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Emissions Trading.

The EU Emissions Trading Scheme (ETS), adopted in 2003, is without doubt the most visible policy development to date within the overall range of EU climate policies. By some it is also claimed to be the most successful.

As any new important policy development the ETS has also been controversial. Already during the internal “interservice consultation” between the different Commission services in mid 2001 it triggered passionate discussions, particularly between the DGs responsible for environment (which was at the origin of the proposal) and the DG responsible for industry. It should not be forgotten that it was explicitly stressed by DG Environment, that the first period 2005-07 was meant to function as a learning period, both as far as the mechanics of the system (setting up an electronic exchange for emission allowances) and the more fundamental concept were concerned. Particularly concerning the second part a learning period has been very necessary, in fact one might argue that, as the scheme has now entered its second period 2008-12 (corresponding to the Kyoto Protocol commitment period) there are still important lessons to be learned.

Before turning to the analysis of the present situation and of the Commission’s proposal for a post 2012 regime it may be useful to recapitulate a few essentials of the existing scheme. The ETS is the biggest ever example of the use of a market based instrument addressing an environmental problem. It could well be seen as an alternative to the failed CO₂/Energy tax proposed by the Commission in the early 1990s as a means to provide for the stabilization of CO₂ emissions by 2000, a proposal that never made it through the Council because of resistance (primarily from UK) to cede national competence on any taxation issue. The requirement for unanimity in Council on taxation issues still existing continues to make regulation of CO₂ emissions via taxation unattractive.

Both the CO₂/energy tax and the ETS draw their justification from the fact that it is very difficult to control CO₂ emissions from the vast number of sources (virtually any installation burning coal, oil or gas) through conventional “command and control” legislation in a reasonably cost-effective way. The ETS is meant to make up for this.

The EU ETS is often described as derived from the emissions trading provision in the Kyoto Protocol. This is a mistake. The provision in the Kyoto Protocol (Art. 17) allows Parties to the protocol to trade part of their commitments against each other, something perfectly possible without national ETS. The EU ETS on the other hand, although linked to the commitments under the burden sharing agreement of KP commitments, can perfectly well operate without the KP provision as demonstrated in the Commission’s recent proposal for a post 2012 scheme.

The ambition of the EU ETS goes beyond what would be required to ensure a cost-effective CO₂ emission reduction policy. That could be achieved simply by allowing those from whom emission reductions are required to trade their obligations between each other. However, the Commission (DG Environment) has gone for a genuine financial instrument through letting the trading being based on freely tradable allowances, thus creating an open CO₂ market like any commodity market, including trading in futures and possibilities for unrestricted speculative trading. As a consequence CO₂ emission are now listed daily in the Financial Times along prices on crude oil, natural gas, diesel etc. and trading volumes largely exceed the quantities of emissions physically being transferred among the enterprises covered by the ETS.

In a system where emission allowances are freely tradable the process of allocation of these allowances to enterprises obviously becomes important. Two questions have been at the forefront:

Who decides the quantities of allowances to be issued (Commission, National Governments?) and through which method (Auctioning, Free allocations based on historical emissions (grandfathering) or benchmarking?).

The 2005-07 period has demonstrated more than clearly that letting national governments decide on the allocation of allowances to individual companies when they are basically allocated for free is a recipe for over-allocation. This should not have come as a surprise but nevertheless did. In fact a report from the German Umweltbundesamt in the fall of 2005 clearly identified the over-allocation, but CO₂ prices continued in a totally unrealistic 20-30€ pr. ton range until the Commission's reporting in May 2006 on actual 2005 emissions unveiled the disaster. Even then it took some time for the market to fully grasp the realities, but for the second half of 2006 and all of 2007 CO₂ emission allowances have been virtually without value.

This was perfectly foreseeable. However, it was only "admitted" too late to allow a modification of the directive before governments moved into their allocation exercise for the 2008-12 period, where however, the Commission has tried to exercise more discipline toward those Member States that persisted in proposing generous allocation of allowances to enterprises with much lower emissions in the past. A number of (new) Member States have gone to the Court to have the Commission's decisions overturned, a step which, if supported by the Court, could have significant negative impact on the remaining part of the trading period. Against this backdrop one can only support the Commission's proposal for the post 2012 period, that the level of allocation of allowances be established at EU level.

