SHAPING THE GLOBAL ARENA
PREPARING THE EU EMISSIONS TRADING SCHEME FOR THE POST-2012 PERIOD

POLICY CONCLUSIONS & RECOMMENDATIONS OF A CEPS TASK FORCE

CHAIRMAN: **DAN GAGNIER,** SENIOR VICE PRESIDENT, CORPORATE AND EXTERNAL AFFAIRS, ALCAN

RAPPORTEURS: **CHRISTIAN EGENHOFER,** SENIOR RESEARCH FELLOW, CEPS

NORIKO FUJIWARA, RESEARCH FELLOW, CEPS

CEPS TASK FORCE REPORT NO. 61

MARCH 2007

This report is based on discussions in the CEPS Task Force on Strategic Implications of the EU ETS Review in a post-2012 Perspective. The Task Force met several times over a concentrated period of time from March to October 2006. Participants in this CEPS Task Force included senior executives from a broad range of industry – including energy production and supply companies, energy-intensive industries and service companies – and representatives from business associations and non-governmental environmental organisations. A full list of members and invited guests and speakers appears in the appendix.

The members of the Task Force engaged in extensive debates in the course of several meetings and submitted comments on earlier drafts of this report. Its contents contain the general tone and direction of the discussion, but its recommendations do not necessarily reflect a full common position agreed among all members of the Task Force, nor do they necessarily represent the views of the institutions to which the members belong.

ISBN 978-92-9079-700-5

Centre for European Policy Studies
Place du Congrès 1, B-1000 Brussels
Tel: (32.2) 229.39.11 Fax: (32.2) 219.41.51
E-mail: info@ceps.be
Website: http://www.ceps.be

Contents

PREFACE

It has been my privilege over the past year to have chaired the CEPS Task Force on the EU Emissions Trading Scheme (ETS) with a view to providing to the European Commission and other EU policy-makers recommendations for the post-2012 period. In doing so I was fortunate to be able to count on a CEPS research staff of exceptional quality headed by Christian Egenhofer and supported by Noriko Fujiwara. In addition I owe an equal debt of appreciation to the Task Force members who gave of their expertise and time and who aptly represented their different industry, power and energy sectors. With respect to our colleagues from various non-governmental organisations who participated in our deliberations, I draw a note of admiration for their dedication and collaboration in helping us to understand better the constraints that we must all turn into opportunities.

I would be remiss were I not to reflect the contribution and advice from various European Commission officials who generously shared their experiences and expertise, helping us to keep focusing on the critical questions as Europe grapples with the lessons from Phase 1 of the EU ETS and strives to improve the only fully operational emissions trading system. While not perfect it is noteworthy in its evolving functionality and its effect to date in reducing emissions. Its success in the longer term is very much linked to its potential to do much more in both an environmental and an economic sense. There is no doubt in my mind as a result of many hours of discussion and debate that the EU ETS is a critical tool in the post-2012 period to enable the stabilisation of CO_2 emissions and to unlock the economic value required to keep Europe competitive in a carbon-constrained global economy.

On occasion my own responsibilities internationally for Alcan Inc. prevented me from attending a discussion. I want to thank my colleague from Alcan, Hugh Porteous, who serves as Vice President for Government Relations and who resides in Brussels, for his assistance.

As readers consider these conclusions and recommendations I urge them to reflect on the importance of the underlying questions for us all if we are to forge policy and regulatory frameworks that reduce CO_2 and greenhouse gas emissions while allowing us to continue to grow, develop and propagate new technologies, learn how to deal with carbon as a global commodity and do so in a way that enhances our environment and our economic and social development.

The discussions were fulsome, the debate was at times intense but to my fellow Task Force members it can be said that together we have made a solid contribution to a key policy question of the century.

Daniel Gagnier
Task Force Chairman
Senior Vice President, Corporate and External Affairs
Alcan Inc.

SHAPING THE GLOBAL ARENA
PREPARING THE EU EMISSIONS TRADING SCHEME FOR THE POST-2012 PERIOD
POLICY CONCLUSIONS & RECOMMENDATIONS OF A CEPS TASK FORCE

CHAIRMAN: DAN GAGNIER

RAPPORTEURS: CHRISTIAN EGENHOFER & NORIKO FUJIWARA

EXECUTIVE SUMMARY

After operating for about two years, the EU Emissions Trading Scheme (ETS) has entered its envisaged review stage. The policy conclusions and recommendations distilled from a CEPS Task Force on this subject attempt to make a contribution to the review.[1] The outcome of this project is divided into two parts: the first consists of these policy conclusions and recommendations, while the second, a forthcoming Companion Report,[2] provides the full background analysis. Both reports cover the agenda of the EU ETS review but group topics under three headings: design (mainly in terms of allocation), signals for investment and how to manage the transition period until a comprehensive, global climate-change agreement can be put into place.

The EU ETS is the main instrument the EU is using to implement its climate change strategy and to enable member states to meet their commitments for 2008–12 under the Kyoto Protocol. It brings transparency to the greenhouse gas (GHG) emissions for stationary installations in the major industry sectors covered. It also provides a carbon price signal to encourage the mitigation of emissions, while allowing individual installations flexibility in reducing GHG emissions. Although the Burden-Sharing Agreement among the EU-15 member states introduces distortions to the internal market, the EU ETS helps by setting a single CO_2 price throughout the Community. The EU ETS has also been the main driving force for building demand for the project mechanism credits of the Kyoto Protocol, especially for those related to the Clean Development Mechanism (CDM), which reduce emissions in developing countries.

I. Key messages

1) The EU ETS is intended to encourage GHG reductions in the most cost-effective way. At the same time it is meant to become a showcase for a successful emissions trading system, acting as a 'docking station' opportunity to which other national or regional schemes can link. To date, a single CO_2 allowance price is applicable throughout the EU, which is unlocking value for CO_2 abatement measures. The market has been gradually expanding in volume. There is evidence that actual reductions have taken place, even in the first year. In this initial phase, however, a number of shortcomings have also been identified.

[1] A list of the Task Force participants can be found in the appendix.
[2] The Companion Report is to be published and made available on the CEPS website before summer 2007.

2) There is an urgent need for more consistency among member states, especially in the field of allocation. Priority areas include the harmonisation of rules on new entrants and a number of EU-wide actions such as the creation of a new entrant reserve, ideally followed by closure and transfer rules. There is also a need to set the cap at either the EU or the sectoral level, to develop EU-wide benchmarks and agreed activity rates, and finally – should auctioning continue to play a role – to build an EU framework for auctioning and recycling the revenues from the auction(s). The need for harmonisation appears to be most urgent in the power sector. Such harmonisation would be difficult although not entirely incompatible with an uneven Burden-Sharing Agreement among member states that extends into the sectors covered by the EU ETS.

3) Regulatory certainty is provided by the continuation of the EU ETS in setting a carbon price. As to investment signals, it is predictability rather than certainty that matters. Predictability can be increased through a number of measures that are discussed in section 3 of these policy conclusions and recommendations. Most important is the creation of a long-term allocation road map that increases predictability as to the allocation rules. Such a road map could also address the trade-offs that exist between the EU ETS and security of supply, for example that higher gas use increases import dependency.

