasons of public image, moral values, etc. (Sen, 1977; Tomer and Sadler, 2007; Segerson and Miceli, 1998). To date, schemes such as carbon emissions trading rest mainly on the received neo-classical view and this issues into a preference for policy mechanisms which grant incentives to firms for adopting environmentally sound business practices, for example. The UK ETS is a scheme which fits this model and for this reason we choose to employ a method of analysis which allows us to examine the issue of 'what motivates participation?' These factors are analysed by exploring the arguments of key stakeholders during the construction of the scheme and by investigating motives for participation in relation to profit-maximisation, institutional and stakeholder theories.

Following the neo-classical model firms that act according to profit-maximisation strategies are those that follow *economistic* ideologies whereby environmental strategies must be judged as *ex ante* profitable (Prakash, 2000, p. 3). The prospects for 'win-wins' are various (see Porter, 1991), for example via savings from improved resource efficiency, increased profits through sales of greener products and the possibility of first-mover advantage following the innovation of environmentally friendly technology. Additionally there is the opportunity for environmentally proactive firms to influence policy to suit their own preferences. These stipulations are not unambiguous as there are risks related to innovations of new technologies that cannot be *ex ante* understood, for example. Dosi (1998, p. 22) highlights five 'stylized facts' about innovation, the first of which is the *uncertainty* related to the lack of all relevant information and the inability to predict the outcomes of one's actions. Yet innovative capacity (the way in which actors harness and exploit the commercial potential of new technological opportunities) is widely regarded to be a key driver of

competitiveness for a company or sector (Carlsson & Stanckiewicz, 1991). Whether a firm adopts a static view of technologies, products, processes and customer needs, or a more evolutionary, dynamic and opportunistic notion of these factors is key to the type of environmental strategy implemented (Porter and van der Linde, 1995). Moreover, it is claimed that 'by stimulating innovation, strict environmental regulations can actually enhance competitiveness' (p. 98). This distinction is useful as it helps us to separate those firms that adopt profit-maximising strategies based on static notions of the world from those with a more dynamic approach to environmental strategies. Profit-maximising firms are deemed to be those that participate in emissions trading primarily in order to benefit from financial incentives that are gauged prior to policy implementation.

Institutional theory is based on the notion that social institutions *external* to the firm stimulate the adoption of specific strategies *within* the firm. The institutions considered extend beyond markets and government that are the focus of neo-classical theory (Prakash, 2000, p. 5) and include consumers, international regimes, the media, investors, interest groups and public opinion. The crux of this theory is that in terms of their environmental performance, firms seek legitimacy by responding to institutional dynamics, such as the status earned by implementing a sustainable strategy or the imminence of stricter regulation. These drivers for change are not *directly* profit-related and therefore can be separated from profit-maximising strategies.

Institutional theory has been criticised for portraying the firm as overly passive, neglecting proactive agency and resistance to external environmental conditions (Oliver, 1991). This criticism issues from early versions of institutional theory that emphasised shared social realities, based on norms, rules, myths, beliefs and implicit ideas, such that organisations were depicted to conform passively to institutional settings. Organisational choices are restricted by factors largely external to the firm, in the sense that the satiation of external demands is key to survival and stability (Oliver, 1991, p. 148). Hence firms display a 'passive acquiescence' in selecting strategies based on the range of institutionalised influences. The decision-making process related to emissions trading would hence be instructed by contemporary environmental discourses, the dichotomy between ecology and economy and so on.

Stakeholder theory, similar in many ways to institutional theory, is built on the notion that firms' actions follow the needs and interests of stakeholders, which are 'any group or individual who can affect or is affected by the achievement of the organisation's objectives' (Freeman, 1970). Donaldson and Preston (1995) contend that stakeholders include governments, investors, political groups, customers, suppliers, trade associations, employees and communities and that '…all persons or groups with legitimate interests participating in an enterprise do so to obtain benefits and that there is no prima facie priority of one set of interests and benefits over another'. The main difference between institutional theory and stakeholder theory is the issue of agency – stakeholder theory assumes that firms can act ethically or morally towards stakeholders, which does not necessarily have be in conjunction with social institutions. Furthermore, stakeholders are not only external to the firm (e.g. employees) and can, as with institutions, differ in their interests, goals and preferences and hence can be a source of conflict. By examining such conflicts one can gain valuable insight into the motivations behind and reasons for particular strategies to be implemented. It is useful to try and identify the stakeholders that have been taken into consideration, both in constructing the UK trading scheme and in stimulating firms' participation. A company's decision-making may be steered by a range of stakeholders whose legitimate interests may be brought into consideration. In accordance with the above definitions, stakeholders may

include employees, shareholders, industry associations, government, taxpayers and those groups or individuals that are affected by emissions trading.