The method of allocation is a more tricky issue. Originally DG Environment intended to leave it to Member States to which extent they would allocate allowances via auctioning or for free, assumed to be via "grandfathering". Realising that different approaches followed by different governments would seriously distort the competitive situation within the internal market, particularly critical for the electricity sector, which in 2001 was far from being fully opened to the liberalization already decided but not yet in place, led the Commission to propose that allocations should, until otherwise decided, be granted for free (with the possibility of auctioning a few percent of the overall). And so it was decided.

It was only after the system became operational in 2005 that it became more broadly recognised, that even though power producers had received their allowances for free, - and in sufficient quantities to avoid having to invest in CO₂ reductions, that electricity prices went up as if the price of allowances reflected a real cost.

Neither should this have come as a surprise. It is a simple consequence of the interaction of three factors.

- liberalisation of the electricity market
- lack of external competition
- impossibility of storing electricity

As long as the emission allowances have a monetary value, it doesn't pay for the power producer to generate electricity unless prices will cover production cost as well as the value of the emission allowance that could otherwise be sold. This is independent of whether the allowances have been bought or allocated for free. It is therefore true that the system has provided power producers with a "windfall profit", not because they were able to sell the allowances (after all they had to be turned in to cover emissions), but because the mere existence of a CO₂ price caused an increase in power prices.

The level of windfall profits is basically proportional to the price of emission allowances. At 20€ pr. ton electricity prices would be expected to increase by 20€ pr. MWh if coal is the marginal fuel and

by 6€ pr. MWh if (more expensive) natural gas is the marginal fuel. This of course assuming that the market works as an ideally liberalized market with unlimited exchange capacity.

The Commission's proposal for a post 2012 ETS consequently has good reason to suggest that this "windfall profit" be eliminated through auctioning of the allowances for the power sector. However, the Commission has less good reason to insist that auctioning will eliminate the "windfall profit" as such. Only some 50% of the EU electricity generation is covered by the ETS (coal, natural gas oil). The remaining half of the electricity production (nuclear, hydro, wind, biomass and a bit of solar PV) benefits equally from the increase in prices. This may explain why the European electricity sector accepted with a smile to pay post 2012 some 30-40 billion € annually for something they used to receive for free (never seen before in the history of environment policy). The relevant numbers are (approximately) the following:

During the present (2008-12) trading period allowance prices have taken off at a level slightly above 20 € pr. ton CO₂. At that level shadow CO₂ prices will correspond to between 6 (in case of natural gas being marginal fuel) and 20€ pr. MWh (in the case of coal being the marginal fuel).

Assuming an average 10€ pr. MWh "windfall profits" will amount to some 30 billion € annually (at an annual production of 3000 TWh). With high gas prices there is reason to believe that the shadow CO₂ price will move closer to 20€ pr. ton and "windfall profits" will increase as well.

In a post 2012 scheme with full auctioning only the non fossil fuel electricity production will benefit. However, CO₂ prices would be expected to be higher in order to achieve the deeper emission cuts. Assuming CO₂ prices at 30€ pr. ton, this still gives a "windfall profit" of more than 20 billion € annually, not much different from what can be expected in the present period.

Of course, with the deliberate intention to let the market set the prices, all calculations of impacts will retain a significant element of uncertainty. What however remains certain is that "windfall profits", transferring tens of billions of euros annually from electricity consumers, private or companies, to utilities companies are not likely to disappear through the introduction of auctioning. One might well argue, that this is not the "fault" of the ETS but rather a consequence of electricity market liberalization, exactly the same way that liberalization by itself is going to create huge "windfall profits" through higher prices than those reflecting increasing production cost. But still, it ought to be part of the political debate over the ETS whether the (probably rather marginal) overall cost-effectiveness benefit justifies the significant cost increase for normal consumers and energy intensive industries.