4) A particular challenge the EU ETS faces is that in all likelihood the 2006–07 EU ETS review will be completed before a global post-2012 agreement can be reached, i.e. the EU ETS will be reviewed against an unknown global context. This situation poses a considerable challenge for ensuring regulatory stability while allowing scope for the EU to adapt to international developments. Scope for adaptation should not, however, be read as suggesting that the EU should merely conform to the outcomes of international negotiations. Instead EU policy-makers and stakeholders should reflect on how to make the ETS a pacesetter for a possible post-2012 regime while seeking to maintain the competitiveness of European industry during this transition period. This transition period will nevertheless require flexibility on the side of the EU ETS in order for it to adjust.

5) The project mechanisms of the Kyoto Protocol will play a central role in the future of the EU ETS and a potential global trading scheme. The project mechanisms increase cost-effectiveness while advancing climate policy objectives at a global level – such as sustainability, decarbonisation and technology transfer – and provide incentives for broader participation. Furthermore, as long as other national or regional schemes allow for the use of project mechanisms as well, there will be a possibility of arbitrage among the schemes, ultimately leading to a convergence of carbon prices in these schemes and by extension 'market-driven' linking. Particular attention is warranted to improve the functioning of these mechanisms. There is a possibility for including a wider range of forestry projects, unilateral CDM projects and developing the CDM into a more programmatic or sectoral crediting mechanism, involving carbon capture and storage projects. Preconditions are assurances that reductions are real and measurable and that any expansion of credits from the project mechanisms needs to be matched by demand that is strong enough to guarantee a meaningful CO_2 price that provides investment signals.

II. Recommendations

On the basis of the above analysis and the Companion Report, this Task Force puts forward the following eight recommendations for the period after 2012 when the Kyoto Protocol commitments expire.

1) Small installations under a certain capacity of, for example, 30MW and 25,000 ktonnes per annum should not be covered by the EU ETS, because of the administration and transaction costs incurred for a minor proportion of emissions.

2) In the case of a significant degree of free allocation,

   a) The EU should formulate EU-wide rules for new entrants, including those for the establishment of a new entrant reserve wherein size, access and allocation criteria (possibly based on benchmarks if data are available) are applied throughout the EU as a means to induce appropriate technology choices, to create transparency and to reduce transaction costs and internal market distortions.

   b) As a follow-up action, the EU should harmonise closure and transfer rules, notably in a way that they do not create barriers to new entrants.

   c) To minimise the internal market distortions from further stimulating harmonisation across the EU, the EU should start developing an EU-wide approach either to setting the cap at the EU level or at least to establishing a consistent methodology to derive the cap, as it has proven particularly difficult to supervise and verify member state projections.

   d) The EU should concentrate mostly on more consistent allocations in the electricity sector, which has seen large differences in allocations among the member states, partly but not only as the result of the Burden-Sharing Agreement.

3) Should benchmarks be used for allocation,

   a) The EU and member states should set EU-wide benchmarks, i.e. the production of an installation multiplied by specific emissions in the sector based on an activity rate (e.g. projected output, standardised load factors, historic or recent production), including a decision on whether to base benchmarks on energy input or production output.[3]

   b) The EU should develop benchmarks and activity rates first for those sectors that lend themselves best to benchmarking because of the simplicity or consistency of the basic production processes, for example in the case of cement or electricity.

4) Should (partial or full) auctioning be used for allocation,

   a) The EU should set up EU-wide rules for the conduct of auctioning, such as the minimum or maximum levels, frequency or mechanics.

   b) In addition, auctioning rules should be accompanied by EU guidelines on revenue recycling to avoid distortions to both the internal market and external competition.

5) The EU should continue to guarantee the continuation of CDM and Joint Implementation (JI) projects beyond 2012 through their recognition in the EU ETS post-2012, so that the project mechanisms do not fail from lack of certainty. This guarantee for CDM projects could be given to least-developed countries without conditions, but with respect to other

[3] Activity rates based on output (instead of energy input) tend to provide better incentives for low-carbon technologies.

developing or industrial countries, in the case of JI, it could be given on the condition that they take on appropriate commitments.

6) Inclusion of new gases and sectors can increase the cost-effectiveness of the scheme, and is recommended under the following conditions:

   a) the accuracy of monitoring and reporting and the verification emissions can be assured;

   b) the price signal can be linked to opportunities to reduce emissions;

   c) the administration costs for both governments and the covered sources are proportionate;

   d) the abatement costs are expected to be broadly similar in the covered and non-covered sectors; and

   e) the reduction of emissions is technically feasible.

7) The EU ETS should not be overloaded with political motivations. In the transition period additional sectors should only be included if in addition to the above prerequisites the following conditions are met:

   a) The expected abatement costs are broadly similar those incurred in the already covered sectors. This condition aims at preventing major re-distributional effects, which might undermine political acceptability.

   b) There are no significant competitiveness impacts on all industries, be they direct or indirect.

8) If there is sufficient interest in domestic off-set projects by stakeholders, the EU should agree on a pilot phase for a limited period to test whether such projects can provide added value to the EU ETS.

SHAPING THE GLOBAL ARENA

PREPARING THE EU EMISSIONS TRADING SCHEME FOR THE POST-2012 PERIOD

POLICY CONCLUSIONS & RECOMMENDATIONS OF A CEPS TASK FORCE

CHAIRMAN: DAN GAGNIER

RAPPORTEURS: CHRISTIAN EGENHOFER & NORIKO FUJIWARA

Introduction

The EU has identified climate change as one of the most important challenges. Recognising that climate change is likely to have major negative consequences for the environment, the economy and societies at large, the EU has repeatedly confirmed its view that an increase in the global, annual, mean surface temperature should not exceed 2°C above pre-industrial levels. In so doing, the EU has made clear its intention to help achieve the ultimate objective of the UN Framework Convention on Climate Change, i.e. the stabilisation of greenhouse gas (GHG) concentrations. The effective implementation of the Kyoto Protocol's commitments is seen as an important first step towards finding a global solution to climate change. The EU Emissions Trading Scheme (ETS) (European Union, 2003) is the EU's central instrument for achieving this goal.

1. Preparing for the post-2012 period: Enhancing predictability while ensuring flexibility to cope with transition

The EU ETS is the first cross-border tradable permit or emissions trading system to address GHGs. The ETS covers over 11,500 installations in the EU, considerably more than double the combined SO_2 and NOx schemes in the US, which are often used as reference points for the EU ETS. Installations frequently contain multiple sources, including boilers, and process energy at the same time.