THE UK EMISSIONS TRADING SCHEME (UK ETS)

The UK ETS was established in response to three factors – UK participation in the Kyoto Protocol, the UK's unilateral emissions targets and the adoption of the Climate Change Levy (CCL) (IPE, 1999). The Kyoto Protocol to the UN Framework Convention on Climate Change (UNFCCC) comprises a binding target of 8% emissions reductions by 2010 for the EU compared to 1990 levels. The EU Emissions Trading Scheme (EU ETS) was launched in 2005 to help achieve this. As part of the Protocol, the UK agreed to a 12.5% reduction in emissions and made a unilateral decision to go beyond this target by establishing a 20% target for 2010 (DEFRA, 2001). The UK's pioneering approach on climate change is hoped to grant international political leverage and stimulate the competitiveness of UK industry.

Market-based instruments (MBIs) have been gaining popularity and support since the 1980s. The 1989 Pearce report (Pearce et al, 1989) endorsed economic instruments and triggered media interest in environmental taxes whilst the Conservative government was seeking better economic efficiency via privatisation. The 1990 environment white paper 'This Common Inheritance' (HMSO: 1990) outlined the potential for market mechanisms and in 1992 the government initiated economic instruments in place of traditional command-and-control regulation – albeit principally to raise extra revenue during a period of economic decline.

The election of New Labour in 1997 provided new momentum for MBIs. However, Jordan (2001, p. 36) contends that New Labour struggled to innovate MBIs initially and received support from the influential Marshall report (Marshall, 1998). The report suggested that the government should introduce a downstream energy tax for businesses given the potential to meet short-term emissions targets and to regulate small businesses cost-effectively (p. 17). Lord Marshall, despite recognising the potential for emissions trading to accomplish meaningful reductions at lower cost and encourage beyond compliance also foresaw the difficulties in establishing a domestic scheme. The many technical details that inhibit effective trading, such as the establishment of caps, legal matters related to compliance, monitoring and reporting procedures, allocation of permits, coverage of sectors, inclusion of gases, compatibility with international schemes and the prospect of high administrative costs for the small business sector are the root of this issue (Marshall, 1998, pp. 12-16). However, Marshall also pointed out that the development of an international trading scheme was inevitable. Further, such a scheme when it emerged would be influenced by those countries which had functional trading schemes in place. Hence, the early adoption of an ETS would allow the UK an opportunity to take a pioneering role.

The UK Chemical Industries Association (CIA), due to fears of stunted competitiveness, opposed the establishment of the proposed CCL and viewed emissions trading as a favourable complement to the levy to reduce net costs (Milano, 1999; 1999a). This was also partly due to the fact that two members of the CIA, BP Amoco and Shell, had implemented internal trading schemes and were considered to have appropriable experience with the instrument (Milano, 1999). The recommendations for emissions trading were echoed by concerns from the Advisory Committee on Business and the Environment (ACBE) and the Confederation of British Industries (CBI) – also in light of potential competitive losses. Prior to the scheme's launch, the UK government consulted the ACBE and the CBI, and the latter lobbied rigorously for maximum flexibility in the scheme. The CBI was in favour of the inclusion of the basket of greenhouse gases covered by the Kyoto

Protocol[1], the participation of as many sectors as possible to ensure a liquid market and for the recognition of past energy-efficiency gains as a means of reducing transaction costs (ENDS 312, January 2001). The CBI also vied for maximum leniency in trading and banking of permits. Banking was deemed problematic given that it might jeopardise future targets under the first commitment period of the Kyoto Protocol, which begins in 2008 (Marshall, 1998, p. 12). The DETR[2] had hoped to include only carbon dioxide and to allow banking until 2007 but the CBI successfully lobbied for inclusion all six greenhouse gases and for extended banking between 2008 and 2012 (ENDS, 319, August 2001). The CBI also vied (unsuccessfully) for baselines to be established over a five- instead of three-year period as proposed by the government (ENDS 312, January 2001) reflecting the general approach taken by industry to push for maximum flexibility to ensure lowest cost. Support for emissions trading was largely due to the unpopularity of energy taxes, and it was hoped emissions trading would actually emerge *in place* of these. It was the also CBI that proposed tax incentives for firms participating in emissions trading.

