



GLOBAL CARBON MARKETS - EMISSIONS TRADING
TRAINING PROGRAM
FOR ENVIRONMENTAL AND GHG SPECIALISTS

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ENVIRONMENTAL SPECIALIST CURRICULUM





EUROPEAN UNION EMISSIONS TRADING SCHEME:
PRICE DRIVERS AND MARKET DYNAMICS
FOR ENVIRONMENTAL PROFESSIONALS

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LEARNING OBJECTIVES



What happened to prices for allowances in the EU ETS during phase One from 2005 to 2007.

How the EU ETS Phase 2, from 2008 to 2012 differs from Phase 1

Short-term EU ETS phase 2 fundamental pricing and trading dynamics, and

How the EU ETS phase 3, from 2012 to 2020, will likely be set up and how anticipated changes are affecting current allowance prices

2030 Climate Target Plan



EU ETS PHASE 3

Before the start of the phases 1 and 2 of the EU emissions trading system (EU ETS), each EU country decided on the allocation of their emission...

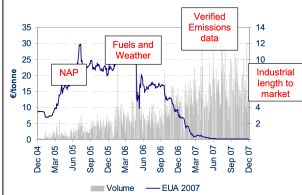
Set up in 2005, the EU ETS is the world's first international emissions trading system. It is now in its fourth phase (2021-2030).

Phase 1: A closer look at the pilot phase of the EU ETS from 2005 to 2007

As you learned in the last lesson, the European Union's Emissions Trading Scheme began on the 1st of January 2005, although forward contracts actually began trading in 2003. Looking at the actual results of the two-year pilot phase, we can see the dynamics of allowance prices and trading in practice and learn more about what factors influence carbon prices.

As soon as the EU ETS began, trading volumes were significant and grew quickly. This graph shows prices as the blue line on the graph and daily traded volumes as the grey bars on the graph. As you can see, by the end of 2005, daily traded volumes had risen to around two million tons per day and then to five million tons per day by the end of 2007. The graph also illustrates the very volatile EU allowance price developments during phase 1 and some of the major fundamental price drivers throughout the period.

EU ETS FROM 2005 TO 2007



Prices for EU ETS Allowances fluctuated due to various price drivers, including the approval process for the National Allocation Plans of the EU member states, fuel prices and weather, public release of verified emissions data, and allowances from industrial emitters coming to market. Each of these factors should be considered in light of the natural supply and demand dynamics that we discussed in previous lecture.

The NAP Process: The first annotation shows a period of rising prices from around 8 Euros per ton in early 2005 up to approximately 22 Euros per ton by October 2005. This rise in prices is attributed to the National Allocation Plan, or NAP, process. The NAP process is the procedure whereby by EU member states decide, with the European Commission's permission, how many EUAs they will allocate to their installations covered by the EU ETS. During the approval process, the amount of allowances that member states decided to hand out was markedly less than market participants had anticipated. Consequently, supply expectations were lowered, whilst demand remained the same, so prices went up.

FUEL PRICES AND WEATHER

During the winter of 2005, colder than average temperatures across Europe in the early part of phase 1 increased demand for energy for heating. The area most affected by the cold was central Europe, particularly Germany where temperatures were below freezing much of the winter. Most of the increased demand for heating fuel had to be met with fossil fuels, primarily coal and natural gas. These fossil fuels all produce CO₂, and their increased use resulted in increased emissions and demand for allowances. The increase in demand led to an increase in allowance prices.

Along with the drop in temperatures in 2005, crude oil and natural gas prices rose relative to coal prices. This situation was particularly dramatic in the United Kingdom, the European country with the most flexible power production capacity. The relative prices of fossil fuels led power companies to shift to burning carbon intensive coal instead of natural gas, further increasing emissions. Adding to the emissions burden in the UK was a fire at a large natural gas storage facility, further exasperating UK natural gas prices.

FUEL PRICES AND WEATHER +

As a fuel, coal emits more CO₂ per unit of electricity generated than other fossil fuels. When combusted for electricity generation in a plant of average efficiency, coal emits nearly 1 metric ton of CO₂ per megawatt hour of electricity generated; oil emits roughly 0.85 metric tons per megawatt hour and natural gas 0.4 metric tons per megawatt hour. The actual efficiency of a power plant can lead these values to vary, but the order of coal – oil – natural gas in terms of their emissions intensity does not.

FUEL TYPE	TYPICAL CO ₂ e EMISSIONS
Coal	1.00 t/MWh
Residual Fuel Oil	0.85 t/MWh
Natural Gas	0.40 t/MWh
Nuclear	0.00 t/MWh
Renewables	0.00 t/MWh

Therefore, the result of a dramatic jump in UK gas prices was to increase use of coal for power generation, which in turn led to greater CO₂ emissions. Again, higher emissions caused greater demand for allowances, which in turn caused the price of EUAs to rise.

RELEASE OF VERIFIED EMISSIONS DATA

The period of increasing carbon prices came to an abrupt end in May 2006 upon the release of verified emissions data for 2005. This data showed what had previously only been estimated: exactly how much CO₂ covered installations in the EU ETS had emitted in 2005. Actual emissions were much lower than most market participants had expected.

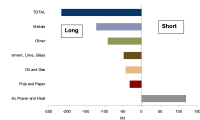
To the surprise of most, the EU ETS was in fact over-allocated and there were fewer emissions than EUAs. The European Commission had allowed member states to hand out too many allowances. As soon as this news hit the market, prices collapsed.

