EUROPEAN PARLIAMENT

Policy Department
Economic and Scientific Policy

# WORKSHOP

# "Future of the EU ETS"

15 May 2008

## Consolidated texts

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Experts submitting a briefing/presentation to the Workshop

Jos Delbeke, Deputy Director-General of DG Environment
Daniel Radov, NERA
Michel Cruciani, Université de Paris – Dauphine
Felix Matthes, Öko-institut
Matthias Duwe, Climate Action Network Europe
Michael Grubb, Carbon Trust and U. Cambridge
Nick Campbell, Chair of Business Europe climate change working group
Roland Ismer, Ludwig-Maximilian-Universität
Prof. Michael McElroy, Harvard U.
Matthieu Wemaere, IDDRI
Jasper Faber, CE Delft
Henry Derwent, IETA
Christian de Perthuis, Caisse des Depots
Barbara Buchner, IEA
Kate Hampton, Climate Change Capital
Jonathan Pershing, WRI

Proceedings: Jason Anderson, Anna Mileva, *Institute for International and European Environmental Policy (IEEP), Brussels*

Administrator:
Yanne GOOSSENS
Policy Department A: Economic and Scientific Policy
DG Internal Policies
European Parliament
Rue Wiertz 60
B-1047 Brussels
Tel: +32 (0)2 283 22 85
Fax: +32(0)2 284 90 02
E-mail: Yanne.goossens@europarl.europa.eu

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# 1. Introduction

In January 2008 the European Commission (EC) presented an integrated Climate and Energy package to cut emissions for the 21st Century, including proposals for specific targets on renewable energy (20% by 2020) and greenhouse gas emissions reduction (20% by 2020). The package, amongst others, includes a proposal for a Directive amending Directive 2003/87/EC so as to improve and extend the EU Emission Trading Scheme (ETS).

The rapporteur MEP Ms Doyle on the review of the EU ETS had expressed an interest to organise a workshop on the EC proposal on ETS in order to get further on the specific issues at stake related to the Commission proposal on the reform of the ETS.

The European Parliament ENVI Committee, IEEP (Institute for European Environmental Policy) and Ecologic together with the European Parliament's Policy Department A and ENVI Committee Secretariat therefore have organised a **workshop** on **The future of the EU ETS**.

***Date:*** *Thursday 15 May 2008, 09h00 - 18h30*

***Venue:*** *European Parliament, Brussels, Hemicycle PHS*

All documentation will be available on both the IEEP website (http://www.ieep.eu/whatsnew/newsitem.php?item=153) and the European Parliament e-studies webpage (http://www.europarl.europa.eu/activities/committees/studies.do?language=EN).

## 2. Workshop - Programme

Organised by IEEP and Ecologic, together with the European Parliament's Policy Department A and the European Parliament's ENVI Committee Secretariat

**WORKSHOP**
**Future of the EU ETS**

European Parliament, Hemicycle Paul-Henri Spaak PHS, Brussels
Thursday 15 May 2008, 09:00-18:30

**PROGRAMME**

***Chair for the day: Mrs. Avril Doyle, MEP***

**Morning keynote addresses (9:00 – 9:45)**

Keynote address *(Mogens Peter Carl, Director-General of DG Environment)*

Comments by the Rapporteur *(Avril Doyle, MEP)*

Introduction to the Commission's Proposal (*Jos Delbeke, Deputy Director-General of DG Environment)*

**First thematic session: Allocation (9:45 – 11:15)**

*(moderator: Lena Ek, MEP)*

Free allocation and auctioning – trade-offs and practicalities *(Daniel Radov, NERA )*

The power sector: how is it likely to react, what are the implications for the sector and its development? *(Michel Cruciani, Université de Paris – Dauphine)*

What role for benchmarking and alternatives to auctioning? *(Felix Matthes, Öko-institut)*

NGO perspectives on the future of the ETS *(Matthias Duwe, Climate Action Network Europe)*

*Discussion of first thematic session*

**Second thematic session: Competitiveness (11:15 – 12:45)**

*(moderator: Marc Pallemaerts, Institute for European Environmental Policy)*

Carbon-intensive industries and international competition: impacts and options *(Michael Grubb, U. Cambridge).*

Industry perspectives on the future ETS *(Nick Campbell, Chair of Business Europe climate change working group)*

The implication of potential competitiveness protection measures for international trade (*Roland Ismer, Ludwig-Maximilian-Universität)*

*Discussion of second thematic session*

**Closing comments for the morning session (12:45 – 13:00)** *(Avril Doyle, MEP)*

----------*Lunch Break 13:00 – 15:00* ----------

**Afternoon keynote addresses (15:00 – 15:30)**

Perspectives on the challenge of global climate *(Prof. Michael McElroy, Harvard U.)*

Europe and the World, how will Europe's domestic policies affect outcomes at Poznan and Copenhagen? *(Derek Osborn, Chairman of the Sustainable Development Observatory, EESC)*

**Third thematic session: scope and operation (15:30 – 16:45)**

*(moderator: Ralph Czarnecki, Ecologic)*

Forestry and land uses: should sequestration be included in the EU ETS? *(Matthieu Wemaere, IDDRI)*

Inclusion of aviation, shipping…road transport? *(Jasper Faber, CE Delft)*

Will the proposed system enhance the operation and credibility of the carbon market? *(Henry Derwent, IETA)*

*Discussion of third thematic session*

**Fourth thematic session: the international dimension (16:45 – 18:15)**

*(moderator: Jason Anderson, Institute for European Environmental Policy*)

Lessons from the first trading period, and ways forward for expanding the price-signal of the EU ETS: linking and mechanisms *(Christian de Perthuis, Caisse des Depots)*

How does the design of the EU ETS affect the EU's international negotiating positions? *(Barbara Buchner, IEA)*

International carbon credits in the ETS *(Kate Hampton, Climate Change Capital)*

Are there prospects for linking to other ETS? What are the signals it gives to other countries in the developing carbon market? *(Jonathan Pershing, WRI)*

*Discussion of fourth thematic session*

**Closing Remarks (18:15 – 18:30)** *(Avril Doyle, MEP)*

## 3. Proceedings of the workshop: summary of the findings and the debate

*by Jason Anderson and Ana Mileva, IEEP/ECOLOGIC*

## Morning Keynote Addresses

**Mrs. Avril Doyle, MEP**, the Parliamentary rapporteur on the Commission's Proposal for a Directive on the Review of the EU Emissions Trading Scheme (EU ETS), opened the workshop and served as chair for the day. She directly introduced the first speaker, Mogens Peter Carl, Director General for the Environment at the European Commission.