The UK Climate Change Programme

In 2000 the UK government rolled out the UK Climate Change Programme which was comprised of three interlocking economic instruments to reduce emissions:

- The Climate Change Levy (CCL);
- Climate Change Agreements (CCA);
- The UK Emissions Trading Scheme (UK ETS);

The Climate Change Levy

The CCL is a downstream energy tax, implemented at the time of supply such that it targets energy *users* (as opposed to upstream instruments that affect energy suppliers), that aims to reduce emissions via improvements in energy efficiency (DEFRA, 2006, p. 47). The Levy was launched in 2001 and comprises staggered rates of taxation for different sources of energy. The bulk of the revenue raised is recycled back to companies in the shape of reduced National Insurance Contributions, providing an incentive to create new jobs as part of a 'double dividend'. As part of the CCL, capital grants are available for investment in clean technologies via the Carbon Trust, which was set up by the government to assist businesses in making improvements in energy efficiency. The main targeted sectors are industry, agriculture and public administration. Transport, electricity generation and domestic sectors are exempt from the tax and the energy-intensive sectors covered by the IPPC[3] were able to negotiate CCAs, which linked the CCL to UK emissions trading. Firms that signed agreements qualified for an 80% reduction in the levy via indirect participation in the UK ETS.

Climate Change Agreements

There are around 6000 firms with CCAs that have endorsed collective targets for *absolute* emissions reductions or *relative* improvements in energy efficiency (such that the number of emissions per unit output is reduced). The inclusion of relative abatements means that total emissions might actually increase if production increases. Targets are reviewed every two years until CCAs conclude in 2010. The agreements were introduced in conjunction with the CCL in 2001. Companies with CCAs are able to participate in the UK ETS with the supposed

benefit of increased flexibility in meeting emissions targets. They are awarded tradable permits for overachievement at the end of each two-year compliance period and can also minimise costs by buying credits to achieve targets. Trading is wholly voluntary for agreement participants. 'Sector targets', comprising group targets instead of individual ones affect some CCA participants. This allows for further flexibility amongst CCA participants, given that the focus is on group abatements and allows for differential performance among individual participants. If the sector does not meet its targets, firms that are accountable pay penalties for non-compliance.

The UK Emissions Trading Scheme

The UK ETS was a voluntary scheme with the following objectives (DEFRA, 2001a):

- To reduce emissions at a reasonable cost;
- To provide UK companies with experience of emissions trading as part of a 'first-mover' strategy and increase British competitiveness;
- To establish London as an international centre for emissions trading;
- To influence the design of the EU ETS, launched in 2005.

There were four main modes of participation in the scheme – as a direct participant (DP), a CCA participant (AP), via emissions reduction projects and for any party that simply wished to open an account and trade. Our analysis focuses on DPs and firms with an agreement.

It was intended that direct participation should be the principal way in which firms partake in the scheme (von Malmborg & Strachan, 2006, p. 145). Initially 33 DPs enrolled in the scheme in April 2002, yet two firms dropped out shortly after the scheme commenced. Permits were allocated via a 'descending clock' auction designed to achieve the highest level of abatement in return for £215 million provided by the government. Firms placed bids in relation to the quantity of reductions they were willing to make in return for a certain incentive, which was initially set by Defra at £100 per ton of carbon dioxide equivalent (tCO2e). If the total cost at the end of bidding was *not* less than or equal to the £215m, a new round of bidding was started at a lower cost and the process was repeated until the total cost of incentives was less than or equal to £215m. DPs bid for the total reductions they would make between 2002 and the end of 2006. After 9 rounds of bidding, the agreed reductions were nearly 12 million tCO2e, at a cost to the government of £17.79 per ton (DEFRA, 2001; NERA, 2004).