You may wonder why market players did not see the over-allocation in advance: after all, they knew how much they were emitting, and how many allowances they were given, so it should have been obvious that there were too many allowances to go around.

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INDUSTRIAL LENGTH COMES TO MARKET

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You can see that the power and heat sector market participants needed to purchase allowances because their allocation left them short of what they needed to cover their emissions. You can also see that emitters in all other industrial sectors had more than enough allowances to cover their emissions and were in a position to sell.

This was not obvious until verified emissions data surfaced because most member states in the EU did not have accurate CO₂ emissions data on their power plants and factories. The allocation of allowances was made based on forecasts and estimates instead of actual data in many cases. These estimates in turn were often based on information supplied by the industries themselves, which had an incentive to inflate emissions projections.

INDUSTRIAL LENGTH COMES TO MARKET

Therefore, the power companies were all bidding up and chasing a small number of allowances from the few industrial emitters that were confident enough to sell their excess. Later, once the industrial emitters were confident in their verified emissions data, they gradually sold off their EUAs, causing the supply to balloon and prices to collapse down to .01 Euro per ton.

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An important factor in this story is the fact that phase 1 allowances in the EU-ETS were, in general, not valid for use in phase 2 for compliance purposes. Effectively, after the close of the compliance true-up for 2006 at the end of phase 1, these EUAs were worthless.

This trading firewall that prevented allowances from phase 1 to be transferred into phase 2 led to some volatile price dynamics in phase 1. However, it also prevented any problems, such as an extreme case of over-allocation, from infecting phase 2 of the scheme. If companies were able to bank allowances from phase 1 to phase 2, then the EU-ETS could have been a total failure. Instead, because banking between phase 1 and phase 2 was generally not allowed, phase 1 truly functioned as a pilot phase where the most important outcome was the discovery by EU-ETS regulators of the actual emissions of installations.

PHASE 3 (2013-2020)

The reform of the ETS framework for phase 3 (2013-2020) changed the system considerably compared to phases 1 and 2.

The main changes included:

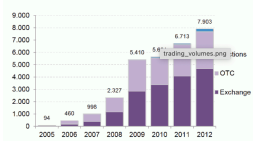
- ✓ a single, EU-wide cap on emissions in place of the previous system of national caps;
- ✓ auctioning as the default method for allocating allowances (instead of free allocation);
- ✓ harmonised allocation rules applying to the allowances still given away for free;
- ✓ more sectors and gases included;
- ✓ 300 million allowances set aside in the New Entrants Reserve to fund the deployment of innovative, renewable energy technologies and carbon capture and storage through the NER 300 programme.

EVOLUTION OF THE EUROPEAN CARBON MARKET

The market in emission allowances developed strongly from the start.

In phase 1, trading volumes rose from 321 million allowances in 2005 to 1.1 billion in 2006 and 2.1 billion in 2007, according to the World Bank's annual Carbon Market Reports.

The EU ETS remained the main driver of the international carbon market during phase 2. In 2010, for example, EU allowances accounted for 84% of the value of the total global carbon market. Trading volumes jumped from 3.1 billion in 2008 to 6.3 billion in 2009. In 2012, 7.9 billion allowances were traded (worth €56 billion).



Daily trading volumes exceeded 70 million in mid-2011, data compiled by Bloomberg New Energy Finance and London Energy Brokers Association show.

Trading volumes in EU emission allowances (in millions). Source: Bloomberg New Energy Finance. Figures taken from Bloomberg, ICE, Bluenext, EEX, GreenX, Climex, CCX, Greenmarket, Nordpool. Other sources include UNFCCC and Bloomberg New Energy Finance estimations.

INTRODUCING CERS AND ERUS

The European Commission's cuts to Member States' National Allocation Plans produced the desired effect: in terms of European emissions and allocated allowances, the phase 2 market was short. However, as you recall from the previous lesson, phase 2 also allowed emitters the ability to import offset credits generated by the Kyoto Protocol's flexible mechanisms, the Clean Development Mechanism and Joint Implementation, to cover their allowance shortfall.

The use of offset credits is limited, however, because each member state assigned its installations a "credit limit", as a percentage of its total allocation, that defines how many CERs and ERUs can be used by the installation to cover its compliance needs.

If you combine the credit limits of all the member states, the EU ETS phase 2 has an overall import limit of 1.4 billion metric tons of CERs and ERUs.

Unlike phase 1 of the EU ETS, it is understood that it will be possible to bank allowances and credits after phase 2 into phase 3, from 2012 to 2020. This "ability to bank" means that investors have the opportunity to buy up allowances now and hold on to them like an investment in hope that they will increase in price later. As we discussed, banking was not possible between the phase 1 pilot and phase 2 by design, which meant that towards the end of 2007, no matter what, any unused phase 1 EUAs would have a price of zero. However, the ability to bank from phase 2 to phase 3 has price implications for the market, which we will discuss later in this course.

2030 CLIMATE TARGET PLAN

Based on a comprehensive impact assessment, the Commission has proposed to increase the EU's ambition on reducing greenhouse gases and set this more ambitious path for the next 10 years. The assessment shows how all sectors of the economy and society can contribute, and sets out the policy actions required to achieve this goal.

Objectives

- ✓ Set a more ambitious and cost-effective path to achieving climate neutrality by 2050
- ✓ Stimulate the creation of green jobs and continue the EU's track record of cutting greenhouse gas emissions whilst growing its economy
- ✓ Encourage international partners to increase their ambition to limit the rise in global temperature to 1.5°C and avoid the most severe consequences of climate change

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