**Mogens Peter Carl**, Director General, DG Environment noted the Barroso package was key to fighting climate change but also in moving forward the European Project. He noted three main aspects: the political, economic and social context; a personal evaluation of where it stands in the institutions; and the prospects to the end of 2008. Mr. Carl noted that the ETS was the most successful example of integrating issues across the Commission in his career. He also stressed that rising energy costs simply reinforce the approach as the higher the energy cost, the more benefit of the climate and energy package policies. He went on to outline five main issues: 1) The choice between 20 and 30 % reduction; 2) The competitiveness of energy intensive industries; 3) The consideration of deforestation and land use; 4) The links with the CDM; 5) Specific Member State issues, especially new Member States.

Avril Doyle then commented that there were good reasons to assume consensus on the ETS package architecture. There was great cooperation across political groups in the parliament and among the three institutions. She warned that the December deadline was optimistic, but still the goal.

**Jos Delbeke**, deputy director general, DG environment, (see presentation slides), introduced the Commission's proposal and focused on the key elements of difference from the old ETS. He noted some of the main new elements which include: the single EU-wide cap, the long-term goal of 2020, a linear reduction beyond 2020 planned. He emphasised that the harmonised allocation rules would ensure a level playing field across the EU. In addition, Mr Delbeke outlined the Commission's views on how the auctioning of ETS permits could be organised between the Commission and Member States as well as setting out the benefits of auctioning over free allocation. He suggested that 20 per cent of auctioning revenue should be ear marked for fighting climate change. The point was also raised that securing CDM and JI[1] was important for the future of the ETS but with the limit of 1.4bn tonnes to 2020 to protect the ETS.

Finally, he noted the costs and benefits of the package. He estimated that the direct cost of increased energy and non $CO_2$ mitigation cost to meet both targets domestically would be 0.6% of GDP in 2020, or some €90 billion, i.e. in line with the Stern Report. He noted that these are short term costs; the long term benefits are large, they have an impact assessment with more detail.

[1] The Kyoto Protocol defines, in addition to emission trading, two other flexible mechanisms: Clean Development Mechanism (CDM) and Joint Implementation (JI).

## First thematic session: allocation (moderated by Lena Ek, MEP)

**Daniel Radov**, NERA explained that allocation can be used for changing the distributional impact of emission price or changing incentives created by emissions price and then went on to outline the basic allocation design choices including: the level of allocation; auctioning vs free allocation; emission-based vs other approaches; historical vs updated. The trade-off between allocation alternatives were presented including between emission-based grandfathering, benchmarked allocation, and auctioning. Daniel Radov concluded with a number of questions on selected issues and practicalities such as: how should auction revenues be used? How do the allocations implicit in limits on the use of credits interact with other direct forms of allocation?

In the next presentation **Michel Cruciani**, Université Paris Dauphin, focused on how the Power Sector is likely to react to full auctioning and what the implications are for its development. The presentation addressed four main topics: investments; electricity price; distributional effects; and the 2020 power portfolio. In terms of investment, auctioning should spur investment in low emitting power generation. Banking and borrowing will reduce the risk of very low and very high carbon prices: between years of the same period; between subsequent commitment periods. Electricity prices: auctioning allowances to power generators will not trigger a price shock but electricity price will rise in the long run. The price is set by the plant with the highest generation cost. Distributional effects: full auctioning will induce much lower profit figures for carbon intensive power companies. The 2020 power portfolio: natural gas is likely to increase its share in power generation.

**Felix Matthes**, from Öko-institut explored the role for benchmarking and alternatives to auctioning**.** Dr Matthes stated that free allocation with benchmarking has a potential to deal with leakage – but only for a part of it (new investments and direct emissions). It is probably not the first choice for compensation in the framework of the leakage issue. EU-wide benchmarking for direct emissions is the only reliable option (transparent, relatively simple, consistent between sectors, etc.) if the main architecture of the EU ETS shall be maintained. Benchmarking is more than defining emission benchmarks. Many options exist to distort the carbon price signal with a non-appropriate design of the benchmarking scheme. Strong guidelines and principles are necessary to ensure consistency between benchmarks for different products or sectors and to maintain a non-distorted carbon price signal. However, it can be done. But it is more complex than it seems to be. It will be difficult to build consensus – in the end. Specification and assessment of a benchmarking scheme takes time – to identify the products where compensation is needed – to assess free allocation against alternative and/or complementary compensation options – eventually to set up a consistent scheme.

The final presentation in the first thematic session on allocation was **Matthias Duwe**, from Climate Action Network Europe. He outlined that the main elements of an international climate deal include the action taken in the developed world. The ETS has been shaping and driving the international negotiations – for the EU to live up to its ambition to limit climate change to 2 degrees, a 20% and even a 30% reduction is insufficient unless done within the EU itself – otherwise these are not in line with the 2 degree goal. The EU needs to support developing countries better – the CDM is not sufficient. The ETS is one of the most important elements. It has been hard to explain to the rest of the world why it hasn't been working – improvements are needed. The proposal does address some shortcomings, but falls short. The ETS needs to have a visible and strong price signal throughout the production chain. Auctioning is the best way to do this – from 2012, for all sectors. Exemptions risk missing the opportunity the ETS offers. Auctioning revenues should be used in part to support developing countries. European policy makers have the power to create the conditions to reach the 2 degree maximum goal.