Incentives were awarded through the duration of the scheme, which ended in December 2006 for DPs and continues until 2010 for APs[4]. Targets for DPs were absolute and were set relative to three-year baselines established from average emissions between 1998 and 2000. Compliance was assessed on a yearly basis. DPs were allowed from all sectors except electricity and heat generators, facilities covered by the CCAs, the transport sector, the domestic sector and sites affected by the Landfill Directive.

Since APs can have either relative or absolute targets, a 'gateway' was set up to restrict the capacity for the scheme's total emissions to increase. The gateway operates by limiting the flow of allowances from the relative sector to the absolute sector. It functions on a 'one in–one out' basis where allowances can flow out of the relative sector only if an equal or greater number have been transferred in.

The inclusion of the basket of greenhouse gases means that participants are able to reduce any or each of these in relation to the equivalent measure of carbon dioxide. Failure

to comply with targets results in loss of financial incentives (loss of the share of the incentive money for DPs and loss of the CCL reduction for APs) and reduces the allowances available in the following compliance period.

Who Participated in the Scheme and Why?

In light of institutional dynamism (or lack thereof) it is likely that some industrial players will oppose strict climate policies whilst others will offer support and attempt to benefit wherever possible. This is reflected by the fact that the emergence of the UK scheme was largely due to industry discontent with the proposed CCL. The prospect of flexibility and cost-effectiveness motivated industrial actors to support the scheme, especially those with experience in emissions trading. It was the CBI that successfully lobbied for greater tax cuts for APs and maximum flexibility in the scheme's rules and regulations to minimise costs of compliance. Yet given the passivity of most APs on the market, which restricted their trading primarily to compliance deadlines, these companies have shown reluctance to learn-by-doing thus ignoring emerging international policy trends to some extent. DPs, in comparison, reacted more proactively in terms of trading, by stating corporate commitments to reducing emissions and by closely following international policy debates (von Malmborg & Strachan, 2006, p. 148).

Table 1: Motives for direct participation in the UK ETS
(*Source: von Malmborg & Strachan, 2006; ENVIROS, 2006*)

Motive for participation	***Rationale***
Incentive payments	Profit-maximising
Meeting UK ETS targets an important corporate priority	Institutional / Stakeholder
Good business practice	Profit-maximising / Stakeholder
Corporate image and reputation	Profit-maximising / Institutional / Stakeholder
Early mover advantage	Profit-maximising / Institutional / Stakeholder
Moral, social and ethical responsibility	Institutional / Stakeholder
To gain familiarity with voluntary instruments and to show that trading works as an alternative to C&C regulation	Institutional / Stakeholder
Chance to make energy savings and/or emissions reductions	Profit-maximising
To prepare for EU ETS	Institutional
Flexibility to choose which of a company's emissions would be covered by the scheme	Profit-maximising / Stakeholder
Inclusion of all six GHGs	Profit-maximising / Stakeholder
The chance to fund energy efficiency / emissions management projects with incentive payments	Profit-maximising / Stakeholder

The rationales for DPs' participation in the scheme were based on a combination of factors (see table 1)*. The appeal of the incentive payments reflects the common sentiment among DPs that the scheme would not have been as attractive without them – some DPs even expected the incentive to provide a new source of revenue (von Malmborg & Strachan, 2006, p. 148). A workshop held by the Department for Environment, Food and Rural Affairs (Defra) with stakeholders supports this claim as incentives were seen to reduce the risks of participation – especially given the scheme's voluntary nature (DEFRA, 2006a, p. 7). Also notable is the fact that *none* of the companies ranked moral, social and ethical responsibility as most important (von Malmborg & Strachan, 2006, p. 150) and the low significance of the desire to gain experience with emissions trading is somewhat surprising given that it was one of the scheme's main objectives.

Clearly a range and combination of rationales led to participation in the UK ETS. Participants displayed tendencies to maximise profits from the scheme, to react in anticipation of and influence future policy and to meet anticipated stakeholder demands and preferences. It is not sufficient to claim that any of these influences is more substantial than the other as they were all stated by a range of DPs, although the financial incentives were of huge significance in reducing risks for both DPs and APs. This is also partly because of the voluntary nature of the scheme – had it been mandatory then firms would have to compete on a level playing field and hence would not have been in the position to demand incentives. Interestingly, a portion of the DPs advocated top-down global emissions trading in light of the need for a level playing field and disregarded the UK's first-mover strategy since abatement is '…a global issue, not just a UK one' (von Malmborg & Strachan, 2006, p. 150).

