CONFRONTING THE CHALLENGES RELATED TO REDUCING GREENHOUSE GAS EMISSIONS

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INTRODUCTION

Among all environmental challenges currently facing industry, the reduction of greenhouse gas (GHG) emissions is among the most topical. Given its direct link to global climate change, how countries and industries will reduce emissions of GHGs has become an issue of significant international relevance and public interest. It is widely acknowledged that the potential impact of climate change on the global economy could be enormous; re-insurance companies estimate that it could be in the order of hundreds of billions of dollars per year in the form of natural disasters and disruptions to agricultural cycles. The extent of these impacts provide ample justification for the introduction of drastic measures for prevention and mitigation of climate change. The targets set out by the Kyoto Protocol of the Climate Convention are only a first step in this direction, but undoubtedly any measure to limit emissions will come with a cost.

Limitations in the emissions of GHGs could lead to reductions in the levels of industrial output and economic activity. In the absence of innovation, it has been estimated that the cost of compliance to meet the targets outlined by the Kyoto Protocol could reach tens of billions of euros per year in Europe alone. Moreover, traditional policy measures such as command-and-control systems or taxation mechanisms can be difficult and expensive to administer, can result in prohibitive costs for industry, and do not provide any guarantee that targets will actually be met. Regulatory systems that cap overall emissions and allow for the trading of these (known as cap-and-trade systems), provide flexibility for individual companies to explore the full extent of their comparative advantages and are proven to be cheaper and more effective than other approaches. It is expected that an international trading system for GHGs could significantly reduce costs of reaching global targets while at the same time rewarding innovation and entrepreneurship.

This chapter describes the initiatives related to GHG mitigation currently being implemented at global and European levels, and how this could impact British industry and economy. The chapter and the accompanying case study outline how companies can take advantage of the opportunities afforded by the various mechanisms established for reducing GHG emissions.

THE CLIMATE CONVENTION AND ITS FLEXIBILITY MECHANISMS

The underlying policy initiative steering international efforts to reduce GHG emissions is the United Nations Framework Convention on Climate Change. Launched in 1992 during the United Nations Conference on Environment and Development in Rio de Janeiro, the Climate Convention created the basis for current efforts related to controlling GHG emissions. Specifically, the Convention establishes the stabilization of GHG concentrations in the atmosphere as its main objective.

In December 1997, the Kyoto Protocol was created to further define the rules and regulations for the implementation of the targets established in the Climate Convention. The most important aspect of the Kyoto Protocol is the adoption of binding commitments by 37 developed countries and economies in transition (collectively called the "Annex 1 countries") to reduce their GHG emissions by an average of 5.2% below the year 1990 for the years 2008-2012. The commitments are differentiated by countries, with some required to reduce up to 8% below their 1990 levels (e.g., the EU as a whole), while others only have to limit the growth of their emissions to 1990 levels. The UK's target is to reduce emissions by 12.5% below 1990 levels. At the same time, the Protocol establishes the use of three "flexibility mechanisms" for facilitating the achievement of these GHG emission reduction targets. These are:

- Emissions Trading, allowing the international transfer of national allotments of emission rights between Annex 1 countries;
- Joint Implementation (JI), the creation of emissions reduction credits undertaken through transnational investment between industrial countries and/or companies of the Annex 1; and,
- The Clean Development Mechanism (CDM), which allows for the creation of Certified Emission Reduction (CER) credits from projects in developing countries and also promotes sustainable development in these countries.

The Kyoto Protocol was a truly international step in the GHG emissions mitigation arena, providing a compromise between substantial emissions reduction targets with a market mechanism under which to achieve those emissions reduction requirements. The Protocol opened for signature on March 1998 and will become legally binding after the ratification by a minimum of 55 Annex I countries accounting for at least 55 per cent of the emissions of the developed countries in 1990. As of April 2004, the entry into force of the Protocol is depends on ratification by Russia.

