

Peering into the Carbon Ball

With the opening of the European Emissions Trading now less than 6 months away, pundits all over the EU are trying to predict what is going to happen as a result. Leaving aside the possibility that the political wrangling between various member governments will get so extreme that the market opening will be delayed, there appear to be two main areas of interest:

- *What will be the effect of the ETS on electricity prices? and*
- *Will the ETS help Europe to meet its Kyoto targets?*

The answers to both of these questions are still somewhat unclear.



A Brief Overview

Before we go any further it would be wise to quickly remind ourselves of the way in which the ETS operates. It is a cap and trade mechanism, in which each country sets targets for emissions levels that it requires industry to meet.

Each company regulated under the scheme will be required to obtain carbon allowances (known as **EU Emissions Allowances** – EUAs) to match the amount of CO₂ that they emit. The number of allowances in the market is limited to the target level set up by the government under a **National Allocation Plan** (NAP). In theory therefore, provided that industry as a whole restricts itself to the total prescribed level of emissions, all companies have to do is trade allowances amongst themselves so that each has the right number that they need. Companies may choose to aggressively reduce their emissions in the hope that they can sell surplus allowances for a high price, or not worry about carbon abatement in the hope that they can pick up extra allowances cheaply on the open market. The former strategy risks the price of allowances being so low that you don't recoup the money spent on abatement. The latter strategy risks your being unable to find the extra allowances and having to pay a penalty fee that starts at €40 and will be rising to €100 in 2008.

The interesting part of the system is way that the governments set their NAPs. Each country within the EU has an emissions target that it is required to meet under the Kyoto protocol. However, there is no requirement that they should reach that target using the ETS. And, as we shall see, some countries are already well ahead of their Kyoto targets, so their ETS target doesn't have to reduce emissions at all.

What will it cost?

Over the past few months the business sections of newspapers around Europe have been filled with outraged and impassioned pleas from industry lobbyist groups who are convinced that the ETS will produce a massive rise in the price of electricity and, as a result, put their members out of business. An article in the June issue of UK Powerfocus[1] suggested that at a carbon price of €15/te, the price of electricity in the UK could rise by £6/MWh, an increase of around 30%. Even at a carbon price of €5/te, electricity prices would still rise by 10%. Or would they?

A recent report by the Oxford-based consultancy, ILEX, compiled on behalf of the Department of Trade and Industry[2], paints a very different picture. The ILEX consultants predict a much smaller rise in prices. This is not because they are expecting a very low price for carbon allowances. It is simply because they have noticed that governments are allowed to hand out the bulk of their allowances to industry free of charge. Some 90% of the allowances that UK generators need will cost them nothing. The cost of the additional allowances can be spread across all of the output. That brings the price rises from the UKPF article down to between 1% and 2%.

A similar report, prepared by Professor Michael Grubb for the Carbon Trust with assistance from the consultancy, OXERA, goes further[3]. To the annoyance of the lobbying groups, Professor Grubb predicts that the ETS will have almost no effect on European industry, and even suggests that some sectors will increase profitability. Grubb agrees with ILEX that the increase in electricity prices will be of the order of 1.5%. He further argues that in most cases both the generators and their industrial customers will be able to pass that increase on to their customers. Furthermore, because the rise in the wholesale electricity price will benefit all power stations, but only some of them will need to buy carbon allowances, some electricity companies will see increased profits. In Grubb's view, only aluminium smelting, which is highly energy intensive and subject to tough competition from countries outside Europe, will suffer under the ETS.

A Complex Dynamic

I should add also that the question of the effect on power prices is much more complicated than simply adding the cost of carbon allowances to the cost of generation. The true effect will depend very much on the plant mix in the market in question (and how the merit order is changed by the existence of the ETS). In a market where coal-fired generation is marginal, carbon prices will be quite important. On the other hand, if peak generation is supplied by hydro-electric plant then the theoretical marginal cost of generation is completely unaffected by the carbon market. Then again, if the hydro plant has few competitors and is shadow-pricing off oil-fired peaking plant, prices could rise quite steeply.

There are also issues of market structure. If most players get most of the allowances that they require for free, then trading will only occur around the margins. This means that the market will be very illiquid, and that could provide opportunities to people to game and drive up the price. The banking rules will be very important here. If it is possible for a company that is long allowances to create an artificial shortage by withholding those allowances from the market then they probably will. Consequently the actual carbon price could be a lot more than the €5-15/te that most people are predicting.

What are the Benefits?

Overall the EU plan sounds promising. If Europe implements the ETS and there is no effect on the profitability of European industry, then surely we are getting a good thing for free. But what exactly are we getting? Remember that at this stage governments are entirely free to choose how many allowances they give out in their NAPs. They have a long-term requirement to meet their Kyoto targets, but they don't have to do so now, and they don't have to do so entirely through the ETS. In addition to the ILEX study, the DTI also commissioned a company called EcoFys to examine the NAPs of the various EU countries and find out how effective they were[4]. As you might expect, the study produced both good and bad conclusions.