The analysis above leads to another conclusion that some might find surprising: The electricity producers will see a collective economic advantage in the strongest possible emission reduction and consequently the highest possible price for CO₂ allowances in the auctioning. This is maybe not what one would find in a first year economy textbook, but it follows very simply from the lack of external competition that allows power producers to pass on whatever additional cost to their customers (demand being relatively insensitive to prices) and cash in a similar profit on their CO₂ free production. It is not without reason that the electricity sector have been supportive of the Commission's proposal for a revision of the ETS.

Energy Intensive Industries.

Most of the political capital invested in the discussion of the Commission's proposed amendment of the ETS has turned around the question of whether the combination of a more progressive EU climate policy, combined with a request that companies will buy their emission allowances through auctioning, would damage the competitiveness of EU energy intensive industries (steel, cement, chemicals etc.) to the point that they would relocate to parts of the world with less stringent requirements - and assumed higher emissions pr. unit produced - thus causing "carbon leakage".

Apparently the Commission has decided to wait for the outcome of the ongoing climate negotiations before deciding whether the “carbon leakage” risk would require special measures such as special import duties on products coming from countries with less stringent emission requirements.

The problems surrounding the particular situation of energy intensive industries in the ETS seem to have more dimensions than what has so far been part of the public debate. First, it is worth noting that energy intensive industries operate in a completely different business environment from the power sector. They are subject to international competition in a market where prices are decided by the global market, not by production cost. Secondly, their products can be stored, contrary to electricity.

The first debatable assumption in the recent discussion is about the “carbon leakage”. Whether explicitly said or not, the discussion appears to be based on a belief that steel, cement, petrochemicals etc. produced in China (in particular) or other rapidly developing economies such as Brazil or Saudi Arabia will give rise to higher CO₂ emissions pr. unit than equivalent EU production. This is unsubstantiated as far as any future production is concerned. Power plants, oil refineries, fertilizer manufacturing or steel-production recently build in the countries that could be foreseen as relocation candidates would be likely to offer better energy efficiency than older facilities within the EU. The main attraction of the “carbon leakage” argument is its moral strength: concern for the global climate rather than for company profit; but if “carbon leakage” were the concern it might as well be given up now.

The much more important (but less noble) concern is plainly cost. Emissions Trading may well offer cost-effectiveness at the macro-economic level but certainly not for the individual enterprise if based on full auctioning. A simple example will demonstrate why. Assume a certain steel producer will have to reduce his emissions in the range of 20% during the 2013-20 ETS period in order to deliver a proportional contribution to the common reduction target and assume that the marginal reduction cost within the ETS for the period will be around 30€ pr. ton CO₂. Under traditional “command and control” legislation the cost of the reduction measures would be for every 100 tons of CO₂ emitted today an average cost pr. ton of somewhere between 0 and 30€, say 15 for the example, or around 300€ for the 20 tons reduced.

Within the ETS the producer may benefit from doing more if his reduction cost is less than that of others (selling allowances at a higher price than his actual cost) or buying part of his necessary allowances (if his reduction cost turns out to be higher than that of others). The potential benefit of such operations, however, are much smaller than the 2400€ he will have to pay, in the case of full auctioning, for allowances necessary to emit the 80 tons (80% of present emissions), an amount that is not called into question within the overall framework.

To some it may have come as a surprise that European industry is unhappy with a market based system that arguably has been launched under the headline of cost-effectiveness. The example above demonstrates that this is not at all surprising. And it is important to stress, that the potential loss of competitiveness has less to do with whether other parts of the world will be subject to comparable emission reductions than to do with whether their governments will want to let their respective industries getting away with just paying the cost of the reductions or will insist on a policy that may well impose 5-10 times higher cost on the respective industries. In this perspective proposals to protect EU industries against imports through special duties on energy intensive products appear almost pathetic. It is easy to imagine a lawyer arguing in front of a WTO panel that deliberately shooting yourself in the foot is not a justification for import duties on feet. And it is easy to imagine that he would win the case.

It is difficult not to see the present discussion on energy intensive industries in the ETS as part of a traditional pattern in environmental policy. All too often different industries have argued against

justified environmental policies on the basis of hugely exaggerated cost estimates, such as in the case of sulphur emissions from power plants and conventional car emissions. But the fact that industry used to be wrong when arguing against environmental measures doesn't mean that they always are. A proper impact assessment should have clarified this beforehand.