The fact that the EU ETS is up and running is a success in and of itself. This point deserves highlighting, because with the exception of Denmark and the UK, there was no prior significant experience of emissions trading in the EU. The ETS was adopted in a very short span of time, posing great challenges to governments and the covered sectors to prepare for it. The EU ETS faced many initial shortcomings for diverse reasons. These included a number of bottlenecks such as a lack of infrastructure (e.g. registries), delayed allocations, issues relating to monitoring, reporting and verification, the need to adapt many national laws, the absence of the International Transaction Log, an insufficiently-operating Clean Development Mechanism and Joint Implementation (CDM/JI) programme and the need to become familiar with the novel instrument within both companies and governments. To date, a single CO_2 allowance price within the sectors covered by the ETS is applicable throughout the EU, which is unlocking value for CO_2 abatement measures. The market has been gradually expanding in volume. A recent report finds that in the first year, surplus emissions cuts have been more important than overallocation (Ellerman & Buchner, 2006). For the second round of National Allocation Plans

(NAPs), however, there have been indications of potential overallocation (see e.g. Rogge, Schleich & Betz, 2006). In a recent decision on the first 10 NAPs for the period 2008–12, the European Commission reduced the number of allowances by almost 7% on average compared with member state suggestions (European Commission, 2006a and 2006b). Two more NAPs have been scrutinised with a comparable outcome.

It has become increasingly acknowledged that if the share of emissions from the covered sectors grows to the detriment of the non-trading sectors, the objective of minimising the total abatement costs will not be achieved. Total abatement costs will be minimised if the marginal costs of abatement measures in the trading and non-trading sectors are equal. Thus, sectors with cheaper reduction measures should contribute to more reductions.[1]

Nonetheless the ETS remains a 'work in progress' with a number of areas for improvement to be addressed in the 2006–07 EU ETS review (see European Commission 2006c; for an overview, see also Egenhofer et al., 2006). These include questions on short- and long-term effectiveness, investment incentives, distortions to competition in the internal market, complexity, concerns about short- and long-term competitiveness of the industry operating in Europe (see e.g. European Commission, McKinsey & Ecofys, 2006) as well as the efficacy and efficiency of the compliance regime.[2] A particular challenge the ETS faces is that in all likelihood the 2006–07 EU ETS review will be completed before a global post-2012 agreement can be reached, i.e. the EU ETS will be reviewed against an unknown global context. An important test will be to create stability and predictability, to allow markets to function efficiently while ensuring that the ETS is flexible enough to adapt to new international developments. There is a distinct possibility that during a considerable transition period, there will be no comprehensive global agreement. This will mean that many of the EU's industrial competitors will not be subject to a similar carbon constraint. Hence, some elements of adaptability to global developments appear necessary for this transition period, although in order to function properly the EU ETS will need a minimum level of regulatory stability or, in other words, abrupt changes should be avoided. Ultimately this boils down to the question of how to make the ETS a pacesetter for a possible post-2012 regime and thus a global price while maintaining competitiveness for European industry during this transition period, until a global regime is in place.

A particular issue has been the inclusion of small installations, which can lead to high administrative costs for either governments or the covered sectors or both. For small installations with emissions of less than 25,000 ktonnes of CO_2, the additional costs of establishing monitoring and reporting can be disproportional to the environmental benefit. While costs can be significant – leaving aside the one-off start-up costs – the environmental gain may be negligible. A principal issue has been whether and especially how to exclude such installations (see also the Companion Report).

2. Improving the design of the EU ETS

The principal focus of the ETS debate has been design options and notably allocation. Numerous changes and even different systems have been proposed in this debate. In order to assess the consequences, we test *four* notional **design options** and their variants against a set of *ten* **criteria** (see also Matthes et al., 2005).

[1] Criterion 3 of Annex III of the EU ETS Directive (2003/97/EC) addresses this issue (European Union, 2003).

[2] This latter topic has not been covered by this Task Force, but further discussion of it can be found in Kruger & Egenhofer (2006).

2.1 Criteria for assessing design options

The ten criteria are grouped under three sub-headings: the fundamentals, environmental effectiveness and economic efficiency.

The fundamentals (contributing to essential climate-change objectives)

1) Achievement of emissions reductions without carbon leakage[3]

2) Incentives for R&D to develop new breakthrough technologies for the long term

3) Potential to adapt to international developments and more generally to enhance global participation

Environmental effectiveness (the objectives to be achieved)[4]

4) Incentives to replace an old plant with a more efficient new plant, i.e. incentives for higher efficiency

5) Incentives to replace an old plant with low-carbon technology, i.e. incentives for low-carbon investment

Economic efficiency (how to achieve the objectives)

6) Prevention of stranded investment *in the future*, which could result from technological or political changes

7) Maintenance of international competitiveness during the transition period, during which not all countries are subject to a hard carbon constraint

8) Distribution of costs and benefits (fairness and political acceptability) within the covered sectors and the EU

9) Effects on the functioning of the EU allowance market (e.g. gaming incentives) and other markets such as energy

10) Administrative ease, data requirements and availability

2.2 Design options

Out of the four notional design options, three are based on the cap-and-trade model – the existing design option. To analyse the effects produced by different allocation methodologies, we look at three options built on the cap-and-trade model. These include on the one hand free allocation based on historical emissions ('grandfathering') and on benchmarks respectively, and on the other hand full auctioning, and if appropriate, variants on that theme. In addition we test one potential 'non-cap-and-trade' option, a credit-and-baseline model.[5] Summarising, the four options considered are

[3] Carbon leakage refers to the displacement of production from one region where emissions are regulated to another where they are not. While emissions in the regulated region go down, they are merely replaced by emissions from another region. Under the assumption that technology in the regulated region is on average better than in the non-regulated region, global emissions with the displacement of production across regions will be higher than in a situation where the production is maintained in the regulated region.

[4] Although criteria 4 and 5 are closely linked and should be seen together, we make a distinction for analytical purposes.

[5] See for example European Commission & Ecofys (2006a, 2006b and 2006c).

1) a cap-and-trade scheme with free allocation, which is based on historical emissions (grandfathering);

2) a cap-and-trade scheme with free allocation to all installations, which is based on benchmarks, i.e. an emissions factor multiplied by activity rates;

3) the full auctioning of allowances; and

4) a credit-and-baseline scheme with relative targets.

2.3 Assessment of the design options against the criteria

The following section tests the four notional design options and their variants as to their performance in relation to the different environmental, economic and other criteria in a stylised manner. The first three criteria are treated up-front, cutting across all the options, as they hold some general messages.

Criterion 1, achievement of emissions reductions without carbon leakage. The hard carbon constraint in the EU is set by the Burden-Sharing Agreement as part of the EU law designed to implement the Kyoto Protocol. The EU ETS did not foresee a hard ceiling. Therefore, the environmental effectiveness in the narrow sense, i.e. achieving the EU Kyoto Protocol targets, is not directly related to the functioning of the EU ETS, with one exception: the global environmental outcome will be jeopardised if there is carbon leakage.[6] The evaluation of this criterion will, however, depend to a very large degree on the assumptions made about the post-2012 framework. As soon as a global agreement or credible domestic policies exist in other economies such as the US and major developing countries, carbon leakage will be reduced and eventually eliminated.

