



EU Emissions Trading Scheme - The next phase

Background and outlook for Phase II of the EU ETS

Why it exists

The Kyoto Protocol requires the EU to cut emissions of greenhouse gases to 8% below 1990 levels in the 2008-2012 period. It covers the six greenhouse gases:- carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulphur hexafluoride. In most assessments the unit of greenhouse gas emission is treated as carbon dioxide equivalents, and hence quoted as tonnes of carbon dioxide.

The EU ETS is the European response to the Kyoto challenge. It aims to reduce emissions from the most energy intensive industries. The purpose of the scheme is to help EU states attain their Kyoto Protocol commitments. Compliance is a legal requirement and governments that do not meet the terms of the EU ETS directive will be challenged under European law. The EU itself can be penalised under Kyoto if it fails to meet its target.

How it works

The actual trading refers to the trading of rights to emit pollutants into the atmosphere. One allowance represents the right to emit one tonne of CO₂. Individual companies are allocated a certain number of allowances which the Member States define in their National Allocation Plans. Companies that keep their emissions below the level of their allowances can sell the excess allowances. Those that emit more than their allowance can buy extra at the market rate. The higher the market rate of carbon allowances, the more attractive it will become to invest in more efficient technology or switch to less carbon intensive fuel.

Companies may trade allowances directly with each other or via a broker or other market intermediary. A registry system keeps track of the change in ownership of allowances that have been traded.

The EU ETS began on 1 January 2005. The first phase runs until the end of 2007, the second phase runs from 2008-12.

Who it affects

The sectors currently included in the ETS are combustion power plants, oil refineries, iron and steel plants, coke ovens, cement factories, glass, brick and ceramics manufacturers and pulp and paper producers. The vast majority (66%) of the emitted CO₂ currently comes from the electricity utilities. This sector will remain the most affected and therefore the most active in emissions trading going forward.

Other sectors have been assessed for feasibility of inclusion, and the aviation sector is to be included from 2011. However most sectors are unsuitable because they either have a large number of small emitters or their emissions are too erratic. Road transport, for example, is responsible for a large and increasing volume of emissions, but the large number of emitters and lack of capacity for monitoring has meant it cannot be included.

More plausible additions are: Petrochemicals, agrichemicals, aluminium smelting and coal mining. However, political objections are more likely as these sectors are exposed to external competition that is not carbon constrained.

Carbon Price

Apart from the initial constraints set by National Allocation Plans, the carbon price is defined by market forces, like any other commodity. The target CO₂ emission level is fixed and the price of CO₂ reflects the shortfall of certificates relative to the expected emissions over the phase of the scheme. The expected level of emissions is the main variable that can change and affect the CO₂ price.

A number of factors can lead to changing expectations of emission levels. Weather and fuel prices are the largest factors. Cold or unusually hot weather increases demand, so countries will be operating nearer to full capacity, necessitating the use of fuels irrespective of cost and emissions levels. Dry weather will reduce hydro contribution and still conditions will reduce the small contribution from wind. Fuel prices can be a dominant factor. Depending on the relative cost of production between coal and gas, there may be periods when it is cheaper to buy extra carbon credits and burn coal than to use cleaner, but more expensive gas.

EU Capacity by Fuel Type

Coal	26%
Gas	20%
Nuclear	18%
Hydro	18%
Oil	12%
Wind	4%
Others	2%

Source: Dresdner Kleinwort Equity Research

UK Capacity by Fuel Type

Gas	41%
Coal	28%
Nuclear	13%
Wind	10%
Hydro	4%
Oil	3%
Others	1%

Adapted from Citigroup Investment Research

One of the largest sources of potential CO₂ abatement from a switching point of view is the usage of gas generation units instead of coal ones. This yields a saving of 0.55t CO₂ per MWh of electricity production¹. The size of this switching potential is dependent on the commodities environment. If coal prices are low relative to gas, then coal generation would be preferred to gas, all other things being equal. However, the cost of CO₂ also comes into play, handicapping the competitiveness of coal to a varying degree depending on the market price for allowances.