The suggestion by the industry to allocate for free sufficient allowances to cover the level of emissions corresponding to "best available technology" (benchmarking) makes sense. It would allow to maintain the cost-effectiveness aspect of the ETS and it could be gradually tightened as more efficient technology is being developed. It would also be consistent with the "polluter pays principle" which, contrary to a widely shared perception, calls for the cost of emission reductions, not emissions per se, to be covered by those from whom they are requested.

It is evident, that the strong arguments in favour of full auctioning of allowances in the electricity sector and the equally strong arguments against full auctioning in the energy intensive industries spoil part of the beauty of the system, maybe even the dream of a global carbon price, seen by many economists as the overarching response to the climate change challenge. The full discussion of whether a "one size fits all" ETS is left for the overall assessment of the scheme.

Aviation.

The inclusion of aviation in the ETS is not likely to have any major impact on CO₂ emissions from the sector. Admittedly, this was never seen as the preferred option for reduction of aviation emissions, but the barriers within the ICAO agreement against jet fuel taxation and the resistance against other measures has left the EU with few possibilities.

When Sir Roy Eddington, then CEO of British Airways, went public with his suggestion to include aviation in the ETS it was against a justified expectation of a CO₂ allowance price of around 20€ pr. ton and free allocation of at least 90% of the allowances required. This translates into a cost of 0.25€ pr seat for a 1000 km flight, certainly a price worth paying for avoiding more radical steps in the foreseeable (10 years) future. At 30€ pr. ton CO₂ and full auctioning the cost goes up to around 3.50€ pr. seat pr. 1000 km, still not an amount that is likely to affect the demand for air transport significantly (at 1000 \$ (650€) pr. ton for jet fuel, fuel cost is in the range of 25€ pr. seat pr. 1000 km, more than doubled over the last three years without serious impact on growth in air traffic). In a system with full auctioning it is possible to limit the number of allowances auctioned to the level deemed consistent with emission reduction needs, but the effect of this will rather be increased pressure (higher prices) for additional reduction in non-aviation sectors, a consequence likely to be welcomed by the electricity sector and opposed by energy intensive industries. One may wonder about the political "sustainability" of such a situation in spite of the fact that it is perfectly defensible from a narrow economic point of view: if the sensitivity to CO₂ prices is less in aviation than in electricity generation or in heavy industry it reflects either a consumer preference or cheaper technological reduction possibilities in these sectors.

There seems to be scope for fuel efficiency improvements in air transport. An expectation of continued high oil prices (the "market" appears to doubt the International Energy Agency in its expectation of a long term oil price in the range of 60\$ pr. barrel) is likely to ensure that more attention will be given to this in future aircraft development. But it doesn't seem that the CO₂ prices to be expected for the next 10-15 years will be a particularly strong driver in aircraft technology, nor a significant brake on future air transport demand. Alternative policies should not be discarded.

Overall Assessment.

The ETS has been widely praised from many and different corners as the most innovative example of environment legislation in recent times, not the least from the Commission. To which extent is this justified and are the modifications recently proposed by the Commission likely to turn the scheme into the successful instrument delivering significant CO₂ emission reductions in a cost-effective way?

It is important to insist that cost-effective reductions is the only valid success criteria. Neither the multi-billion euro business generated during the 2005-07 trading period, nor the present (March 2008) CO₂ trading price of 20-25€ pr. ton measure the success of the scheme. At best, the 2005-07 has been a conditional failure. A failure because it didn't deliver any reductions (apart from some limitation on unrestricted coal use during the first half of the period, a result that could easily have been achieved for the whole period through conventional policies), conditional because the 2005-07 period was deliberately seen as a learning period.

More seriously then, is there reason to expect that the present 2008-12 period is likely to deliver the reductions, hopefully cost-effective, necessary to allow the EU to meet its present Kyoto commitments and to put it on track towards the future targets? The answer to this question is highly uncertain.