***Discussion of the first session***

In discussion the following main points were made by the panel in response to questions:

- Personal allowances might be long term but the current system is a pragmatic first step
- The ETS is not a revenue-raising scheme primarily, that is a side effect of creating the proper incentive.
- The commission has not yet done full analysis of the employment and GDP impacts of a 30% target; the main variable is how auctioning revenue is recycled.
- The commission has sympathy with the idea of a single European auction, but revenue will be raised and they do not want to get involved in a taxation discussion – it isn't an EU tax measure.
- No speculation has been observed in the carbon market and none is anticipated with auctioning, though this will be studied.
- Benchmarking isn't the only way to deal with indirect effects - fixing them with benchmarking means a complete redesign.
- Regarding on-site power generation, one has to leave out all issues subject to a market price signal – it is the incentive in the ETS that spurs doing onsite power generation, so adjusting the benchmark to account for it conflicts with the desirable effect of that incentive.
- The Commission agrees there shouldn't be perverse incentives for district heating and is open to address it. The EC wants to see allocation addressing improvements to district heating efficiency.
- For additional credits to support technology, the Commission supports the use of auctioning revenue and state aid guidelines go that way. Some view using allocation to credit technologies as a lottery because you have to make a choice which to support.
- The Commission notes that the ETS foresees free allocation through 2012, so there isn't a gap even if the decision on energy intensive industries isn't made for a couple more years.
- Early auctioning may not have time to be arranged.

## Second thematic session: competitiveness (moderated by Marc Pallemaerts, IEEP)

**Michael Grubb**, Carbon Trust and University of Cambridge, focused on carbon-intensive industries and international competition: impacts and options. The potential for significant impacts is restricted to specific subsector activities that comprise a small fraction of value-added but significant emissions  Even for the most impacted sectors, *profit margins* can easily be protected by free allocation but profit-maximising response will still raise prices, resulting in trade impacts of a 'few percentage points' for the most impacted sectors.

There are tenable, mid-term solutions to *parts of* the problem investment relocation (NER[2] benchmarked on capacity, or investment subsidies) and profit impacts (free allocation), but these are far from perfect and they do *not* prevent production / carbon leakage in key sectors;

Solutions to production / carbon leakage based on levelising cost of carbon globally are untenable for Phase III. Sector-specific border adjustment options exist and at least some dimensions can be WTO-compatible. The challenge will be gaining political acceptance of their application in specific sectors. The options should be analysed as a multilateral instrument to support post-2012 agreement. Additional time and research engaging impacted industries and Parties within and outside the EU is required. The interim scale of leakage is not a "show stopper":

**Nick Campbell** spoke on behalf of BusinessEurope, giving the industry perspective. He noted business' support for the broad objectives of the ETS revision and the cost effectiveness of ET as an instrument. However, it is crucial to recognise the globalised environment and the competitiveness considerations. The business community has done much data analysis on the impacts for their sectors. Industry has been moving out of the EU, for several reasons, and the ETS should not accelerate this. Industry's shift out of the EU is a risk for secure supplies of materials. Industry supports the single EU cap and some other elements proposed. While not pleading for special cases, each business has unique circumstances, which need to be taken into account. Business has not only to cut emissions but to absorb any growth as well – a 40% emission cut compared to the baseline. Business wants predictability and early decisions, as well as a comprehensive global deal with equivalent burdens, as well as protection of competitive positions. Those at risk should get 100% free allocations in a transitional phase. Robust criteria should be set to know if burdens are equivalent.

**Roland Ismer**, University of Munich, noted that the ETS can be accompanied by 'classical' environmental regulation such as standards – which can be used to address leakage. He noted that free allocation faces efficiency problems and risk of overcompensation, while mandatory standards could fragment markets and create an innovation disincentive. There could also be high implementation costs. From an economic point of view border adjustments look attractive – the problem is compatibility with international law. The GATT prevents discrimination, though is room for manoeuvre. He concluded that we can do better than free allocation through border adjustments and standards, which can in fact further cross border cooperation.

***Discussion of the second session***

Main points made were:

- We have to aim at a global consensus as the root of the problem. Should involve the WTO, IMF, World Bank.
- The more countries involved in an international agreement, the more difficult the deal, while industry wants certainty sooner, so there is a tradeoff.
- Carbon is concentrated in certain activities, and is a lower cost down the chain, so secondary spillover is small. Similarly, importing won't affect European industry too much on a macro scale, and employment less so.

[2] The New Entrant Reserve (NER) is a set aside of $CO_2$ allowances, reserved for new installations and extensions to existing permitted installations.

- In defining which sectors, there are three with most risk – steel, cement, aluminium; lesser three in second level, then declines quickly after that.
- As for the comment perhaps we should move more slowly, this has been an issue since at least 1990 – 18 years isn't quick, no case to delay further.
- Border Tax Adjustments (BTA) as a way of protecting Europe and ETS won't work – it has to work in cooperation, maybe not global but with some others.
- BTA should be within an international framework, similar to how world customs law is handled, as a fallback option for a comprehensive post-Kyoto deal.
- BTA is like a VAT: when you cross borders you get a VAT refund in one and pay VAT in the other; but without a carbon tax, you don't get a refund, just pay the 'tax' in the new country. But without an ETS you could still play a part in the discussion.
- Proof to the WTO has to be clear, which is the point of the Commission's data gathering exercise underway. It's hard to do, and needs to be done without rushing.
- Regarding the slow turnover of power sector investment necessitating more time for the transition than foreseen, with IPPC there was a 10 year transition period and not until the last minute did Member States wake up and start to panic. So having a long term period doesn't seem to help.
- BusinessEurope notes that for SMEs, the administrative burden of reporting and getting involved in auctioning are concerns, while chemical and pulp and paper industry are concerned on Combined Heat and Power (CHP) processes. BTA won't protect downstream operations, it makes the EU process more costly. The biggest concern – retaliatory reaction, hence they are opposed to BTA. Under carbon pressure there won't be a massive industry exodus, it's a gradual process with reduced incentives to upgrade technology.

## Afternoon keynote addresses

Prof. **Michael McElroy**, Harvard University, presented on the different perspectives on the challenge of global climate change. He noted that significant warming is expected globally, but that the effect on temperature and rainfall will be unevenly distributed around the world. In general, global warming is expected to cause more climate extremes. Mr. McElroy pointed to the fact that US emissions have actually stayed relatively flat since 2000, largely because climate change has received significant local attention, notably in California, and because US business has focused on improving efficiency. He emphasized that one focus is wind energy, which has very high potential in US, with total capacity around ten times the current electricity generation in the country. Wind power generation is available in the top 10 $CO_2$-emitting countries, although to a varying degree. Mr. McElroy stated that while some have expressed doubts, switching to renewables is possible. The real challenge is the policy vis-à-vis developing countries, in particular China and India.