THE UK AND EU EMISSIONS TRADING SCHEMES

The objectives established by the Climate Convention have, in turn, to be translated into national rules, regulations and legislation. The UK was the first European country to develop and implement an emissions trading scheme to assist the country to meet its emission reduction targets. The UK Emissions Trading Scheme (UK ETS) started operating in early 2002, one year after the establishment of a Climate Change Levy on the use of electricity by all companies in the country (the rationale being that electricity generation is one of the main causes of CO2 emissions in the UK). The UK ETS was particularly focused on energy intensive industries such as the steel, aluminium, chemicals, paper, food and drinks, glass, and foundry sectors. These energy intensive companies were entitled to negotiated emission reduction plans with the government in exchange for a reduction in their Climate Change Levy burden. In order to meet their emission reduction targets, companies in these sectors were allowed to trade emission permits between themselves, forming the basis for the UK ETS. It is estimated that, by 2006, the UK ETS will have led to the reduction of some 4 million tonnes of CO2 emissions in relation to 1998/2000 levels. In parallel, the UK ETS had the objective of fostering innovation and triggering the beginning of an environmental trading system, which would place the City of London at the centre of this new market.

Although the UK was the first to develop an emissions trading scheme for GHGs, the UK ETS will now be gradually superseded by an EU-wide trading system, designed to prepare the EU for its Kyoto agreements. Arrangements for the European Union Emissions Trading System (EU ETS) came into force in October 2003, and it is planned that it will begin operating in January 2005. The EU ETS is a cap-and-trade system based on the allocation of limited amounts of emission rights (European Allowance Units - EAUs) and the associated flexibility to buy or sell surplus allowances from other parties. While the EU ETS is an important tool for meeting the objectives of Kyoto, it is important to point out that it is not dependent on Kyoto ratification; the EU ETS will be implemented even if Russia does not ratify the Kyoto Protocol. The main elements of the system are:

- The system will start operating in January 2005, with the participation of the 15 EU Member States, and will gradually incorporate the accession countries. The first phase of the EU ETS runs from 2005 to 2007, while the second phase coincides with the first commitment period under Kyoto, 2008-2012.

- The system covers five main sectors of the economies of the EU, namely power and heat generation, iron and steel, mineral oil refineries, mineral industry (cement, glass, ceramics), and the pulp and paper sectors. In total, a total of 12-15,000 plants or installations will be covered by the EU ETS.
- These sectors account for approximately 46% of the emissions of the EU, or over 2 billion tonnes of CO2 emissions per year. Reduction of emissions from other sources (e.g., transport) will be promoted directly by individual governments through a combination of internal measures, policy instruments and, as already initiated by some governments (e.g., The Netherlands, Italy), programmes for the purchase of emission reduction credits from projects outside the EU (see next section).
- Each country will decide on the total amount of EAUs that will be allocated to its industry and, effectively, the emission reductions burden that it will impose on the sectors of its economy that are covered by the EU ETS. This allocation, however, has to be in line with the country's Kyoto and European emission reduction targets.
- The process of allocating allowances between sectors and companies in a given country is determined through the establishment of the National Allocation Plans (NAPs), which will be published by each individual Member State. The first drafts of these NAPs are currently being issued and negotiated. The process for internal allocation of allowances within a country vary, including approaches based on grand-fathering, historical and projected emission levels, auctions, etc.
- After receiving their EAUs, companies will have to implement measures to ensure that they stay within their CO2 emission quotas. The allocation of EAUs, however, will be done in such a way that installations will need to effectively reduce their CO2 emissions.
- In order to allow companies to explore fully their comparative advantages, the EU ETS allows companies to trade surplus EAUs between themselves. In this way, companies that are successful in reducing their GHG emissions beyond their target generate a surplus allowances and can sell them to companies that do not meet their targets. In addition, companies will be able to purchase a certain amount of emission credits from emission reduction projects taking place outside the EU (see next section).
- Companies that do not meet their targets will be subjected to penalties for non-compliance. These will start at €40/t CO2 during 2005-2007, reaching €100 from 2008 onwards. Penalties will not be treated as an 'opt out', and companies that are fined will still need to meet their emission targets either by reducing their emissions somehow or buying emission credits or EAUs.
- Though the UK's Kyoto target is to reduce GHG emissions by 12.5% below 1990 levels by