A basic idea in the ETS is that those enterprises that have available relatively cheap reduction potential will benefit from this in investing in reductions beyond what is required by the number of allowances received. However, whether such an investment is profitable or not depends on the future CO₂ price and this is most uncertain for the time being. Furthermore, any investment considered today would only deliver real reductions after the time (easily 3 years or more) necessary for the decision making process internally in the company, regulatory procedures and construction, implying that any return in the present trading period is very limited (and the post-2012 situation is so far unknown, both as far as the international and the EU regime are concerned). In view of the importance of medium to long term predictability it is particularly worrying that the Commission has decided to postpone the proposal of the conditions under which allowance allocations to energy intensive industries will take place. Council and Parliament should fill this vacuum, as suggested above, on the basis of free allocation of allowances according to strict benchmarking.

The other major risk to the functioning of the present trading period is the uncertain role CDM credits may play. The proposal to allow CDM projects initiated during the present period to deliver reduction allowances to the post 2012 trading period might well lead to a rush towards cheaper CDM generated allowances towards the end of the 2008-12 period, a generous gesture towards developing countries, but not necessarily of benefit to the global climate. It is already obvious, that many CDM projects have failed to deliver the additional reductions in developing countries that has been the justification for the scheme, but rather served as external financing of projects that would anyhow have taken place (not to mention the outright scandalous HFC projects where reducing emissions is so cheap that any party to the climate convention would in any case be obliged to do it). A number of Chinese investors in renewable energy unanimously insisted that their wind farms or biomass fuelled power plants would have been built if necessary without CDM support, but that the widespread use of CDM projects in China was a very welcome source of financing.

Let it be clear. The problem is not the support of renewable energy in developing countries, but rather the fact that the CDM mechanism doesn't deliver the extra reductions in developing countries necessary to justify the reduction in the commitment of the country co-financing the project.

There is an easy way out of this. Industrialised countries must stick to the principle of supporting developing countries in pursuing climate friendly policies, financially as well as technologically. In the case of the EU, assuming that maximum 10 percentage point of the overall reduction commitment envisaged for 2020 (30 % relative to 1990 emissions in case of an appropriate

international agreement) would be delivered via CDM projects, the total CDM transfer would amount to around 400 million tons of CO₂ equivalent. This corresponds to a transfer of 4 billion € annually, not a significant amount compared to the 60 billion € estimated by the Commission (for a 20% overall reduction) or the 30-50 billion € revenue estimated from the auctioning allowances under the ETS. It would provide a much more transparent (and honest) system if the industrialised countries reduction commitment and financial support for developing countries were separated. After all, the CDM mechanism is in the Kyoto Protocol based on a US proposal that the EU only hesitantly accepted in order to keep the US in the process. There is no need for the EU to defend this particular mechanism after it has been demonstrated that it is of questionable value, when there are much better ways of supporting – to the same level - developing countries in their efforts to develop in a more sustainable way.

A final element that could greatly enhance the environmental efficiency of the ETS would be to establish a floor price. Adding to the present Commission proposal a paragraph insisting that the Commission would sell no allowances at less than e.g. 30€ and that the Commission would buy back allowances if the market price went below that level would be simple and without cost for the Commission. It would be a major step towards creating the sort of predictability often mentioned as a virtue of an emission tax and it is difficult to imagine that it would not be necessary to implement reductions possible at less than 30€ pr. ton CO₂ if the medium to long term reduction targets are to be achieved.

It is still far from clear that the “one size fits all” philosophy is the best way to proceed on ETS. However in any case the following three amendments to the present proposal would greatly enhance its possibilities to deliver according to the original intentions:

- decide now on a benchmarking based free allocation of allowances to energy intensive industries
- detach support to developing countries from internal EU commitment reductions
- establish a floor price for allowances

Time is of the essence. The present Kyoto commitments are not going to deliver much difference in global emissions compared to what would have been the situation without the Protocol (and less than what would have resulted from proper implementation of the commitments in the Climate Convention if anybody had bothered to pay attention). The fourth IPCC assessment report and other studies have highlighted that we cannot go on losing time as we have done over the last 20 years if serious negative impact on the global climate is to be avoided. Present EU policy must be reinforced to meet that challenge.