The table below shows the cost of switch for two scenarios. In scenario 2 there is a difference of €19/MWh between coal and gas on a marginal cost basis. This means that in order to save 0.55t CO₂, the CO₂ price would have to be over €34.6/tonne to incentivise the switch.

Coal Relative to Gas Scenarios

		Scenario 1	Scenario 2
Coal thermal efficiency		36%	36%
Coal price	\$/tonne	65	65
Fuel cost	€/MWh	22.5	22.5
Coal O&M	€/MWh	7.5	7.5
Coal marginal coal cost	€/MWh	30.0	30.0
Gas thermal efficiency		52%	52%
Gas price	p/therm	30.0	45.0
Fuel cost	€/MWh	31.8	46.8
Gas O&M	€/MWh	2.3	2.3
Gas marginal coal cost	€/MWh	34.1	49.0
Coal – gas marginal price differential	€/MWh	-4.1	-19.0
Carbon price needed for switch	€/tonne	>7.5	>34.6

Source: Dresdner Kleinwort Equity Research

Credits for Emissions Reduction Projects

Operators of installations covered by a National Allocation Plan may earn carbon credits from emission-saving projects carried out in countries outwith Kyoto. The credits can be obtained through Clean Development Mechanisms (CDMs) and Joint Implementations (JIs). Companies get 'Certified Emission Reductions' (CERs) from CDMs. Companies get 'Emission Reduction Units' (ERUs) from JIs.

CDM - developed country or their companies can earn emission credits (CERs) from financing emissions-reducing projects in developing countries (with no emissions reduction target), e.g. China, India.

Ji - developed country can earn ERUs when it helps finance carbon reducing projects in another developed country (with no emissions reduction targets), e.g. Russia, Ukraine.

The Emissions Trading Directive requires that for the second phase of the Scheme, Member States impose a limit on the use of credits from CDM and Ji projects for use in compliance. This reflects the recognition in the Kyoto Protocol that the use of credits obtained through these mechanisms should be supplemental to domestic action. The UK Government has set a limit on the use of projected credits from CDM and Ji of 8% of each installation's free allocation. This represents about 65% of the shortfall between the total allocation of allowances and business as usual emissions.²

Phase II

Phase I credits were revealed to be in surplus last April in the release of verified emissions data for 2005. In effect this makes Phase I carbon credits worthless as companies unwind their positions towards the close of the phase in December this year. Nevertheless, the EU deemed the exercise a success as it established a functioning market across all Member States and generated awareness of the issue at the highest levels in European industry.

During 2006, 27 EU Member States proposed National Allocation Plans for distributing allowances to emit CO₂ during Phase II. The initial plans proposed would have led to an increase in emissions to 5% above 2005 levels. This exceeded the trend in emissions and, combined with inflow of emission credits from emission saving projects such as CDMs, would probably have led to another dead market for carbon. The EC ruled that almost all the submitted plans violated its interpretation of the EU ETS Directive and proposed an allocation formula that turns the proposed 5% increase into a 5% decrease over 2005 levels. This is below all 'business as usual' forecasts.

The agreed Phase II National Allocation Plans will be imposed from January 2008. In the UK, the total number of allowances for Phase II represents around 47% of average projected emissions, whilst the proportion covered by the scheme is 52%.³ This, then, creates a 5% shortfall in credits for the start of Phase II. 93% of UK allowances will be allocated for free to installations covered by the scheme. 7% will be auctioned. A New Entrant Reserve (NER) will provide free allowances to eligible new installations.