The imminence of future climate policy was an (albeit less significant) incentive for participation as firms specified the benefits of familiarising themselves with emissions trading as an advantageous pre-requisite for the EU ETS. Yet DPs did not merely act passively towards upcoming regulation, since the opportunity to demonstrate the value of emissions trading as an alternative to C&C regulation was also part of their rationale. Supporters of emissions trading have shown a strong degree of proactive agency in trying to influence policy. Another incentive to participate was the publicity and PR accrued via involvement, showing that firms are sensitive to stakeholder (particularly consumer) preferences. This was especially significant for firms with shareholders, suggesting that these organisations are driven more extensively by profit-maximisation. Indeed, some companies viewed the potential to miss emissions targets as a factor that could obscure their public profile and were deterred by this (ENVIROS, 2006, p. 17; DEFRA, 2006a, p. 6).

DPs consisted mainly of firms that had access to emissions data and could confidently reduce emissions. Of these around half '…stated that their objective was to overachieve their target and sell surplus allowances' (ENVIROS, 2006, p. 17), again demonstrating economistic motivations for participating. On the contrary, some DPs complained that their sector was not proactive enough and called for stronger governmental regulation (von Malmborg & Strachan, 2006, p. 149):

> 'We believe that while we are at the forefront of emission reduction measures in our industry many of our competitors do not see it as one of their main concerns...emission reductions is not on the corporate agenda, never mind a core objective...while I feel that we are doing the right thing I do often think we are putting ourselves at a competitive disadvantage. . . industry attitudes need to

* Note that the first six motives were ranked by von Malmborg and Strachan (2006) with the first being the most significant.

change....'

'Of course our industry could do more, we just need a little push in the right direction...to make emissions trading work. . . the Government needs to reconsider its strategies. . . both a stick and carrot approach is required.... Of course much more could be done but the costs of abatement are often very high and the benefits limited....'

The main disincentives for participation were that organisations were restricted by bounded rationalities. Those that declined to participate did so because they lacked awareness of the scheme's potential benefits and due to the fact that verifiable emissions data was missing – particularly in SMEs. In smaller firms emissions data is deemed more costly to obtain (ENVIROS, 2006, p. 10) and confidence in trading was generally lower (DEFRA, 2006a, p. 8). These hindrances were exacerbated by the scheme's short lead-in time, which limited firms' ability to fully understand the function of the scheme. The rationalities of firms that are not energy-intensive (and hence do not frequently contemplate energy-use) meant that reductions were perceived to be too costly for them (ibid). Lastly, the limited size of the scheme, and given that it was a pilot, meant that concerns for market illiquidity were a disincentive for many firms that declined to participate (ENVIROS, 2006, p. 9).

Analysing the Scheme

According to Roeser & Jackson, (2002) emissions trading schemes should be evaluated in accordance with the following criteria:

- ability to create an efficient market that will enable companies to realise emissions reductions cost-effectively', and;
- the presence of sufficient players with diverse abatement potentials, stringent targets, transparency and strict monitoring and control systems'.

For abatement costs to be minimised, it is important to have a liquid market that facilitates straightforward trading by participants with diverse abatement potentials that create appropriate supply and demand. Meticulous monitoring and control to ensure the authenticity of baselines, targets and reductions must complement this. In the case of the UK ETS, it is doubly important for targets to be stringent, both to maintain the environmental integrity of the scheme and since the government offered financial incentives from the taxpayers' purse.

The DPs in the scheme constitute a diverse mix, which vary in terms of business-as-usual emissions, targets under the UK scheme and sector (see table 2). Prior to the scheme's launch, Defra experienced problems in attracting participants, which is reflected in the relatively small number of DPs (NAO, 2004, p. 2). The small number of DPs is mainly due to the fact that the government was eager to adopt a first-mover strategy and it is claimed that more companies would have participated having been allowed more preparation time (NAO, 2004, p. 2). In fact, the 6000 CCA participants represent the core of the scheme, which is not what was initially intended (Roeser & Jackson, 2002, p. 79). The scope for significant environmental improvements and the success of the scheme as a whole are brought into question by its limited size.