Criterion 2, incentives for R&D to develop new breakthrough technologies for the long term. One of the key questions is whether the EU ETS and the prospect of high carbon prices in the future could induce investment in R&D. Although this can be expected in the case of incremental technological changes, i.e. the development and diffusion of technologies that promise short-term returns to companies, this is most likely not the case for radical technological change (Schleich & Betz, 2005).[7] The long-term 'profitability' of R&D for new and breakthrough technologies would require a far higher and more stable CO_2 price than is commonly perceived as realistic. More generally, signals stemming from secondary markets, founded on government regulation (i.e. how caps are set) would not normally create the predictability needed as they are not seen as a guarantee that R&D investments will pay off in the very long term, i.e. in 20 to 30 years (see e.g. Montgomery, 2005). Therefore, additional policies to support R&D will be needed (as discussed in the Companion Report).

Criterion 3, potential to enhance global participation. The EU ETS was meant to become a showcase for cost-effective climate change policy and a 'docking station' to which other possible schemes could link. The attractiveness of the EU ETS as a docking station depends on efficient design, e.g. simplicity, environmental effectiveness and economic efficiency. Rules such as the one on allocations should ensure cost-effective reductions, provide long-term investment signals (notably towards low-carbon technologies) and minimise impacts on competitiveness. Any scheme would need to be open to the Kyoto Protocol's project mechanisms or similar instruments. Therefore, an important element is the efficiency of the Linking Directive (2004/101/EC), which ensures that (CDM/JI) credits from non-EU countries

[6] Strictly speaking, carbon leakage can also occur because of ineffective compliance rules or dysfunctional project mechanisms.

[7] Nevertheless, once technologies are proven, the ETS can help their massive diffusion.

are eligible for compliance with the EU ETS. Some non-EU countries may consider participating in a future global regime if the EU offers them the possibility to sell credits in the EU ETS. But if the EU offer is not conditional on the acceptance of reduction commitments, there will be no incentive for them to join a global regime. A critical role of the Kyoto Protocol's project mechanisms is to allow for arbitrage between the EU ETS and other possible emissions trading schemes. Such arbitrage will lead to a convergence of the allowance price levels of different schemes, if volumes are sufficient. Price convergence will facilitate linking as it reduces distributional effects when schemes are linked.

2.3.1 Option 1. Cap-and-trade, with free allocation based on historic emissions

This option foresees the free allocation of allowances based on historic emissions ('grandfathering') for allocations to existing installations and allocation to new projects (or entrants) in three different ways: i) through a new entrant reserve, for free, on a first come, first served basis or based on benchmarks; ii) through the purchase of EU allowances on the market or iii) through auctioning from a set-aside reserve. With regard to closures, allowances are withheld or a transfer rule applies where allowances can be transferred to the new investment. This option is very close to the existing allocation rules applied by member states although it includes some of the principal modifications that appear to play a role in the NAPs phase II.[8] Small partial auctioning in the order of 10-15% – while the remaining allocation is free – does not radically change the assessment against the criteria of this option. Partial auctioning provides somewhat better incentives for low-carbon investment. On the other hand, it undermines the competitiveness position of industry, because industry will receive less revenue (from free allocation) under partial auctioning than it will under 100% free allocation. Incentives for investment have been hampered because of allocation periods that are too short.

Criterion 4, incentives to replace an old plant with a more efficient new plant. The basic incentive is provided by the (level of the) cap, the resulting CO_2 price and expectations. Investment incentives have partly been weakened by the differences in rules for new entrants and closures across countries, which has provided incentives for gaming and in particular by the difference between allocations to existing installations (more generous) and those to new installations (more tight). In the analysis a distinction needs to be made between two distinct kinds of entrants: new projects (new investment) and replacement, i.e. improving the technology of an existing installation. In the case of replacement, one key aspect is that closures allow installations to retain allowances or the allowances are transferred to the replacing installation.[9] In addition, the length of the period with additional (transferred) allowances is critical for investment. No such transfers are needed in the case of a new project, although the new plants of newcomers are likely to gain market share from less efficient incumbents. It can be argued that free allocation based on historic emissions allows investment to go forward at a lower electricity price, as total costs including those for allowances are lower than in the auctioning scenario.

[8] The EU ETS does not prescribe a specific allocation methodology except that of predominantly 'free allocation', with an option to auction up to 10% for the second period of 2008-12.

[9] The reason is that the 'high' value of the allowances allocated to existing installations deters new investment by which the value of these allowances would be lost. It is important to note that transfer rules are very difficult to design and implement, given that is seldom that a new plant replaces an old one in its entirety. Rules in member states to withhold allowances upon closure – without transfer rules – are detrimental to new investment.

Criterion 5, incentives to replace an old plant with low-carbon technology. In addition to transfer rules – if appropriate, see criterion 4 above – incentives depend on how strictly the cap has been set and on how the rules for new entrants have been designed. A light cap, combined with free allocation, based on historic emissions offers little incentive for low-carbon investment. Moreover, the use of fuel-specific allocation methodologies (e.g. long-term technology-specific guarantees) – for reasons of security of supply – reduces incentives for low-carbon investment.

Criterion 6, prevention of stranded investment in the future. Allocations based on historic emissions prevent stranded investment, i.e. investment made before the carbon constraint. This criterion will gradually lose its importance for existing installations over time. Generally speaking, the more incentives there are for investment in low-carbon technologies, the lower is the risk of stranded investment *in the future*.

Criterion 7, impact on international competitiveness. Competitiveness issues concern principally the impact on those energy-intensive industries that are subject to international competition. For the most part, member states have 'generously' allocated allowances to the industrial sectors to compensate for higher electricity prices.[10] Yet, even if the additional costs in an industry were 100% compensated by either free allowances or higher revenues or both, the current allocation rules nevertheless provide incentives to industries in global competition to shift their production, and thereby emissions, abroad. The reason is that production decisions are not based on average industry margins, but on marginal costs for the last unit. In practical terms, two effects are at work: operational, i.e. reducing production in existing installations, and structural, i.e. postponing or abandoning investment or actively pursuing divestment. The evaluation of the structural effect depends very much on the perspective one takes and the assumptions made about the post-2012 situation, i.e. how fast a global agreement will be forged and how it will look. An important element remains project mechanisms such as the CDM, which can bring down overall compliance costs.

Criterion 8, distribution of costs and benefits (fairness and political acceptability). There are major differences among sectors, i.e. the power sector and the industrial sectors. The power sector, basically a domestic or regional market, generally does not face major external competition and in the short term can often pass through CO_2 costs,[11] with new investment acting as a long-term price-setter. This has generated windfall profits[12] for the power sector, which by and large can pass through CO_2 costs while receiving additional revenues from free allowances.[13] Meanwhile, the industrial sectors have to bear some or all of the costs

[10] Allocating the majority of the CO_2 allowances for free, combined with the potential of industries to pass a smaller or larger share of the costs onto consumers, limits the economic loss entailed for most industries or can even represent an upside for some industries. While this has been the usual practice, many exceptions exist (see for example Kawamura, 2006).

