REPORT

EU Emissions Trading Scheme: contentious issues

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Introduction

The European Emissions Trading Scheme (EU ETS) is a central pillar of European efforts to combat climate change. The basic idea is to reach a given reduction target at lowest cost by allowing firms to trade the right to emit carbon dioxide (CO_2) emissions under a given emission cap. By making the cost of emitting CO_2 equal and tradable across the EU, reductions will take place where the cost is the lowest and a level playing field is created.

Each Member State is responsible for setting up a National Allocation Plan (NAP), detailing how many allowances will be given to each installation covered by the ETS. The total cap on emissions is given by the sum of Member State allocations. The Member States have some flexibility in the allocation methodology but the NAPs must conform to the criteria set by the EU Directive on the EU ETS[1].

In total the EU ETS covers some 12 000 installations in energy intensive industries and approximately 45 % of EU CO_2 emissions. On January 1 2005 a three year trial period was launched, ending December 31 2007. The second trading period, 2008-2012, coincides with the commitment period under the Kyoto Protocol.
This policy brief gives an overview of the most contentious issues in the EU ETS. Each section contains a short introduction to the issue at hand, followed by comments and suggestions by the author. The brief was prepared for the Energy Policy Advisory Group of the European Commission, March 2007.

Have too many allowances been allocated?

The environmental effectiveness of the scheme is governed by the total allocated volume of allowances, which is given by the sum of all of the Member States' allocations. Assessments of the phase I NAPs showed that installations covered by the scheme were given more allowances than what their emissions had been historically. They were also given more allowances than they should have if each sector of the economy were to carry an equal burden in relation to the EU Kyoto target[2]. The trading system has been criticised for not resulting in any real abatement measures over and above what would have taken place without the scheme. Consequently, there are calls for more restrictive allocations in phase II of the scheme.

Author's comments
The current low price levels on emission allowances support the view that the allocation in phase I was generous. The economic incentives to implement measures to reduce emissions are low, and it seems unlikely that the EU ETS has led to any significant reductions in CO_2 emissions compared to a business as usual scenario[3]. Early assessments of NAPs in phase II suggest a continued generous

[1] See Annex III of Directive 2003/87/EC of the European Parliament and the Council of 13 October 2003 establishing a
Scheme for Greenhouse Gas Emission Allowance Trading within the Community and amending the Council Directive 96/61/EC
[2] IVL (2005)
[3] It is, however, difficult to determine to what extent abatement measures have been implemented. Please see Ellerman & Buchner (2006) for a comprehensive discussion.

allocation[4]. This would require larger reductions in sectors not covered by the scheme and a greater use of the CDM and JI in order for the EU to reach its Kyoto target. It could also force member states to buy Kyoto emission credits (AAUs) from countries outside of the trading scheme (for instance Russia or Ukraine), which would be controversial. Furthermore, a situation with very low allowances prices could jeopardise the credibility of the trading scheme. Consequently, a more stringent allocation in phase II is critical for the success of the EU ETS. Given this, it is very encouraging that the EU Commission has taken serious action to limit the allocation in several Member States by requiring significant cutbacks in their allocation plans.

An unfortunate effect of the construction with allocation delegated to the member states level is that it encourages generous allocation at the Member State level, creating a "race to the bottom", since it is problematic for politicians to enforce stricter allocation to the own industry compared to other Member States. A solution to this would be to do the allocation at a European level, or at least decide on the total volumes to be allocated at the European level centrally. This would have implications for the construction of any new burden sharing agreement between member states.

Choice of allocation methodology

In theory, the choice of allocation methodology is a matter of distribution of costs and should not alter the marginal cost of production for firms. In practice, however, allocation does tend to affect how firms behave and the sections below discuss some of the challenges associated with allocation.

The fundamental question is whether firms should receive allowances for free or if they should have to pay for them, for example in an auction. The dominating allocation methodology in the EU ETS is free allocation based historical emissions, usually referred to as *grandfathering*. The benefits of grandfathering are that it compensates firms for sunk costs and reduces industry resistance to the trading scheme, put it has proven difficult to implement without distorting incentives in the market. Grandfathering constitutes a significant transfer of assets from governments to firms.[5]

The principal argument for auctioning is that it is more straight forward to implement in a way that provides equal incentives to all firms participating in the trading system. In general, industry has fiercely opposed auctioning for competitiveness reasons, while the economic literature indicates that auctioning is a preferred solution compared to grandfathering.