Many of the carbon-intensive sectors covered by the EU ETS were excluded from the UK ETS. By including these the UK scheme would have comprised greater diversity of abatement potentials and would have granted the UK more bargaining power in the

Table 2: Direct participants, baseline emissions and targets.
(Source: von Malmborg & Strachan (2005) and public data from Defra)

Company	Baseline emissions per annum (tCO_2e)	Target emissions (% of baseline)
Asda Stores Ltd	526110	84,8
Barclays Bank plc	75229	88,4
Battle McCarthy Carbon Club	141894	92,3
BP plc	**6,757,799**	**94,8**
British Airways plc	*1,011,785*	*87,6*
British Sugar plc	579,367	82,7
Budweiser Stag Brewing Co. Ltd	4,303	0
Dalkia Energy plc	24,077	59,0
Dalkia Utilities Services plc	59,513	62,4
Dalkia UK Holdings Ltd	37,306	17,7
First Hydro Company	**1,370,410**	**79,2**
Ford Motor Company Ltd	250,257	95,0
General Domestic Appliances Ltd	43,149	89,5
GKN (UK) plc	102,382	90,2
Imery Minerals Ltd	358,124	90,1
Ineos Flour Ltd	***1,861,863***	***56,7***
Invista UK Ltd	***2,626,226***	***81,0***
Kirklees Metropolitan Council	8,622	88,4
Lafarge plc	***3,215,657***	***92,6***
Land Securities plc	25,643	95,1
Lend Lease Real Estate Investment Services Ltd	8,890	89,0
Marks & Spencer plc	13,892	85,2
Mitsubishi Corporation UK plc	1,134	78,0
Motorola GTSS	19,551	77,4
Natural History Museum	9,119	89,0
Rhodio Organique Fine Ltd	***2,098,275***	***79,5***
Rolls-Royce plc	315,203	92,0
Royal Ordnance plc	21,400	74,3
Shell UK Ltd	**3,805,909**	**88,7**
Sommerfield Stores Ltd	380,367	98,5
Tesco Stores Ltd	271,155	72,7
UK Coal Mining Ltd	**4,513,722**	**92,0**
TOTALS	30,538,333	87,0

negotiations for the EU scheme. The failure of the British government to achieve this is reflected in the mismatch between the UK and EU schemes, which occurs on four levels. Of particular importance is the potential for double regulation of target sectors and double counting of permits due to the lack of harmony between the schemes (Sorrell, 2003). The mandatory nature of the EU ETS implies that 'the EU Directive has driven a coach and horses through UK climate policy and could lead to substantial adjustment costs as a result' (p. 6) and resulted in the temporary exclusion of firms in the UK ETS that were affected by the EU scheme from the latter until 2007.

The scheme's DPs have reduced emissions by over 7 million tCO_2e in total. The early years of the scheme showed massive over-compliance – in the first year DPs collectively exceeded targets fourfold. This was largely due to the fact that 'hot air' was introduced into the scheme following the establishment of weak targets (ENDS 312, 2002). The problem of an *additionality* deficit (that reductions would have occurred under business-as-usual conditions) arose due to the way in which baselines were established, as emission trends were not taken into account. Instead the baseline consisted of the average emissions over a three-year period (1998-2000). Some firms with rapidly declining emissions had baselines lower than emission targets when the scheme commenced (ENVIROS, 2006, p. 17). Hence by 2004 an allowance oversupply had drastic consequences for the liquidity of the market. The surplus surpassed DPs' actual emissions and Defra was forced to intervene by negotiating a voluntary agreement with six participants to reduce emissions by a further 9 million tons (ENVIROS, 2006, p. 5)[*].

The surplus affected allowance prices significantly. During the early stages of trading, due to problems in verifying baselines, the price of a permit was in excess of £12 per ton yet after this period prices have consistently been £3-4 – significantly lower than the incentive offered at the auction. Brokers for the scheme claimed that prices represented the cost of verifying emissions and completing trades rather than actual marginal abatement costs. Brokers have consistently stated concerns about the illiquidity of the market, stressing that some participants are relatively inexperienced in trading (NERA, 2004, p. 14-15). On the contrary, Boemare et al (2003, p. 110) argue that the UK ETS has successfully provided a cost-effective means of meeting targets for CCA participants, as it is cheaper to purchase allowances on the UK carbon market than it is to pay for non-compliance. These contentions highlight the necessity of stringent targets in emissions trading, as without them participants can 'free-ride', benefiting from cheap allowance costs. Learning-by-doing is also jeopardised as trading is commonly restricted to compliance periods for APs.