**Derek Osborn**, Chairman of the Sustainable Development Observatory, EESC, presented the expected outcomes of Europe's domestic policies internationally. He stated that the proposed trading scheme introduces good reforms and could fix many of the problems discovered during Phase I and II. Mr. Osborn noted his approval of auctioning and including aviation in the trading scheme, as well as the shipping sector. He suggested that bringing other sectors into the scheme be considered and evaluated. Mr. Osborn concluded that the proposed energy package is capable of achieving the 20 % reductions required by 2020.

However, it is less clear that it can deliver 30 % reductions without some reinforcement, and another strengthening package may be necessary to ensure that the EU has proper negotiation leverage by the time of the UN Climate Change Conference in Copenhagen in 2009.

## **Third thematic session: scope and operation** (moderated by Ralph Czarnecki, Ecologic)

**Matthieu Wemaere** from IDDRI presented issues surrounding forestry and land uses and including sequestration in the EU ETS. Mr. Wemaere began by noting that LULUCF[3] was not included in Phase I and II, mostly because the ETS was meant to provide long-term rather than temporary abatement. Including LULUCF as a sector would increase the scope of the ETS and the administrative burden and cost would be high. A major question is how to deal with liability issues in case of carbon leakage. Mr. Wemaere stressed that deforestation is a major source of emissions. The Commission's proposal maintains the exclusion of credits from LULUCF, mainly because of the liability risks. Mr. Wemaere concluded that including the LULUCF as a sector in the EU ETS is not desirable, at least until accounting rules are agreed upon at international level. However, action must be taken to tackle deforestation, and he called on the EU to explore and develop a clear strategy on RE(D)D[4], possibly financed through the use of auction revenues. Liability associated with the non-permanence issue still raises concern, but EU harmonized rules for offset projects may offer a window for issuing fully fungible allowances to forestry activities in the EU.

**Jasper Faber** talked about the impacts of including transport sectors in the ETS. He stated that a cap and trade system provides a very clear policy signal. He pointed out that including the transport sector in the ETS could increase the price of carbon, which in turn might increase the risk of carbon leakage in other sectors. The extent to which carbon prices will increase depends on the cap the transport sector gets and the marginal abatement cost curve. The proposed inclusion of aviation in the ETS would have a limited impact on the carbon price if CDM is not restricted; however, if CDM is restricted, it could result in 10-20 % increase in the carbon price. Mr. Faber then focused on maritime transport, stating that including it in the ETS is a promising option, although others should also be considered. Fuel charge is not possible because ships can refuel anywhere around the world, leading to carbon leakage, but an emissions charge could be an alternative. Mr. Faber also noted that including it in the ETS could put upward pressure on EU emission Allowance (EUA) prices depending on the cap and on the sector's marginal abatement cost curve. Finally, Mr. Faber addressed the potential inclusion of road transport in the ETS. He explained that the administrative burden of making each emitter responsible would be enormous, so it would be necessary to have an upstream system under which fuel suppliers will be responsible for handing out allowances to fuel users. Therefore, he concluded, ETS would work in the same way as a fuel tax, raising questions about whether it's a good option. Mr. Faber estimates that, if road transport were to be included in the ETS, reductions of 20 % below the 1990 level would raise the price of allowances by 30 %, a significant increase.

Mr. **Henry Derwent** from IETA stated that in general the proposed emissions trading system will enhance the operation and credibility of the carbon market. He highlighted the fact that the new system includes a longer period for the price to operate and signal the right direction to market players, allowing for more flexibility of response while providing clarity on the amount of emission reductions necessary.

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[3] LULUCF - Land Use, Land Use Change and Forestry

[4] REDD - Reducing Emissions from Deforestation and Degradation

Mr. Derwent also pointed to other positive developments including the auctioning principle, harmonized cap and allocation methodologies, evidence of determination to avoid inadequate demand, and linkages with the global market. He then noted that the Phase I price crash did damage the ETS' credibility internationally and explained that the reason for the crash was that companies did better than expected, reducing the price signal, rather than because the allocation process was flawed. Mr. Derwent called attention to the need to be prepared for similar situations in the future. He then indicated that some confusion about the ETS does remain. Mr. Derwent recommended that the Commission increase transparency and publish its modelling price assumptions. He also indicated that it is unclear what will trigger an international agreement, and that other problems include the application of revenues and the issue of fairness between countries and between sectors. Mr. Derwent's biggest concern was the unresolved confusion over renewables support policy. He explained that early-stage support for new technology is necessary to bring the technology to a level where a generalized market price allows it to stand on its own feet. It is important to confine the support to the early stage so that it doesn't interfere with the price signal later. Discovering where that level is, however, is tricky. Mr. Derwent recommended a clear analysis of what is expected to happen and letting the market work in the meantime.

***Discussion of third thematic session***

- Mr. McElroy stated that what is needed is a balanced portfolio and that wind power is just part of the solution rather than the whole solution. It's developing rapidly in Texas with little opposition. Off-shore wind in the US is encountering opposition because of the high value of coastal property.
- A member of the audience commented that the approach of the Commission has been sector-based and it should be more general because the sectoral approach results in cumbersome regulation.
- One participant expressed disagreement with the idea that including road transport in the ETS amounts to a fuel tax, stating that large fuel consumers can participate in auctions directly. Mr. Faber responded that while this is possible in theory, it would require having two supply systems for petroleum and diesel. That would add huge administrative complexity and cost.
- A participant representing the railroad industry pointed out that railroads are effectively within the ETS because it uses electricity, and the electricity sector passes the cost of ETS down to consumers. That creates an uncompetitive situation with other transport sectors having an advantage over rail transport.
    - Mr. Faber agreed that the rail transport sector is affected by the ETS, providing a perverse incentive to shift to a high-emission transport mode from a low-emission transport mode. He explained that a fairly easy way to fix the problem would be to increase the excise duty for road transport by a couple of cents. That would put the price increases for rail and road at the same level.
    - The Commission agreed that rail transport is affected by electricity prices, but emphasized that it is taking steps with the new ETS proposals to address carbon emissions from other transport sectors.
- The Commission responded to Mr. Derwent's presentation by stating that its impact assessments have been published and that they explain the Commission's methodology and assumptions.