[11] Note that a recent study has estimated pass-through of between 60-100% for Germany and the Netherlands (see Sijm et al., 2006). According to the survey undertaken by Ecofys and McKinsey (European Commission, McKinsey & Ecofys, 2006), most ETS participants expect increasing rates of pass-through, eventually reaching 100%.

[12] Windfall profits for power generators in the Netherlands in an average year have been estimated at €300 to €600 million or about €3–€5 per MW (Sijm et al., 2006).

[13] Windfall rents that have been intended for near-zero carbon technologies such as nuclear and hydro power would nevertheless remain.

themselves.[14] As a result, the industrial sectors have been given more allowances than the power sector, partly to compensate the industrial sectors for higher power prices.

Criterion 9, effects on the functioning of the EU allowance market and other markets. Differences in member state allocation rules have created distortions to competition (see the Companion Report, chapter 3). In addition, retailers without generation assets could face an adverse competitive position compared with more vertically-integrated retailers (i.e. companies with generation assets). The latter will benefit from additional funds through allocations based on historic emissions. The 'windfall effect' also strengthens the market position of the incumbents and could easily create barriers for new entrants.

Criterion 10, administrative ease, data requirements and availability. Administrative costs to governments and the covered sectors have been high because of a lack of harmonisation. These factors have led to member states' special provisions, notably as regards rules for new entrants, closures and the cross-border effects of new entrant reserves, partly as a reaction to avoid putting 'one's own' industry at a competitive disadvantage. Moreover, transaction costs can arise from the need to establish emissions projections and the inclusion of small or new types of installations in the second trading period. Some but not all administrative burdens stem from the fact that both companies and the governments have been unfamiliar with the scheme.

Historic emissions from 2005–07 as a baseline will increasingly become meaningless for allocation purposes for the third trading period 2013–17. Using more recent years as a reference period, however, reduces predictability for investments. This dilemma has increased interest in benchmarking and auctioning.

2.3.2 Option 2. Cap-and-trade, with free allocation to all installations based on benchmarks

In this option, free allocations are made to all installations but are based on benchmarks, e.g. an installation's production is multiplied by the specific emissions in the sector based on an activity rate (e.g. projected output, standardised load factors, historic or recent production). Each installation receives the allowances *ex ante* based on the benchmark that is chosen for a specific activity. A distinction can be made between technology- or fuel-specific and fuel- and technology-neutral benchmarks.

Criterion 4, incentives to replace an old plant with a more efficient new plant. As was the case for historic emissions, the incentive to replace an inefficient plant with a new one under the benchmarks depends first on the obligation, i.e. the cap and the resulting CO_2 price. The tighter this obligation is or is expected to be, the higher this incentive will be. The problem of a lack of incentive owing to more generous allocations to existing rather than to new installations by definition would be removed.

Criterion 5, incentives to replace an old plant with low-carbon technology. Only fuel- or technology-neutral benchmarks provide incentives for investment in low-carbon technologies. Fuel- or technology-specific benchmarks have the opposite effects. The result would be that future abatement would become more expensive than would otherwise be the case. Fuel- or technology-neutral benchmarks could, however, strongly influence the fuel mix, potentially

[14] If we distinguish the industrial sectors by value added per tonne of CO_2 we find that refining, timber/paper/packaging and glass have the highest value added at €1,900, €1,060 and €850 per tonne of CO_2 respectively, while steel, cement and limestone have only a fraction of value added at €110, €25 and €22 per tonne of CO_2 respectively. Overall, the economic impact on low added-value producers is higher than it is on high added-value producers if their sectors are bearing the additional costs themselves (figures derived from ThyssenKrupp and StoraEnso).

creating security of supply risks, if for example deep cuts to the emissions are required too early, e.g. before new, near zero-carbon technologies are developed.

Criterion 6, prevention of stranded investment in the future. There is little risk of stranded investment in the future when fuel- or technology-neutral benchmarks are applied, which are likely to stimulate combined heat and power (CHP) in the short term.[15] There are higher risks associated with fuel- and technology-specific than with fuel- and technology-neutral benchmarks; incentives for investment in higher emission technologies, e.g. coal- and lignite-fired power stations, are contrary to the long-term objective to reduce emissions.

Criterion 7, impact on international competitiveness. This option directly affects energy-intensive industries, i.e. benchmarks will reduce the incentive to move production abroad only in instances where the benchmark is applied to the recent or forecasted production. Hence this situation needs to be distinguished from one in which a standard load factor or historic production level is applied. In this latter case, the incentive to shift production abroad is still the same as in the current grandfathering or auctioning scenarios, i.e. options 1 and 3.[16] This is so because production decisions are not based on average industry margins, but on marginal costs for the last unit (see the Companion Report). Yet a scheme with benchmarks can also restrict economic growth, if specific reduction targets are very high.

Criterion 8, distribution of costs and benefits (fairness and political acceptability). By and large, using benchmarks is more equitable and fair as they are based on performance in terms of emissions reductions. Furthermore, benchmarking rewards early action. An additional benefit is that benchmarks make allocations comparable, which is especially important for ensuring a level playing field within the EU, in the absence of harmonisation. Nevertheless, benchmarks will create losers and winners. Those industries with lower efficiency will lose and may therefore seek (temporary) protection by 'their' governments, thus making a deal in the Council and the European Parliament potentially difficult. 'Regional benchmarks' could solve this problem. A precondition would be needed that such regional benchmarks would be strictly temporary and very limited in numbers, e.g. one for the old and one for the new member states.

Criterion 9, effects on the functioning of the EU allowance market and other markets. Benchmarks do not distort competition in major ways *as long as* benchmarks are set in a harmonised manner at the European level. National benchmarks alone or in combination with EU benchmarks will undermine the internal market. A major advantage is that with benchmarks incumbents are treated the same as new entrants.

Criterion 10, administrative ease, data requirements and availability. Although benchmarks do away with rules for new entrants and new entrant reserves, their administrative costs can be high. Benchmarks raise issues of data availability and the costs of data collection (see e.g. Radov et al., 2005). But overall, simple benchmarks are not difficult to find and are less expensive than often assumed, as Dutch experience suggests.[17] A precondition for the efficient use of benchmarks would be EU-wide agreement on EU average performance and BAT[18] values and

[15] CHP and fewer coal- and lignite-fired power stations will result in a lower consumption of natural gas at a given carbon constraint (see Schyns, 2005b).

[16] If the standard load factor does not change (i.e. is applied), a company that shifts marginal production abroad will still obtain the same amount of free allowances.

[17] The Dutch Covenant Benchmarking system has established some 100 'world top' benchmarks, covering most of the emitting industries in the EU. The effort to establish the benchmarks has incurred costs of approximately €20,000–€40,000 per benchmark. This amount is less than €0.01/tonne of CO_2 of the Dutch emissions per trading period (see Schyns, 2005a).