A related issue is whether the allocation itself, or only the market price of CO_2, should provide incentives to firms to act in a certain way. The former is the case when firms are able to affect their allocation, for instance if the allocation in one year is based on the performance of the installation during the year before. This is normally referred to as *updating*. The economics literature shows a range of problems associated with updating, and the EU Commission has strongly advised against it.

Several member states also use *benchmarking* in different forms. In a benchmarking system, the allocation is calculated for instance by multiplying the production of an installation with an average emission factor for the sector to which the installation belongs.

[4] Rogge et al (2007)
[5] In fact, the value of those assets is much greater than the costs that the firms face for compliance, see fig 1 in Åhman et al 2007.

Author's comments
The current allocation methodologies are complex, distort competition, give perverse incentives for firms and fall short in guiding investments to low carbon technology. Most of these problems would be resolved if auctioning were used instead of free allocation. From an economic efficiency point of view a transition to auctioning is therefore of the highest priority.

However, auctioning is opposed by in particular those industry sectors that face competition from firms outside of the EU ETS. Introducing auctioning only for the energy sector could therefore be an option during a transition period. This would also address some of the concern around windfalls profits for electricity producers (see below for a separate discussion). A prerequisite for this is that a fairly clear-cut distinction between electricity producers and the rest of the installations can be made.

Should free allocation be used, an updated benchmarking system could be considered. However, the benefits of providing incentives for CO_2 efficiency through the allocation must be weighed against the potential loss of economic efficiency that is associated with updating.

Competitiveness

In simplified terms, the EU ETS affects at least three distinct aspects of competitiveness:

1. The competitiveness of Member States.
2. The competitiveness of new vis-à-vis existing installations in the EU ETS.
3. The competitiveness of European companies active on a global market.

Author's comments:
The first aspect, the competitiveness of Member States, is affected by differences in regulation between Member States. If the objective is only to create a level playing field within the EU, harmonisation of the rules across Member States in such a way that the incentives provided to the operators by the allocation are equal is more important than the actual details of the regulation.

The second aspect, competitiveness of new vs. existing installations, should be analysed in the light of the close link between treatment of new entrants and rules on closures. Please see separate discussion below.

The third aspect, competitiveness of European firms active on a global market, is mainly driven by the differences in climate policy between EU and the rest of the world. In the context of emissions trading, the most important factor is the difference in the price of carbon between the EU and the rest of the world. The first priority in order for the EU to be able to pursue a progressive climate policy without risking the competitiveness of industry would be to continue the efforts to achieve a broader, preferably a global, climate regime.

New entrants/closures

The treatment of new entrants and closures has proven to be one of the most contentious issues in the EU ETS. All member states have set aside a reserve of free allowances to allocate to new entrants. The sizes of the reserves differ, as do the exact allocation methodologies. However, most member states allocate allowance based on benchmarks (e.g. CO_2/MWh) multiplied by projected

production (e.g. MWh). The debate has been focussed on whether new entrants should receive allowances at all, what benchmarks and calculation rules to use, and how to define a new entrant.

For installations that close, the policy that dominates is to withdraw the allocation. In some member states the allocation can be transferred to a new installation or to a capacity increase in an existing one.

Author's comments
The current rules on new entrants and closures create significant distortions between member states, between new and existing installations and between technologies. First, the methodologies differ greatly between member states, thus not providing a level playing field across the internal market. Second, the policy to withdraw allocation from installations that close constitutes an implicit subsidy to keeping existing installations in operation, thus putting new entrants at a disadvantage[6]. Third, in many cases the allocation methodologies to new entrants do not encourage low carbon technologies.

Again, most problems would be solved if free allocation to all participants were phased out. If free allocation were to be used, as a first step, the rules on new entrants and closures should be harmonised across the EU. Preferably, installations that close should retain their allocation, at least for a time long enough to reduce the incentive to keep an inefficient installation in order to receive the allocation[7]. This would reduce the implicit subsidy to existing installations and thus allow a more stringent allocation to new entrants, or even no free allocation at all.