- A participant asked how developed countries can influence what happens in China. Mr. McElroy answered that China is industrializing rapidly and following what it perceives to be the successful model of the West, although it is realizing the problems that go along with that. Developing countries have to show that they are committed to reducing their own carbon footprint. If developed countries do that, the hope is that China will be more willing to industrialize in a more sustainable way than the West did.

## **Fourth thematic session: the international dimension** (moderated by Jason Anderson, IEEP)

**Christian De Perthuis**, Caisse des Depots, presented the review he and colleagues did of the first ETS trading period. They find that drawing lessons from the first period is important to improve the subsequent ones, but it is also useful for outside Europe. He outlined the six main points of the study, then focused on the fifth and sixth: The ETS as a driver of the international carbon market is a major result. The data is clear that the market developed when the ETS did, and the international carbon value is dependent on the ETS allowance value. The expansion of the ETS has started – new Member States have joined, as well as Norway, Iceland and Lichtenstein. JI is also open to countries within and outside the ETS, and its scope outside covered sectors could be enlarged after 2012.. Might be useful to influence building, agriculture, allow local government to reduce emissions.

**Barbara Buchner**, IEA, noted that there has been a trend toward establishing carbon markets, which could become global, so it's important there be a race to the top in terms of standards. The ETS has been a step in the right direction. She reviewed the conditions for an effective market in light of the ETS experience. With the correct conditions there is confidence in the market, enhancing the credibility of the scheme. In concluding she noted that even if an ETS is well functioning there are other policies needed to address aspects that remain problematic – such as market barriers, R&D, and high costs for some market actors. The ETS is a fact on the ground that affects future negotiations; the learning from the pilot phase is not just in the ETS, but being taken up in emerging plans around the world.

**Kate Hampton**, Climate Change Capital, examined the role of external credits in the ETS. She outlined the scale of the carbon market to date and its likely growth in the future, while highlighting the vast investment needed in clean energy technology. The benefits of CDM are several, including the way it gathers data about costs for abatement in countries that may consider their own regulations in future. But these benefits need to be balanced against the needs for domestic action, and concerns about competitiveness. While the EU's own post-2012 commitments have spurred interest in the CDM in that period, there will be 2-5 year period of uncertainty about an international agreement as first political agreement then operational rules are worked out for any post-Kyoto system. But the future CDM will also have to look different as much greater reductions are needed. There will need to be a system of sectoral baselines where standards converge internationally over time. There is room for experiment in the current system in transition to post 2012. She summarized conclusions about ways to improve the EU approach.

**Jonathan Pershing**, WRI, noted that the ETS has been a leader and is important as a model to other systems. But when considering linkages between those systems, it may not always be a good idea, it would be case by case depending on the merits of the particular system. The lessons of the ETS have been examined carefully in the US as systems develop, and Dr. Pershing reviewed the specific examples. He summarised US sub national programmes: the Regional Greenhouse Gas Initiative (RGGI), Western Climate initiative, and the Midwest region.

He also summarised the Lieberman Warner proposal in more detail. Significantly, even though reduction commitments are lower through 2020, the anticipated allowance price is similar to that in the ETS, and impacts on the GDP higher. He concluded with a summary of aspects of systems that are important to consider in linking.

***Questions/statements:***

- US presidential candidates are interested in reengaging internationally, but we shouldn't have unrealistic expectations. Linking is interesting to expand the market but there will be questions about implementation. We need a broader scope in a future agreement than we had in the past, but not all third country partners seem willing. Working transatlantically will help. The US concern about competitiveness vis a vis China is overblown.
- Including Carbon Capture and Storage (CCS) in trading is an important first step, as it may be important to reaching reduction targets. But more R&D efforts are needed, also for other technologies.
- An industry group noted that there is uncertainty about which sectors will get free allocation, which is paralyzing for industry and for negotiating internationally. The Commission responded that it isn't paralyzing because in fact determining this first would send the signal that the EU is protecting its heavy industry. But they are obviously not interested in harming competitiveness, so it will be addressed, preferably through an acceptable international agreement – which we will recognise when we see it.
- Mr. Pershing said he can't see certain countries getting out of coal soon, so we'll have to work on CCS, subsidizing it where necessary. There is a proposed set-aside in the US of $500m per plant through 2020, which should be similar in Europe.
- If the US and EU accept different kinds of offsets, such as forestry, it is problematic, but how much so depends on the perceived importance of maintaining the link. Allowances will be fungible, so can't restrict it. But even without a link there will be arbitrage across systems.
- In moving beyond 1-1 offsetting: there are various options including discounting and changing the baseline. Discussions on this have started but need to go further.
- Heads of government have dropped the ball on CCS incentives after the promise of demonstration plants; fortunately there is movement on this now.

**MEP Mrs. Doyle** concluded the session by indicating that the speed they are moving to reach agreement is necessary in the context of reaching an acceptable international agreement – the definition of which may get some shape in her report. In reviewing the many initiatives around the world, she said that over time ETS systems should be able to link. She also noted that among other issues, forestry will likely be addressed in some way in her draft – without collapsing the price of carbon, but still, it has to be there to be credible. Given even if there is an international agreement politically it won't get up and running immediately, energy intensive industry will be considered carefully. She concluded by acknowledging the cooperation among institutions in this effort.

## 4. Annex: Workshop briefings and presentations

All briefings are annexed to this document; please refer to the website of the Institute for European Environmental Policy (IEEP) for the online presentations (http://www.ieep.eu/whatsnew/newsitem.php?item=153).

**Michel CRUCIANI**

**CGEMP**
**Université Paris-Dauphine**

**michel.cruciani@dauphine.fr**

**Hearing on the Commission's post 2012 proposal**

**European Parliament – 15 May 2008**

# THE POWER SECTOR

## How is it likely to react to full auctioning, what are the implications for its development?

### Auctioning should spur investment in low emitting power generation.

Auctioning will ***remove a distortion*** arising from the previous rules (Phases I and II of ETS): distributing allowances for free, on the basis of current emissions, appeared as a disincentive for power generators to reduce emissions or close inefficient plants ("early action problem").

The electricity sector's potential for emissions reduction relies essentially on building new low emitting plants. On average, the period of 5-15 years is the key period over which a new power plant needs to recoup the majority of its investment. Therefore, it is critical that ***targets are fixed for the next 15 years*** into the future. Ideally, any further change would be set 10 years ahead. With reduced uncertainties about the long term cap, auctioning will not pose serious threat to investment.