[18] BAT refers to the best available technologies and techniques.

activity rates.[19] While an emissions factor can be used for a homogenous product, 'benchmarks' for larger and integrated plants seem more difficult to establish. Some sectors such as cement and electricity appear to lend themselves better to benchmarking than do refining or steel, for example, where production sites usually consist of numerous different production steps with separate, different intermediate products. Nevertheless, even for rather complex installations such as steamcrackers and refineries, benchmark systems have been up and running for about three decades in countries such as the Netherlands.

2.3.3 Option 3. Full auctioning to all installations

The following option is auctioning off all allowances. This option could avoid – at least in theory – many of the difficulties that have arisen from the current allocation system: different treatment across member states, the complexities of the rules for new entrants and closures, problems with accounting for early action, the risk of excess allocation, windfall effects and the challenge of ensuring the application of the polluter-pays principle. Nevertheless, participating companies are better off with free allocation than with auctioning, as free allocation generates some revenue as compensation for higher electricity prices. Therefore, at least for a transition period until the EU's major competitors are subject to a similar carbon constraint, realistically full auctioning can only be expected if combined with adequate revenue recycling.

Criterion 4, incentives to replace an old plant with a more efficient new plant. Among all the allocation methodologies, auctioning provides the clearest incentives to replace an old inefficient plant with a new one. With auctioning all plants have to cover full CO_2 costs, which means that when an incumbent does not replace an inefficient technology in a timely manner a newcomer will do so and push the obsolete plant out of the market. For the most part, incentives will depend on the stringency of the target, i.e. the total amount of allowances auctioned. The flow of investment in those sectors that are subject to international competition is likely to slow down as a result of the lack of compensation through free allocation, unless revenues are recycled to these companies. There could be a significant leakage effect in the absence of an adequate recycling of revenues.

Criterion 5, incentives to replace an old plant with low-carbon technology. Auction-based allocations to new installations provide strong incentives for investment in low-carbon technologies. At the same time, strong incentives for investment in low-carbon technology risks increasing import dependency on natural gas. In the medium term, only combined cycle gas turbines as a large-scale abatement measure exists although coal-based CHP can be an alternative.

Criterion 6, prevention of stranded investment in the future. Risks in relation to this criterion are minimised as auctioning provides incentives for the technology with the lowest carbon liability *for the future*.

Criterion 7, impact on international competitiveness. There are direct effects on industry in the EU. For energy-intensive industries, in the short term the partial compensation from free allocation will cease to exist unless there is revenue recycling. Auctioning in the absence of recycling would constitute a reduction in revenues for industry. There is also a risk in the short term that auctioning could lead to higher electricity prices. This risk arises because the pass-through of CO_2 could go beyond the current 60-100% rate, if power markets remain uncompetitive.[20] In a longer-term perspective, the power sector would become less carbon-

[19] In the past, member states have applied both differing emissions factors and activity rates.

[20] In competitive markets, even a 100% pass-through rate for the marginal asset, which sets the price, does not mean that other assets can cover 100% of their CO_2 costs. For example, if all generators take

intensive than it would without auctioning, which could reduce power prices. The precondition for this to occur is that power markets are competitive. Energy-intensive industries can be seen as paying twice, however: first for their own emissions and second for the increased costs of power purchases.

Criterion 8, distribution of costs and benefits (fairness and political acceptability). Auctioning would allow the covered sectors less revenue than free allocation does and thus lower gross revenues for both the energy-intensive and power sectors. For the power sector, which by and large can pass through CO_2 costs, this would mean that windfall profits[21] stemming from free allocation would disappear.[22] Those industrial sectors that cannot pass through the additional CO_2 costs owing to international competition would remain in a situation of reduced revenue. The recycling of auction revenues could address this. Auctioning allowances solely to the power sector combined with transferring revenues from such auctions to the energy-intensive sectors, subject to international competition, could off-set the reduced revenues of the industrial sectors, which are currently being off-set by free allocation as compensation for increasing power prices. As about 45% the EU's power production is based on nuclear and renewables (mainly hydropower), revenues may not necessarily be high enough to compensate for all lost revenues.

Criterion 9, effects on the functioning of the EU allowance market and other markets. Auction-based allocation increases transparency, ensures a level playing field across the EU and avoids the windfall rents that have arisen from free allocation. Auctioning would have no effects on competition within the internal market for the sectors involved as long as the rules for auctioning and revenue recycling (including the size of redistributed revenues) are the same across the EU. Revenue recycling risks introducing distortions, however, unless the rules are the same for all sectors across the EU.

Criterion 10, administrative ease, data requirements and availability. Although auctioning should be simple in principle, the administrative costs of auctioning could be very significant mainly because the recycling of revenues will require rules for allocating them ('reverse allocation'). The precondition for auctioning is also that rules are shaped in such a way that they avoid the enhancement of market dominance (i.e. 'deep pocket' issues). (For further details see the Companion Report). On the other hand, auctioning will avoid many of the inefficiencies and complexities that arise from the current allocation system.[23] As long as free allocation and auctioning are used in parallel, administrative costs will also remain relatively high as two different sets of allocation rules are used simultaneously. This situation might cause difficulties especially for smaller enterprises.

2.3.4 Option 4. Credit-and-baseline system with relative targets

In credit or rate-based trading, emission credits are generated when emissions are reduced from an agreed baseline (i.e. energy-efficiency targets). These emission credits can then be traded. By their nature credit programmes tend to be associated with specific sources, processes or projects. Baseline-setting and verification under a credit-and-baseline scheme is similar to that under the Kyoto Protocol's project mechanisms JI and CDM, in that credits are generated *ex post* and are

---

100% account of CO_2 costs, when gas sets the price the increase in the electricity price will be high enough to cover only about 40% of the CO_2 opportunity costs for a coal asset.

[21] See footnote 12, *supra.*

[22] See footnote 13, *supra.*

[23] Factors such as different treatment across the member states, the complexities of the rules for new entrants and closures, difficulties with accounting for early action, the risk of excess allocations and windfall effects have together made the system more complex.

based on a comparison of a baseline and actual emissions. An explicit feature of a credit-and-baseline system is *ex post* allocation, based on actual emissions, hence including *ex post* adjustment of the forecast to the actual production. This aspect distinguishes the credit-and-baseline scheme from option 2, a cap-and-trade scheme with *ex ante* allocation, but one that is based on benchmarks.

A credit-and-baseline scheme based on relative targets does not provide environmental certainty insofar as emissions depend upon the level of output. Nevertheless, this lack of absolute environmental certainty in a credit-and-baseline scheme may be off-set by a lower risk of carbon leakage than under a cap-and-trade scheme.[24] Moreover, a total cap for a credit-and-baseline system could be guaranteed by annual adjustment of the baseline (benchmarks per product) for future years (Schyns, 2006).

Theoretically, schemes with relative targets are economically less efficient than absolute schemes, because they have a subsidy effect as allowances are related to (increasing) output (see Koutstaal et al., 2002). Therefore, overall emissions in the future would arguably be higher than they would under an absolute scheme, as would abatement costs.[25]

It has been argued that *ex post* allocation risks an asset freeze. Despite the market being liquid, participants may want to wait until the end of the trading period to trade when their trading positions are clearer. Although the actual adjustment at the end of the trading period may be small, allowance prices are set at the margin. But even a relatively small degree of uncertainty may have a big effect on prices.