2008-2012, the country has adopted a more ambitious voluntary national climate change target of reducing CO2 emissions by 20% below their 1990 levels by 2010. In Phase 1 of the EU ETS (2005-2007), the UK plans are based on the reduction of 16.3% of the emission levels in relation to 1990, possibly leading to a higher level of reductions in Phase 2. A total of 1,500 installations will be included, and some 714 million tonnes of CO2 (tCO2) allowances will be distributed between them during 2005-2007. Allocation of EAUs will be based on an average of historical levels of emissions during the 1998-2002 period, taking into account some of the commitments that were made as part of the UK ETS.

LINKING THE EU WITH KYOTO: THE USE OF PROJECT-BASED CREDITS

In parallel to the establishment of the EU ETS, the EU is finalising a directive to link it to the flexibility mechanisms of the Kyoto Protocol, in particular the CDM and JI project mechanisms. The main advantages of this link is that the use of the Kyoto's flexibility mechanisms would greatly increase liquidity of the EU ETS market and reduce overall costs of compliance. The 'linking directive' is due to be approved in early 2004 and is expected to enter into force in January 2005. The main elements of the linking directive are:

- In order to provide companies with a larger degree of flexibility, the linking directive enables companies affected by the EU ETS to buy credits from emission reduction projects that are implemented outside of the EU (through the JI and CDM mechanisms).
- Companies will be able to purchase an additional 8% of their original EAU allocation in the form of credits from either JI or CDM projects. This could mean an additional volume of 125 million tCO2 per year in Europe, or some 19 million tCO2 per year in the UK alone.
- The original directive stated that credits from JI and CDM projects would only be allowed in the ETS from 2008. However, a recent amendment put forward by many Member States proposes that the use of credits from projects in developing countries should be allowed in the EU ETS from the beginning of 2005. This has already been accepted by the EU Parliament and the EU Commission and is now waiting for final approval.
- It is expected that the introduction of project-based credits in the EU ETS will reduce the overall cost of credits and allowances traded from € 26 to €13 per ton CO2, leading to a reduction in the cost of compliance in the EU of approximately half a billion euros per year.

BARRIER OR OPPORTUNITY ?

Given the scale and complexity of the challenge to reduce GHG emissions worldwide, the EU ETS appears to be a sensible way forward. As shown above, the integration of the EU system with other Kyoto initiatives through international trading has the potential to significantly reduce the overall costs of meeting these targets. In addition, limiting GHG emissions will likely promote innovation and the development of new technologies both in Europe and internationally. In a recent survey of European electricity companies, more than 50% of those interviewed indicated that they see the EU ETS as an opportunity, with the potential to enhance shareholder value and profitability of their companies in the long term.

Apart from those directly involved in the EU ETS, international emissions trading systems are also fostering the development of a wide range of associated services. These include technical consultancies, project finance, auditing, verification, financial, insurance, and legal services. The UK can play a significantly role in this new service industry, capitalising on its reputation and tradition as a global financial services centre.

On a wider scale, emissions trading systems can also lead to substantial transfers of resources to developing countries, both in the form of payment for project based emission reduction credits, as well as foreign direct investment associated with the development of environmentally sound projects abroad (an example is shown in Case Study in page XXXX). At the same time, the faster uptake of clean technologies promoted by carbon trading could also lead to an increasing demand for new low emissions European technology.

The combination of these factors suggests that while companies could face increased costs due to limitations set on previously unregulated pollution, companies have at their disposal several options for reducing their cost of compliance. As with all regulations, there will be winners and there will be losers, but the ability to craft effective corporate strategies for addressing the challenges of a carbon-constrained economy will allow the more nimble players to limit their burden or even to capitalize on opportunities.