In contrast DPs traded more actively and were the main suppliers of allowances with the major energy companies showing most proficiency, in some cases due to previous experiences with trading schemes (NERA, 2004, p. 15). On the whole, DPs reported that participation in the scheme has granted valuable learning experiences, such as the improved capacity to manage energy-use, increased confidence in using emissions trading and enhanced ability to verify emissions (NAO 2004, p. 27). Furthermore, most DPs claimed that the UK scheme has better prepared them for the EU ETS. In contrast, only a fraction of APs actually traded. Many SMEs complained of the high cost of verification in the scheme. Of major concern is that the bulk of the participants in the scheme still do not understand how trading works, limiting the experience gained via learning-by-doing.

Several DPs claimed that abatements would not have been possible without incentive payments, as this allowed crucial capital investments in clean technologies (von

[*] These companies are represented in table 2 by cursive text. Those in bold text are the major beneficiaries of incentive payments, each receiving at least £10m by the end of 2006.

Malmborg & Strachan, 2006, p. 149). The majority of APs claim that agreements are an important stimulant for innovation in clean technologies (Bailey & Rupp, 2004, p. 396-397)

The experience gained in terms of the monitoring, reporting and verification of emissions, both by participating companies and independent verifiers was the main scheme's major triumph. Brokers have benefited from learning-by-doing given that many niche markets have opened for consultants and environmental law specialists (NAO, 2004, p. 33) and the launch of the EU scheme represents a long-term opportunity for companies with expertise in this field, with London a potential international hub for emissions trading (ibid, p. 32). The Emissions Trading Registry in London has indeed received praise for its simplicity and ease of use (ENVIROS, 2006, p. 16) and Defra is claimed to have gained valuable experience in emissions trading (Pearson, 2004). Competence in emissions trading is shared among the range of actors involved in the scheme with the exception of those APs and SMEs that participated passively.

Discussion

The UK ETS may arguably be described as a paradigmatic example of the dominant doctrines such as sustainable development and ecological modernisation which advocate the compatibility of environment and economy. The scheme shows that firms would voluntarily respond to market signals for environmental compliance. By making the specification of emissions data management of energy-use obligatory points of passage for participation, the UK ETS was able to persuade those firms that participated in the scheme to adopt such practices. These criteria of participation yielded positive externalities such as the emergence of niche markets for firms specialising in, for example, environmental auditing and the establishment of the Carbon Trust. These niche markets may themselves, at a future date lead to other kinds of institutional developments.

The UK ETS was the result of close cooperation between government and industry. The ETG was formed as an arbitrator to negotiate the workings of the scheme following recommendations by an industry leader (Lord Marshall) and the scheme itself was advocated strongly by two of its DPs – British Petroleum and Shell. The ETG now consists of 200 major companies and trade associations and has allowed for new forms of governance with government assuming a more relaxed role allowing for the active participation of key stakeholders. That industry took the lead in making environmental improvements is a clear sign of this. That some DPs went beyond compliance suggests that there is increasing 'critical self-awareness' amongst stakeholders to alleviate the climate problem, although such levels of performance were not matched by all participants. Success was limited by the size of the scheme and some DPs even stated their preference for C&C regulation. This passive mentality shows that MBIs have not been broadly embraced.

In practice the scheme does not live up to its pledge. The UK ETS shows that contrary to the rhetoric used to popularise environmental friendly policies, it is not always a 'win-win' outcome. Several participants stated concerns regarding high abatement costs and loss of competitiveness (von Malmborg & Strachan, 2005, p. 149). These concerns were raised in light of the lack of an international 'level playing field' due to the scheme's limited and national focus, and calls were even made for global emissions trading to resolve this problem. Mismatch with the EU scheme was another reason DPs felt subjected to a competitive loss. Roeser & Jackson (2002, p. 80) claim that '...the UK ETS fails to internalise the social and environmental cost of emitting carbon, given the lack of stringent targets that leave the door open for free riders'. They also deride the prospect of 'paying the polluter', which arises due to the financial incentives. The 'pollution prevention pays' claim that is the

backbone of Kyoto proposals for emissions trading alludes to the prospect of economic enhancement via the development and diffusion of clean technologies and increased resource efficiency, not the receiving of incentive monies. Yet financial incentives should not be underestimated for their capacity to attract as many sectors as possible, especially given the short time that was available to launch the scheme. Without incentives the scheme would not have been realised.