Credit-and-baseline schemes based on relative targets share some of the same characteristics of (*ex ante* allocation based on) benchmarks, as described in option 2.

Criterion 4, incentives to replace an old plant with a more efficient new plant. The incentive to replace an inefficient plant with a new one depends first on the obligation to reduce CO_2 emissions, i.e. the total cap, and the resulting CO_2 price. The tighter this obligation is or is expected to be, the higher this incentive will be.

Criterion 5, incentives to replace an old plant with low-carbon technology. The strength of the incentives depends on how the target is expressed. If it is expressed in a fuel- or technology-neutral way (e.g. X% of reduction of CO_2 per unit of output), there will be an incentive for reduction. If, however, the constraint is expressed for each specific product, this will not be the case. The incentive will then be to (merely) improve on existing technologies,[26] although this situation is more favourable to a balanced energy mix.

Criterion 6, prevention of stranded investment in the future. There are higher risks associated with this criterion if fuel- and technology-specific targets are set versus fuel- or technology-neutral targets.

Criterion 7, impact on international competitiveness. Incentives for reductions within sectors and in low-carbon investments are maintained while avoiding competitiveness problems (Grubb

[24] Theoretically, a total cap of a credit-and-baseline system could be guaranteed by annual adjustment of the future baseline (benchmarks per product) for future years.

[25] The production subsidy effect could theoretically be neutralised when the baseline (the benchmarks per product) takes into account efficiency in the use of electricity not produced on site, which is the basis of the benchmark methodology.

[26] Yet fuel- or technology-neutral benchmarks could strongly influence the fuel mix, potentially creating security of supply risks if the total cap is set too stringently too early, e.g. before new, near zero-carbon technologies are developed.

& Neuhoff, 2006). [27] A credit-and-baseline scheme has the same positive effect on competitiveness/carbon leakage as benchmarking combined with historic or recent production data (see criterion 7 under option 2).[28] The difference with benchmarking is that the credit-and-baseline system is based on actual production data. At the same time, a scheme with relative targets and *ex post* adjustment can also restrict economic growth, if specific reduction targets are very high. The indirect effect from power prices is addressed as the CO_2 pass-through is reduced to an extent because the marginal unit of power would not bear the CO_2 cost.[29]

Criterion 8, distribution of costs and benefits (fairness and political acceptability). Relative targets are considered fair as they are based on performance in terms of emissions. Still, relative targets also create losers and winners, as do benchmarks. Yet applying relative targets could mean that overall reductions from the EU ETS may be lower than under options 1 and 3, although ultimately this will depend on how the baselines are expressed. This would push compliance costs to other sectors while at the same time overall compliance costs for the EU would increase.[30] This consequence is reinforced through the output subsidy effect, although (at least theoretically) the problem could be solved if benchmarks for industrial sectors also take into account the source and efficiency of the fuel input.

Criterion 9, effects on competition in the EU allowance market and other markets. Credit-and-baseline schemes do not distort competition in major ways, as long as targets are expressed in a harmonised manner at the European level. Different targets for similar installations or technologies across countries will undermine the internal market somewhat like non-harmonised benchmarks. There is also the risk of asset freeze (see the introduction to section 2.3.4 on option 4); despite the market being liquid, participants may want to wait until the end to trade when their trading positions are clearer.

Criterion 10, administrative ease, data requirements and availability. A major downside of a credit-and-baseline system is the possibility of high administrative costs for governments and the covered sector. As mentioned under option 2, determining benchmarks does not need to be expensive. But the credit-and-baseline scheme additionally requires verification of whether actual emissions have been above or under the baseline. This feature is comparable to the granting of credits to the Kyoto Protocol's project mechanisms or benchmarking in general. Furthermore, experience in the US has shown that such schemes offer themselves to government interference and resulting uncertainty, especially through *ex post* adjustment (see e.g. Klaassen, 1996; Godard, 2000). This risk can, however, be reduced by a predictable methodology for setting the baseline.

---

[27] The benchmarks from the credit-and-baseline system will result in fewer incentives to move production abroad than will options 1 and 3 because production decisions are not based on average industry margins, but on marginal costs for the last unit (see the Companion Report). This outcome makes clear the decision of whether it is better to continue to produce or to reduce production and sell the freed allowances independent of the quantity of allowances allocated to a firm.

[28] The relative targets from the credit-and-baseline scheme would enable EU industry to meet this demand at times of unexpected output growth. In addition, short-term carbon leakage would largely be avoided; however, it will ultimately depend on how stringently the target is set.

[29] In most markets gas-fired electricity is marginal at peak demand and coal- or lignite-fired electricity is marginal during base-load demand. The higher variable costs of coal- and lignite-fired power plants are then neutralised by the lower variable costs of gas-fired power plants, which is a benefit for the competitiveness of industrial operators in Europe.

[30] A number of studies argue that the split between the ETS and the non-trading sectors is already biased towards the ETS. These studies find that the marginal abatement costs in the ETS sectors are lower than in their non-ETS counterparts (for an overview, see Schleich & Betz, 2005).

2.4 Conclusions: What harmonisation is needed?

The EC Treaty gives guidance as to harmonisation and the degree of centralisation of EU policies. For shared competences, as in the case of the EU ETS, Art. 5 concerning subsidiarity states, "only if and in so far as the objectives…cannot be sufficiently achieved by member states" should these be achieved by EU action. The reasons for EU action are economies of cross-border effects. In addition, the EU should not go beyond what is necessary to achieve its objectives (the proportionality principle). Hence the EU should use the least-interfering instrument, including for example voluntary coordination, framework legislation, harmonisation or centralisation, i.e. the outright EU execution of policies.

1) The EU ETS Directive (2003/97/EC) has assigned the responsibility of setting the cap to member states as a political choice and a reflection of the differences among member states, mainly but not only in the energy mix. This approach has left member states' governments subject to pressure to not treat 'their' industry worse than they treat competitors from other member states. This suggests the need for more centralisation. The first step could be to harmonise methodologies for setting the cap. Once agreed methodologies are in place, caps could even be set at the EU or the sector level.[31] The precondition for EU-wide caps would almost certainly be that the ETS sectors are not subject to a Burden-Sharing Agreement by member states, although in theory solutions are possible to continue EU caps and a Burden-Sharing Agreement.