Nevertheless, the risk related to the carbon price will add to the fuel price risk. Stability of carbon price can be increased with specific provisions, notably banking and borrowing. ***Banking and borrowing*** allow markets to optimally allocate emission permits across regions and over time. Banking is proposed in the draft directive. It will play an important role to smoothen carbon price between Phases II and III. The longer the timeframe for banking, the better firms can spread their efforts through time thus minimizing abatement cost. Borrowing from the following year is allowed in the present scheme (Phases I and II). It can be maintained in Phase III if auctions are brought forward earlier than the normal schedule: i.e. to 2011 rather than 2013, etc.

Investment will be at risk in countries where operators cannot fully pass through their costs due to regulated prices.

### Auctioning allowances to power generators will not trigger a price shock.

The principle of "***opportunity cost***" ensures that a carbon allowance should always recuperate its market value, independently whether it is used in electricity production or sold separately and independently whether it was bought or granted for free. In most countries, opportunity costs have already been passed on to the consumers (giving way to the charge of "windfall profit").

Electricity prices reflecting the cost of $CO_2$ are needed to encourage investment in clean generation, demand-side response and adoption of efficient end-use technologies.

# The implication of potential competitiveness protection measures for international trade

Roland Ismer[1]

## A. Overview of Potential Instruments

Implementation of emissions trading only in the EU may lead – *for certain sectors* – to an uneven competitive playing-field: production sites in the EU face additional costs from purchasing allowances while their competitors in non-abating regions of the world do not. This asymmetry may lead to carbon leakage which threatens to partially defeat the purpose of emissions trading. To level the playing-field, a number of instruments have been proposed. The most important of these are:

- **Conditional free allocation**. Art. 10a(8), which the Commission proposes to insert into Directive 2003/87/EC, provides for the possibility of a bigger share of free allowance allocation for installations in certain sectors exposed to a significant risk of carbon leakage. To be effective in addressing leakage the allocation has to be conditional on investment, operation or output. This conditioning reduces the incentives for innovation and substitution to lower carbon products and can create an early action problem.

- **Mandatory product/production process requirements.** A second option to address competitiveness concerns is a requirement specifying the nature of imported products or, (from a trade restriction perspective, even more far-reaching) requirements regarding the production process.

- **Border adjustments.** A third possibility is adjustments at the border for the carbon content of goods transported across the EU border.

  - As a first subcase, they may take the form of an obligation on the part of the importer to surrender emissions allowances equivalent to the number that would have been due had the good been produced within the EU. As a complementary measure, adjustment for export from the EU would also be conceivable in the form of a refund of allowances.
  - As the second subcase, the adjustment could come in the guise of a tax upon importation and a tax refund upon exportation. In this respect, the scheme would mirror the system in place for VAT.
  - As the third subcase, export taxes by the exporting countries also fall into this category. They could be integrated into the first two subcases: border taxes could provide directly for the imputation of export taxes by developing countries, whereas the obligation to surrender allowances could be suspended where export taxes are levied in a satisfactory form.

- **Government-led sectoral agreements.** Fourthly, sectoral agreements are often discussed in the expectation that governments will set a global benchmark for a certain industry sector; to be viable, governments would have to assume a leading role. To achieve the right market prices, governments would have to require participants to pay for all carbon emissions, and not just the fraction of carbon emissions above a benchmark level – otherwise they would not support substitution towards lower carbon goods. It would appear that such government-led sectoral agreements may be almost as difficult as a stringent global climate convention. They will therefore not be discussed here in more detail.

## B. Aims of Competitiveness Protection Measures

Besides the primary aim of maintaining competitiveness and preventing leakage, the measures should meet the following criteria:

- Conformity with international law;
- No fragmentation of international markets, since that could jeopardize the gains from trade;
- Reasonable administrative and compliance costs;
- No adverse efficiency effects.

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1 Lecturer at the Faculty of Law, Ludwig-Maximilians-University of Munich, roland.ismer@jura.uni-muenchen.de.

## C. Conditional Free Allocation

Conditional free allocation is currently pursued in Phase II and considered as one option to address leakage concerns in the new Directive. In order to meet the basic criteria and prevent leakage, allocation has to be in some form conditional on investment, operation or output. However, it has been demonstrated in the relevant literature that the efficiency properties, and in particular the dynamic incentives, are doubtful.

## D. Mandatory Requirements

Mandatory requirements can be more problematic: it is possible that markets may fragment when different countries introduce different requirements. Furthermore, the existence of mandatory requirements may stifle innovation which goes beyond the level set by the mandatory requirement, and thus have adverse dynamic effects. At the same time, they can also unlock innovation potential when mandatory requirements are set for the future, if sufficiently ambitious and credibly enforced. In addition, mandatory requirements must conform with world trade law and therefore must be designed and applied in a non-discriminatory manner. This not only prevents formal discrimination, but also *de facto* discrimination. Finally, concerns may arise regarding administrative and compliance costs where requirements are introduced for production processes.

## E. Border Adjustments

From a purely economic point of view, border adjustments appear attractive since they have neither adverse efficiency effects, nor do they lead to a fragmentation of the market. In order to ensure conformity with international law, however, great care has to be taken in designing the adjustments. In particular, for imports, they must be non-discriminatory under Articles I and III GATT, or there must be a justification to the discrimination under Article XX GATT. This should be possible through a combination of an adjustment at a level corresponding to a commercially viable best available technique, and the possibility, as allowed under the GATT Superfund Case, to show that actual emissions were even lower. For exports, there must not be an illegal subsidy under the SCM Agreement. Furthermore, given the possibility to produce electricity with renewables, any adjustment for electricity poses – in my view: surmountable – problems. Finally, administrative and compliance costs need to be kept at a reasonable level which suggests weight based adjustments for sufficiently broad classes of goods.

## F. Conclusion

None of the solutions discussed above are perfect. However, conditional free allocation is sometimes seen as fall-back option. Two avenues have the potential to improve the credibility of this option: exploring potential international cooperation on border adjustments, and the establishment of internationally agreed mandatory requirements. These avenues have the potential to further a spirit of international cooperation, whilst at the same time reflecting the common but differentiated responsibilities as postulated by the UNFCCC.