In addition, DPs are also experiencing difficulty in developing innovative ways of reducing emissions, especially since many are from the retail sector, for example. These companies are more focused on finding innovative solutions within their own sector, which is not at all related to energy use. The downstream focus of the UK ETS, coupled with the fact that energy-intensive sectors are excluded from direct involvement in the scheme, limits its ability to stimulate the development of low-carbon supply technologies. Even though there have been some reports of innovations in clean technologies, the difficulties experienced by DPs to develop and implement technological fixes were due to the limited duration of the scheme, the lack of stringent emissions targets, the uncertainty related to the scheme's future and the uncertainty created by the clash with EU policy.

The downside of the close collaboration between government and industry in the construction of the UK ETS is that the scheme is very pro-industry. Hence, the UK ETS '...favours the status quo in the long run' and 'provides no signal to industry for structural change' (von Malmborg & Strachan, 2005, p. 156). Without long-term, stringent targets, there is no real stimulus for business mindsets to change and there is little impetus for companies to devote resources to innovative activities. However, and even though these are major flaws, the fact that the UK has taken a pioneering role in launching emissions trading sends signals to industry that such instruments will become a mainstay of environmental policy. Management of energy use has also proliferated as a result of the scheme.

Emissions trading is a complicated mechanism and will take time to perfect, given that government and industry, and other institutions, must adapt considerably to appropriate its economic advantages. The main weakness of the scheme was that it was designed with too much attention given to the political reality of the UK and too little given to what should have been the principal aim of climate change mitigation policy – to reduce emissions. The lack of stringent targets brings the scheme's environmental integrity into question and given that 'failing to attack the fundaments of the capitalist world will result in superficial and cosmetic environmental reforms' (Mol and Spaargaren, 2000, p. 22), the risk is that key actors lose legitimacy in both domestic and international climate policy debates. At present these are sensitive issues since the UK is attempting to build international consensus regarding abatement.

CONCLUSION

As discussed above, the UK ETS may be regarded as a mixed success with regard to the actual goal of emission abatement. Looked at from the point of view of policy, the UK ETS has not the least provided a source of rich data on a number of issues that are critical for improving policy intended to stimulate corporate responsibility. Although this study is limited in the sense that it does not assess intra-firm factors that lead to the implementation of environmental strategies, it does show that while firms do respond to incentives, a range of different types of incentives has to be created if one is to be able to capture the diversity of the business sector relevant to emission reduction.

A second issue is that the scheme raises the question of the relative benefits and costs of *voluntary* MBIs *vis-à-vis* command and control strategies. By this we refer to the fact that

many firms stated a preference for command-and-control. This taken together with the concerns expressed about a level playing field suggests that companies will be induced to change their practices if they can be sure that the costs of change would not put them at a temporary disadvantage to competitors. Use of MBIs is based on the assumption that such initial costs would be compensated at a later date as a result of profits accruing from first-mover advantage. The persistence of the level playing field argument and others in a similar vein suggests that in the case of environmental issues, policy needs to create an incentive structure under which companies that take steps to minimise the harms they cause are rewarded, and those which do the opposite are penalised. This would imply that future research on corporate responsibility would have to develop more nuanced MBI alternatives.

Notes

[1] This includes carbon dioxide, methane, nitrous oxides and three groups of fluorinated gases (sulphur hexafluoride, HFCs, and PFCs).
[2] The establishment of the UK ETS fell under the remit of the Department for Environment, Transport and Regions (DETR), which is today known as Defra – the Department for Environment, Food and Rural Affairs.
[3] IPPC stands for Integrated Pollution Prevention and Control, a mandatory EU directive that regulates the chemicals, food, metals, minerals, paper textiles, waste and intensive livestock agricultural sectors. There are 36,000 installations targeted by the directive, which are to implement Best Available Techniques to minimise air, land and water pollution.
[4] The scheme may continue beyond 2010 for agreement participants – a decision has not yet been made.

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