The energy sector is worth a special note. Most member states allocate more allowances to high emitters than low emitters that enter the system, and there are great differences in the allocation between member states[8]. For instance, a coal fired power plant may receive more allowances than a natural gas fired plant. This should be changed so that the allocation is fuel neutral. Otherwise, there is the danger that instead of a diversity of energy sources, only new coal-fired power plants are built, as a result of the current gas prices and gas supply situation. The argument that the allocation should motivate energy source diversity by differentiated allocation is based on the assumption that firms will not take into account the gas supply situation on their own sufficiently, which is a questionable assumption.

Possibly, free allocation to new installations could also include biofuels.

Price of allowances

The price of emission allowances has varied considerably since the launch of the scheme on January 1 2005. Initial price levels were around 10 €, rising to more than 30 € in the winter of 2006. When data on 2005 emissions were released in April of 2006, prices fell by more than 50 % over just a few days. During the autumn of 2006 and early 2007 there has been an accelerating decline in prices, and the current price is below 1 €/ton CO_2. In contrast, forward prices of phase II allowances are currently approximately 12 €. Important price drivers are total volume of allowances on the market,

[6] Åhman et al (2007)
[7] For instance, if the allocation is kept for ten years, a large part of the problem with closure rules is avoided. Please see Åhman et al 2007 for a more comprehensive analysis of this.
[8] See for example Neuhoff et al (2007) or Åhman & Homgren (2007)

weather variables and fuel prices (in particular the difference in price between coal and natural gas, with low relative prices on coal leading to a higher allowances price.)

Author's comments

Although price formation is notoriously difficult to analyse[9], let alone predict, at least three conclusions can be drawn from the short history of the EU ETS.

1. There is little, if any, scarcity of allowances in phase I.
2. Lack of transparency together with unsatisfactory handling of emissions data can seriously affect prices on the market, creating episodes like the price crash in April of 2006.
3. The lack of banking provisions, i.e. possibility to save allowances between trading periods, creates a situation where prices can go towards zero at the end of the trading period in the event of a surplus of allowances. Most probably this is what we are witnessing at the moment.

Lessons learned from this should be to increase scarcity by allocating fewer allowances, improve transparency in emissions reporting and increase the flexibility on the market by allowing banking of allowances between trading periods. There are interesting proposals to guarantee a minimum price of allowances, through the use of full or limited auctioning with minimum prices, in order to create an increased price certainty for investments.

EU ETS and the electricity market

The effect on electricity prices is one of the most important aspects of the EU ETS. Research indicates that 60-100% of the CO_2 price is passed through to electricity consumers[10]. Three aspects dominate the discussion on the interaction between the EU ETS and the electricity market:

1. Negative effects on energy intensive sectors like steel, pulp and paper and aluminium, which are active on a global market and thus have limited possibilities to pass on costs to their customers.
2. Windfall profits to electricity generators. Since electricity prices are determined by marginal production based on fossil fuel, electricity generators can charge a higher price for all of the generated electricity, including that from nuclear, biomass and hydro.
3. Volatility. The allowance market has shown significant volatility, which migrates into the electricity market. By some actors this volatility is perceived as 'artificial' in the sense that it to some extent is created by political uncertainty rather than market fundamentals.

Author's comments

To many industries the indirect effects of increased electricity price are more important than the direct costs of allowances. This is true in particular for the sectors that are subject to international competition, making this highly relevant in the discussion on competitiveness of European industry. Having said this, one of the central pillars of the trading scheme is to include the cost of CO_2 into energy prices, so a complete protection of energy intensive industries from this would in a sense work against the original objectives of the scheme.

A similar discussion can be held with regard to windfall profits. On the one hand, one of the objectives of the EU ETS is to make low carbon technologies more profitable. On the other hand,

[9] For a good overview of the price dynamics of CO2 allowancesand, see ECN 2005

[10] Please see Renauld (2007), ECN 2005 and Sijm & Neuhoff (2006) for a discussion of cost pass through and windfall profits.

it may be perceived as unfair that energy companies both receive free allocation, *and* are able to make large profits on the generation not covered by the scheme.