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## Electricity prices will rise in the long run.

The main drivers for higher electricity prices are rising ***fuel input prices*** and increased ***capital costs***. Increased investment costs mean expensive carbon allowances if access to cheap Kyoto credit is restricted: allowance price will come in line with the average abatement cost. For fossil fuel based electricity, the increased cost of allowances will add to the increased cost of generation.

## Specific measures should address non $CO_2$ energy policy goals.

The project lead time for nuclear power plants may exceed 10 years in some countries. Therefore, bringing a large amount of nuclear capacity on line by 2020 seems unlikely. Large scale deployment of Carbon Capture and Storage is also unlikely before 2020. In spite of energy efficiency improvement and an increased role of renewables, a capacity gap may appear in several countries. This will lead to a "***bridge strategy***" relying on combined-cycle gas turbines (CCGTs).

Meanwhile, ***capacity margin*** might shrink to a dangerous level. Investment for this margin can get a return from wholesale market either through separate capacity payment mechanism or through extremely high electricity price during peak time. Given the uncertainty of this return (the "missing money" issue), investment in peak generation might not be sufficient.

There could be a temptation to give free allowances to boost peak generation investments and to favor coal-fired generation. This would undermine the economic efficiency of emissions trading. ***Specific guidance*** should address the issues of supply diversity and capacity margin.

## Full auctioning will induce large losses of profit for carbon intensive power companies.

During peak hours, every generation plant is needed. Therefore, they all benefit from the same electricity price. The price is fixed by the most expensive power producer. Hence, base load producers can gain ***large rents*** due to a price of electricity much higher than their generation cost ("infra-marginal rent").

Carbon allowances increase the electricity price. When allowances are given free, the increase of infra-marginal rent applies to all producers. When allowances are auctioned, the increase of infra-marginal rent is no longer applicable for carbon intensive base-load producers; it is still applicable for carbon-free base-load producers. Based on generation figures of 2005, with an average 17 €/tCO2, ***the loss would exceed 10 B€.***

A new wealth distribution will come in the wake of auctioning. In the same period, integrated gas and power companies which can secure gas supply will take advantage of a comeback of gas generation. New ***consolidation*** within the electricity sector is therefore likely to be a consequence of auctioning. This has an economic meaning, as the growing uncertainties of the electricity markets increase the optimal size of an operator.

## Complementary measures

***Energy efficiency*** can play a major role, especially if investment is targeted to reduce peak demand. In this context, the provision on EU-based ***offset projects*** is a welcome initiative.

A border tax adjustment or a sectoral agreement might be considered to deal with ***power import*** from neighbouring countries and possible carbon leakage. Auctioning will ease the adoption of this solution, as it fulfills the "real cost" condition requested by WTO.

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# Perspectives on the Challenge of Global Climate Change

Michael B McElroy

The global climate system is currently out of balance: the energy the Earth absorbs from the sun exceeds the energy it radiates back to space. As a consequence, the Earth as a whole is warming up. Human activity, notably the build-up of the concentration of so-called greenhouse gases such as carbon dioxide, methane and nitrous oxide, is largely, though not solely, responsible for this imbalance. Additional contributions relate to emissions of black carbon (soot) and a variety of compounds that result in an increase in the concentration of small particles in the atmosphere contributing to an increase in regional and global cloud cover.

Climate scientists define the global energy imbalance in terms of a quantity known as the related radiative forcing. The build-up of greenhouse gases over the past several hundred years is responsible for positive radiative forcing of about 3 watts $m^{-2}$ averaged over the surface of the Earth. That is to say, the direct effect of the build-up of greenhouse gases is to cause the Earth to gain heat at the rate defined by this quantity. Much of this extra heat is used to warm up the surface layers of the ocean. A relatively small fraction is employed directly to warm up the atmosphere. The consequence of this is that even if we were to magically, instantaneously, remove the excess concentration of greenhouse gases in the atmosphere, the surface would continue to warm drawing on the heat previously deposited in the ocean. Whatever we do, global warming is with us for the next several decades or longer.

The warming impact of greenhouse gases is amplified by the absorption of sunlight by black soot emitted as a consequence of incomplete combustion of organic matter (think of black smoke emerging from dirty factories, from households burning dirty coal or from open-air fires set either deliberately or of natural origin). Black carbon is estimated to contribute additional positive radiative forcing, globally averaged, of 0.9 watts $m^{-2}$. The positive forcing due to greenhouse gases and black carbon is offset to a significant extent by negative forcing due to bright colored, water absorbing (hydroscopic), particles formed in the atmosphere in large measure as products of the emission of sulfur and nitrogen oxides, by-products of fossil fuel combustion responsible additionally for the regional phenomenon of acid rain. Negative radiative forcing due to the direct and indirect of these emissions is estimated at -2.3 watts $m^{-2}$. Adding the combined effects of greenhouse gases, black carbon and reflective aerosols would imply that the magnitude of net global radiative forcing is currently about +1.6 watts $m^{-2}$. If we were to successfully eliminate emissions of black carbon, and there are good reasons to do so relating to their impact on public health, net radiative forcing could be reduced to about 0.7 watts $m^{-2}$. Were we to also seriously cut back on emissions of the compounds responsible for the reflective aerosols, and there are good reasons also to do this, radiative forcing would rise back to the level set by the build-up of greenhouse gases, about 3 watts $m^{-2}$.

Carbon dioxide is responsible for approximately half of the warming attributable to greenhouse gases. Methane ranks second in importance. The concentration of methane has been relatively constant over the past decade but appears to have recently resumed its previous upward trend. And there are serious prospects that future warming could contribute to an unavoidable large increase in release of methane specifically from carbon rich soils at high latitude. Combustion of fossil fuels is largely responsible for the increase in the concentration of atmospheric $CO_2$ with an important additional contribution from deforestation, mainly in the tropics, offset to some extent by regrowth of vegetation at mid-latitudes. Concentrations of $CO_2$ have risen by close to 40% over the past several centuries and are on a path to double over the next few decades absent aggressive action by the global community to curtail emissions. Emissions from Europe and North America have been relatively stable since the turn of the century. The abundance of $CO_2$ in the atmosphere continues an unabated rise reflecting largely accelerated growth in emissions from populous developing countries such as China and India.