Phase II Sectors, UK

	Annual Allocation tCO ₂	% Contribution to NER	Allocation to existing installations
Large Electricity Producers	107,421,556	7.3%	99,534,205
CHP	24,745,437	13.3%	21,462,484
Refineries	15,417,590	2.1%	15,098,072
Offshore (including flaring)	20,197,232	11.4%	17,886,325
Iron and Steel	24,380,992	2.7%	23,727,929
Cement	11,247,642	2.7%	10,948,556
Lime	2,760,069	2.1%	2,702,868
Glass	2,291,758	2.7%	2,230,818
Ceramics	1,898,407	2.9%	1,842,944
Pulp and paper	1,054,135	2.1%	1,032,289
Aluminium	2,854,101	2.1%	2,794,952
Chemicals (crackers, carbon black)	5,587,626	3.9%	5,369,160
Food and Drink	1,734,773	3.0%	1,681,889
Services	1,549,424	8.1%	1,424,524
Downstream Gas	2,157,406	35.2%	1,398,823
Other Electricity Producers	1,316,558	2.1%	1,289,273
Others	2,328,974	14.9%	2,198,317
Total free allocation	228,943,678	7.1%	212,623,428
Allowances to be auctioned	17,232,320		
Total allowances	246,175,998	6.6%	

EU Emissions Trading Scheme -
Approved UK Phase II NAP 2008-2012 (DEFRA)

Sector allocations

Allocations of allowances to sectors in the UK are determined as follows:-

All sectors other than Large Electricity Producers will be allocated allowances equivalent to their projected Business as Usual emissions, taking into account their potential to reduce emissions, and a deduction for the New Entry Reserve. Large Electricity Producers will be allocated the remainder, taking into account a deduction for the amount of allowances to be auctioned and a contribution to the New Entry Reserve. Thus the LEP sector will receive a reduced allocation to account for the carbon savings the UK expects the sector to deliver.

The Phase II forward price has been on an upward slope since mid February, and is currently close to €25 per tonne CO₂. The beginning of this move up corresponds to the decisions of the European Commission on the remaining large National Allocation Plans (Poland, Czech Republic and France). This gave a clearer picture of the Phase II market and led participants to start covering their short positions. News since then has been in the same direction, such as a cut in the Italian plan and reinforced anticipation of a hot summer in Europe pushing up power prices along the forward curve.

Speculative players have been reinforcing the movement, buying on the back of bullish expectations for carbon credit demand.

National Allocation Plans' allocation at plant level is yet to be finalised. Once this happens, any operators with a long position will be able to sell with confidence, so supply should increase. Also, once the International Transaction Log (electronic log for transfers between CDM registries) is implemented, Certified Emissions Reductions (from Clean Development Mechanisms) will be allowed to be imported into the EU ETS on a spot basis. The date of implementation is still uncertain, but once known will have a negative effect on the price of carbon credits.⁴

Conclusions

The outlook for Phase II of the EU Emissions Trading Scheme looks bright. Allocations have been tightened in response to the over allocation in Phase I and the forward price is buoyant as a result. Whilst Phase I has been a failure in terms of generating demand for credits, it has achieved its main goal of gaining acceptance of the scheme amongst EU Governments and industry, and has successfully created a working market for carbon credits.

There are still potential problems with the scheme. For example, the Carbon Trust are concerned that there appears to be a conflicting incentive to construct new high emitting power plant in certain countries' allocation plans, citing Germany's new entrant rules (where new entrants to the scheme get free allowance to more carbon intensive fuels).⁵ They suggest auctioning of new entrant reserves would be a more appropriate method for integrating new entrants.

And despite the allocation plans for Phase II looking set to incentivise companies to reduce their operational emissions, the issue of whether it will incentivise investment in lower carbon technology is debatable. The power utilities will be able to pass additional costs on to the consumer, and it is the power utilities that will be bearing the shortage of credits in their allocations. The Carbon Trust recommends more auctioning of allowances. They claim that this would not increase power prices, but could help to improve incentives for low carbon investments in three ways: by reducing the high emitting new entrant incentive; through judicious use of auction revenues to support such investments; and by enabling a reserve auction price that would help stabilise price expectations.⁵

1 Dresdner Kleinwort Equity Research use 0.90 tCO₂/MWh for coal and 0.35tCO₂/MWh for gas

2 EU Emissions Trading Scheme, Approved Phase II NAP 2008-2012 (Defra)

3 UK Energy and CO₂ Emissions Projections, Updated Projections to 2020 (DTI, Feb 2006), <http://www.dti.gov.uk/files/file26363.pdf>

4 Carbon Drivers (Societe Generale Commodities Research)

5 EU ETS Phase II Allocation: Implications and Lessons (Carbon Trust)