Certainty

There is an inherent trade-off between flexibility and certainty in the trading scheme. On the one hand, there are benefits of retaining options to adjust the trading system to changing priorities and developments in the international climate policy regime. On the other hand, there is a need to provide certainty to market actors. The five year trading periods are much shorter than the investment cycles in most industries included in the scheme, and there have been calls to increase the length of the trading periods. As mentioned above, the regulatory uncertainty may also increase volatility in market prices, which many perceive as troubling.

Author's comments
Increased certainty is a high priority in order to stimulate long term investments. This is particularly relevant in the energy sector. The situation with high regulatory uncertainty is exacerbated by the rules for new entrants and closures, which do not stimulate investments in low carbon technology.

Increasing the length of the trading periods would reduce regulatory uncertainty which may have positive impacts on investments. Less frequent revisions of the allocation would also reduce some of the distortions that updating of the allocation creates. If the major flaws of the allocation methodologies are adjusted, longer trading periods seem attractive even given the uncertainty of external developments.

Finally, a political commitment to prices above a certain level would create incentives to make long term investments which today are considered too uncertain. A guaranteed minimum price could be a solution in this direction.

EU ETS and the transport sector

The principal argument for including transports in the trading system is that emissions from the sector are rising rapidly and need to be curbed. The EU Commission has proposed that EU–internal aviation should be included in the EU ETS from 2011, and that all flights that take off or land in the EU be included the subsequent year. So far no formal proposal has been put forward to include maritime transports or road transports.

Author's comments
Including the aviation sector in the EU ETS makes certain sense since there are few other policy instruments aimed at reducing greenhouse gas emissions in that sector. The same argument can be made for maritime transports. The drawback of including these sectors is that it increases the complexity of the scheme, in particular since they are not covered by the Kyoto protocol.

The road transport sector is very different. First, emissions from road transports are much higher than those from aviation, making the impacts from integration greater. Second, the fuel taxes in the road transport sector are far higher than the current price of CO_2 in the EU ETS. Should those taxes be removed and transports instead included in the trading scheme, the road transport sector would act as a buyer of allowances. This would result in significantly higher allowance- and

electricity prices for industry, and a radically lower pressure on the transport sector to reduce emissions. It seems unlikely that the benefits of inclusion of road transports justify the drawbacks.

Conclusions

Five aspects stand out as the most important in the future development of the EU ETS.

1. Allocate fewer allowances.
2. Introduce auctioning as the dominating allocation methodology.
3. Harmonise rules on new entrants and closures (if full auctioning is not introduced).
4. Introduce longer trading periods for increased certainty.
5. Increase flexibility by allowing banking of allowances between trading periods.

The trade off between efficiency and perceived fairness is common in the EU ETS. A simple trading system with few distorting elements would be more economically efficient, but more challenging to implement politically. It will also allow less room for pursuing other objectives than CO_2 reductions at lowest cost, for instance stimulating certain technologies or fuels. However, it appears wise to avoid using the allocation of CO_2 to pursue other energy policy objectives than CO_2 reductions at least cost[11]. Finally, the more complex we make the EU ETS, and the more special fixes are introduced, the harder it will be to link it to other emerging trading systems, which by many is regarded as a potential future strategy for a global climate policy regime.

Useful websites

EU COM:s website on the EU ETS: http://ec.europa.eu/environment/climat/emission.htm Click on EU ETS review, contains a suite of reports on how to develop the trading scheme.

UK Defra website of the EU ETS. Good overview of emissions trading in general and of the EU ETS. www.defra.gov.uk/environment/climatechange/trading/

Climate strategies website. Many useful articles and reports on the EU ETS: www.climate-strategies.org/

The Swedish authories website on the EU ETS: www.utslappshandel.se

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[11] See also Renauld (2007).

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* Draft versions of these papers can be found on the Climate Strategies website www.climate-strategies.org

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Basic facts

- Phase I, January 1 2005- December 31 2007.
- Phase II 2008-12
- CO_2 only
- Energy intensive industries (steel, cement and lime, pulp- and paper, refineries, ceramics, energy)
- Covers approx. 12 000 installations, 45 % of EU CO_2 emissions
- Allocation at Member State level, criteria at EU level.
- Price of EAU (February 27, 2007) approx 1 €/ton CO2, as compared to more than 30 €/ton winter 2006.
- Total volume of allowances on the market, approx 2.2 billion.