Effects of climate change to be discussed in the talk include evidence for important changes in the ice cover of the Arctic Ocean, the continuing retreat of glaciers at mid and low latitudes, changes in regional weather patterns (droughts and floods and increasingly violent storms such as the one that recently devastated Myramar) and evidence that the large ice sheets on Greenland and Antarctica may be less stable than was thought previously with important implications for the future rise in global sea level. The paper will focus on particular issues of concern, notably the disproportionate impact climate change is likely to have on populations least equipped to cope, regions of the world where people are already struggling to survive. The paper will also offer some thoughts on how we might respond to the challenge of climate change with a discussion of the prospects for a transition to a low carbon energy future, an energy future based on solar, wind, geothermal and nuclear sources rather than coal, oil and gas. If we fail to effect this transition, we should prepare now for the inevitable social, ecological and political dislocations to be expected in the decades ahead.

The human species has evolved as a dominant global presence. We have developed the capacity to change the climate and the life support system of our planet on a global scale. The question is whether we can also develop the wisdom to chart a course that can ensure a viable future for our children and grandchildren.

# THE EUROPEAN CARBON MARKET IN ACTION: LESSONS FROM THE FIRST TRADING PERIOD

## An International Research Program led by:


**FRANK CONVERY**[1]

**DENNY ELLERMAN**[2]

**CHRISTIAN DE PERTHUIS**[3]


## PRESENTATION

The European Union Emissions Trading Scheme (EU ETS) is the largest greenhouse gas market ever established. The European Union is leading the world's first effort to mobilize market forces to tackle climate change. A precise analysis of the EU ETS's performance is essential to its success, as well as to that of future trading programs.

The research program *The European Carbon Market in Action: Lessons from the First Trading Period* aims to provide such an analysis. It was launched at the end of 2006 by an international team led by Frank CONVERY, Christian DE PERTHUIS and Denny ELLERMAN. An interim report was released in March 2008 which presents the researchers' findings to date. It is available in both English and French versions on the website of the Association for the Promotion of Research into the Economics of Carbon (APREC), accessible at www.aprec.net.

## ADDRESSING THE ISSUES RAISED BY THE EU ETS

- How Could The EU ETS Be Put In Place?
- What Choices Were Made Regarding Allowance Allocation?
- How Did the Financial Market Develop and Facilitate Compliance?
- Did Emissions Abatement Occur?
- What Have Been The Impacts Of The Carbon Market On Industries, Noteworthy The Power Sector, And Their Competitiveness?
- How Did The EU ETS Help Expanding The Carbon Price Signal Worldwide?


[1] F. CONVERY, University College Dublin - frank.convery@ucd.ie - +353 (1) 716 2672

[2] D. ELLERMAN, Massachusetts Institute of Technology - ellerman@mit.edu - +1 (617) 253 34 11

[3] C. DE PERTHUIS, Mission Climat of Caisse des Dépôts, Université Paris-Dauphine - christian.deperthuis@caissedesdepots.fr - +33 (0)1 58 50 22 62

## MAIN CONCLUSIONS AT THIS STAGE

➲ **The pilot phase was useful.** The first phase of the EU ETS presented a number of problems, but its aim was to make the system run, and this was done within a very short timeframe. Lessons from the pilot phase are already being learned, as is confirmed by several allocation choices in the second phase: more harmonized allocation rules, stricter caps set in National Allocation Plans, etc. An important insight from the pilot phase: not all elements have to be in place when an emissions trading scheme is launched.

➲ **Carbon now has a real price.** From 2005 to 2007, the European market developed strongly in terms of traded volumes and market infrastructure. An effective carbon price has emerged on this market reflecting the balance between supply and demand. The market proved to be economically rational: the allowance surplus for the first period led to a price close to zero in 2007 and steadier prices for the second period reflect the scarcity anticipated by market players from political decisions. All the big industry and finance players now consider carbon to be no longer free in Europe and that it will continue to be costly in the future. A major achievement after only three years.

➲- **Carbon price has induced some emissions abatement.** Despite over-allocation, which clearly existed in some Member States and sectors, a significant price was paid for $CO_2$ emissions during 2005-06 which induced some emissions abatement. While switching from coal to natural gas did not occur in the magnitudes expected, other unanticipated emission reduction strategies were employed, including intra-fuel substitution (brown to hard coal) in Germany and improved $CO_2$ efficiency in the UK.

➲- **Carbon price has had a limited impact on industrial competitiveness.** In the power industry, only a part of the profits made in 2005 and 2006 can be attributed to carbon prices being passed through to consumers. “Windfall profits” were due in part to free allowance allocation, but also to market restructuring and high fossil fuel prices. In the non-power sectors, including cement, refining, steel and aluminum, international competition makes it difficult, if not impossible, to pass carbon prices on to consumers. To date, there is no empirical evidence of any market share loss in these sectors due to carbon pricing. However future stronger carbon constraints may affect their long-term competitiveness.

➲- **The European carbon market has had external impacts.** From its inception, the EU ETS was designed to be enlarged. Since 2005, the scope of the EU ETS has been significantly extended to two new Member States, Romania and Bulgaria, and linked to Norway. The EU ETS’s link with the international Kyoto credit market has driven the development of Clean Development Mechanism (CDM) projects in developing countries and has led to additional emissions reductions through Joint Implementation (JI) projects. The development of the European carbon market has provided the first empirical experience with linking different carbon markets and valuable lessons on how linking may be incorporated into future climate regimes.

➲- **Lessons from the EU ETS can be applied to future climate negotiations.** The EU ETS is a true multi-national system. The European Union is home to 500 million people, living in 27 countries, embracing 23 languages, with per capita GDP ranging from $42,000 (Ireland) to $9,000 (Romania and Bulgaria). Through the EU ETS, nations of widely varying circumstances and commitments to climate policy have agreed to a common constraint. Europe’s choice of emissions trading has created a ‘fact on the ground’ that will be difficult to ignore in future global climate negotiations. The EU ETS is likely to contribute to the shape of a future global system, and is already instructive for emerging national and regional schemes.

Find the complete report in both English and French versions on the website of the Association for the Promotion of Research into the Economics of Carbon (APREC), accessible at www.aprec.net.