One of the obvious things for EcoFys to do was compare the level of emissions implicit in each NAP with the level that would have been expected in that country if the ETS did not exist (the "Business-as-Usual" scenario, or BaU). Pleasingly, those countries that are well behind their Kyoto targets, such as Spain, Denmark and Austria, did set their NAP targets below the BaU level. In other words they were making an effort to use the ETS, at least in part, to meet their Kyoto targets. Doubtless they will look with some jealousy at countries like the UK and Germany who are already well up with their Kyoto targets and were able to set their NAPs close to a BaU level. Meanwhile, in Riga, the Latvian government is doubtless feeling rather smug. Their country is currently so far ahead of its Kyoto target that they have been able to set their NAP well above the BaU level. This may be one reason why the Latvians are keen to build a power interconnector across the Baltic to Finland. Once they have it in place, Latvia will be a good place to build new power stations.

Filling the Gap

The most worrying part of the EcoFys report, however, was the large number of gaps between the level of emissions specified in the NAPs and that required to meet the Kyoto targets. Although the countries that do have to reduce emissions are all setting

their NAPs below BaU, none of them are setting them low enough to get where they need to be. All of these countries will have to find some other way of achieving the additional required emissions reductions.

How they do this is, of course, an open question. Some of them claim that they will do so by reducing emissions from the domestic and transport sectors. Basically this translates as "hitting the voter in his pocket". It means things like putting taxes on home electricity usage, and discouraging people from driving. Somehow I just can't see this happening.



A more feasible strategy is for the countries in question to buy carbon allowances from outside of the EU. The Kyoto treaty has provisions whereby more developed countries can gain credit for helping their less-well-off brethren. If France builds wind farms in Algeria, or the UK plants forests in India, they can gain

carbon allowances as a result. However, the downside of this Clean Development Mechanism is that currently such projects are few and far between. As Dr. Andy Kerr of the carbon market consultancy, E3 points out, the monitoring requirements for CDM projects are quite severe, resulting in expensive administrative overheads. To make them economic, CDM projects currently have to be quite large. The idea of every village in India planting a forest and selling carbon allowances is all very well, but unless some aggregator brings all of those projects together and handles the bureaucracy in one go such schemes are unlikely to be viable.

Carbon reductions achieved through CDM are usable within the ETS as well, so a thriving CDM market would allow member governments to set tighter NAPs in the future if CDM-based allowances (Certified Emissions Reductions – CERs) were available. The EU has decided not to set a limit on the amount of CERs that member countries are allowed to source through CDM projects until 2008, but Kerr says that such projects are so thin on the ground that countries may find it hard to sign up the projects that they want. Kerr's comments are supported by a paper by Jørund Buen and Atle C. Christiansen of Point Carbon[5]. Their view is that CDM-based allowances will not even reach 1% of total market volume over the first couple of years of the market. What does seem to be happening here is that the EU is trying hard to kick-start CDM projects. Of particular note is that ordinary EU carbon allowances handed out through the NAPs are not bankable between the first phase of the ETS scheme, lasting until 2008, and the period beyond that. CERs, however, can be carried across. This encourages market players to obtain CERs rather than EUAs. The EU is probably hoping that the more flexible CERs will trade at a premium to EUAs, thus further encouraging the development of CDM schemes.

Back to Basics

At this point we need to get back to basics and ask ourselves whether there might not be a better way for Europe's electricity industries to reduce carbon emissions. Two obvious candidates come to mind: renewable generation and demand side management. Both of strategies will reduce emissions from the

power sector. Dependent on the emergent price of carbon in the European market, they may even prove to be cheaper strategies than tightening the NAPs well below the BaU level.



In addition to their work for the DTI, ILEX has produced a report on behalf of the environmental group, WWF[6]. Using cost figures from the UK Government's own energy white paper[7], and the usual €5-15/te range for carbon prices, ILEX estimates that Britain can actually save money by investing in new renewable generation and energy efficiency schemes in the period up to 2010. Moving on to 2020, new renewable generation will still save the country money, but energy efficiency schemes will not

as all of the easy options will have been taken. ILEX explains these claims by offsetting the cost of the new developments against the projected sale value of ETS allowances that will no longer be needed.

Of course building renewable generation is by no means easy, especially with the Conservative Party having chosen to throw its lot in with the NIMBY faction. As for energy efficiency, the ILEX report is rather gloomy about prospects. The report notes: Economic theory suggests that this investment in energy efficiency should already have taken place. The fact that it has not, and the reasons why, remain something of a conundrum. Collectively the factors behind this market failure are known as "barriers", and range from a lack of awareness to fiscal distortion. ILEX does not seem to hold out much hope of the UK government acting to remove these barriers even through the economic case for doing so would seem sound.

Then again, we could all build lots of new nuclear power stations. Hmm.

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[1] "Emissions trading and the Power Generation Sector", Ali Lloyd, UK Powerfocus #48, June 2004

[2] Impact of the EU ETS on European Electricity Prices, ILEX, July 2004

[3] The European Emissions Trading Scheme: Implications for Industrial Competitiveness, Carbon Trust, June 2004

[4] Analysis of the National Allocation Plans for the EU Emissions Trading Scheme, EcoFys, August 2004

[5] "Perspectives on the inclusion of project-based credits in the EU ETS", Jørund Buen and Atle C. Christiansen, Point Carbon, 2003

[6] PowerSwitch! – Scenarios of CO2 emissions from the UK power sector, ILEX, June 2004

[7] "Energy Paper 68: energy projections for the UK", DTI, 2001
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