2) The application of different allocation methodologies across member states has cross-border effects. If the ETS continues with member state allocation, the allocation methodologies should be reasonably consistent. There has been progress in harmonisation, such as on the definition of combustion installations or the Monitoring Guidelines. Similar progress would be needed for allocation methodologies.

    a) In the case of a significant degree of free allocation, the current rules for new entrants, closures or transfers – if required and provided they do not hinder new entrants – should be harmonised across the EU to avoid distortions in the internal market. Such rules that could be drawn up by the European Commission together with member states would gradually replace previous obligations by member states as these run out. Ultimately, the EU should formulate EU-wide rules on new entrants and closures and for those situations where needed on transfers as a means not only to reduce transaction and management costs (centralisation) but also to avoid distortions to competition. These rules could be formulated now and implemented by those member states that wish to use them as default rules. Over time these rules would become applicable to all member states. An important first step would be to establish a new entrant reserve in the EU, where size, access and allocation criteria (possibly benchmarks) are set on an EU-wide basis. A necessary follow-up element would be the harmonisation of closure rules and (if applicable) transfer rules.

    b) To stimulate harmonisation further, the EU should start developing an EU-wide approach to setting the cap, as it has proven particularly difficult to supervise and verify member state projections. The introduction of a more harmonised approach appears to be most urgent for the electricity sector, which has seen big differences in allocations among member states, partly as the result of the Burden-Sharing Agreement.

[31] In practice, if caps are set at the sector level, the situation is almost identical to one in which caps are set at the EU level.

c) As we can expect that member states will continue to use benchmarks, it becomes indispensable not only to agree on EU-wide benchmarks (i.e. emissions factors) but also to use activity rates in an agreed and consistent way. Such benchmarks are best developed for a number of select sectors that lend themselves well to benchmarking.

d) Benchmarks can reduce incentives to move production abroad, but only if the benchmarks are applied to the recent or forecasted production. This is so because production decisions are not based on average industry margins, but on marginal costs for the last unit. At the same time, benchmarking can also restrict economic growth, if specific reduction targets are very high.

e) Should the EU or member states move to full or partial auctioning, priority should be to set up EU-wide rules for the conduct of auctioning such as the minimum or maximum levels, frequency or mechanics. Similarly, the rules of auctioning should be accompanied by EU guidelines on the recycling of revenues to avoid distortions to competition as well as litigation.

3) A scheme based on relative targets could perform better in terms of avoiding carbon leakage than one based on absolute targets, provided the baseline is combined with recent or forecasted production (and not standard operation time). But this aspect raises similar issues with forecasts as has the free allocation of historic emissions, e.g. accuracy and generally the pressure to inflate projections (LETS Update, 2006). A scheme with relative targets can also restrict economic growth, if specific reduction targets are very high. A relative target scheme tends to offer less environmental certainty, although this may be off-set by avoiding carbon leakage. Theoretically, schemes with relative targets are economically less efficient than absolute schemes, because they have a subsidy effect as allowances are related to (increasing) output. As a result, overall emissions in the future would likely be higher than they would under an absolute scheme, as would abatement costs. Furthermore, an emissions trading scheme with relative targets could incur high administrative costs, for example from setting a baseline although this risk can be reduced by establishing predictable methodologies.

4) We have also analysed the possible merits and disadvantages of a credit-and-baseline scheme, which shares some of the same characteristics of (ex ante allocation based on) benchmarks, or relative targets. An explicit feature of a credit-and-baseline system is ex post allocation, based on actual emissions, hence including ex post adjustment of the forecast to the actual production. It is argued that despite the market being liquid, participants may want to wait until the end of the trading period to trade when their trading positions are clearer. Although the actual adjustment at the end of the trading period may be small, allowance prices are set at the margin. Hence, a relatively small degree of uncertainty can have a big effect on prices. A credit-and-baseline scheme requires verification of whether actual emissions have been above or below the baseline. This feature is comparable to the granting of credits to the Kyoto Protocol's project mechanisms or benchmarking in general. Although this involves the risk of government interference and resulting uncertainty, this risk can be reduced by the use of a predictable methodology for setting the baseline. A critical element for the incentives for GHG emissions reductions is how the target is expressed. If a target is expressed specifically for each individual product, there is (merely) an incentive to improve on existing technologies instead of moving towards different and low-carbon technologies.

3. Squaring the investment circle: Predictability in an uncertain future

Investment incentives to stimulate the development of more efficient and low-carbon technologies are warranted not only to reduce emissions and to bring the EU onto a low-carbon trajectory. It is also commonly accepted that current short-term allocation periods of 3 and 5 years respectively witness a significant disconnect with investment cycles spanning up to 30, 40 or more years.

3.1 Predictability rather than certainty matters

There can be no absolute certainty. Uncertainty is a normal factor for many investment decisions. Uncertainty relates to demand, prices for electricity and other products, factor prices (primary energy, feedstock, labour, transport, etc.), technological progress, competitors' strategies as well as regulatory risks, under which the EU ETS falls. Instead of absolute allocation certainty, increased predictability in the total allocation and the allocation rules for individual installations based on the principle of a (relative) reward for low emissions and a (relative) penalty for high emissions will facilitate investment to reduce emissions in existing installations and investment in new efficient installations, thereby replacing old inefficient plants.

- The first and most basic measure to ensure predictability is an **assurance that the EU ETS as a scheme will continue** until 2030 and beyond. The recent European Commission Communication on the 2006–07 ETS review (European Commission, 2006c) makes this sufficiently clear and should there still be doubts, the subsequent 2006–07 ETS review should do away with them.
- The second and intermediate measure is to provide a reasonable level of predictability as to the allocation methodology, for example by **determining how future allocation methodologies will be developed.** The 2006–07 ETS review offers the opportunity to agree on the principal elements of how allocation methodologies will emerge.
- The final measure is the **actual allocation and the length of the commitment period**. Long periods such as those set for the US SO_2 schemes would be an ideal situation. But because of the unpredictability of international negotiations on the global situation and climate science, very long-term allocations over 20 or 30 years or more are not recommended. These could lock the EU into an arrangement involving unsustainable capital stock and result in stranded investment in the future.

As follows, there are some additional possible approaches for increasing predictability.

3.2 A road map for the long-term harmonisation of allocation

A clear benefit to predictability would be the development of a **road map for the long-term harmonisation of allocation,** i.e. laying out a path for how future allocation methodologies will be developed. The basic idea is that the member states, together with the European Parliament and the European Commission where appropriate, agree on a road map for the long-term, for example for 30 years. As a 30-year period of stability for rules is rather difficult to perceive, this 30-year period could for example be separated into three 10-year phases. At the end of each phase the EU could commit to a number of harmonisation steps to come into effect in the subsequent phase, including methodologies for allocations and the setting of the cap.[32]

[32] For example, for the first phase this could mean a commitment to using agreed methodologies for projecting economic growth or for harmonised allocations, including for instance a commitment to

3.3 Additional options to increase predictability

For the power sector, the German example of providing certainty to the electricity industry seems to suggest that some sort of guarantee of around 14 years is sufficient to induce investment. There have been a number of additional ideas for dealing with predictability and investment incentives, which we briefly discuss below.

- One approach is the so-called 'ten-year rule' (see Åhmann et al., 2006; see also the Companion Report).[33] It attempts to address the issues of grandfathering based on historic allowances, and hence focuses on this specific allocation method. In essence, the proposal foresees that a member state will allocate allowances based on an average of, for example, three reference years for 10 years. As the reference period is updated, allocations would always been known for 10 years in advance. This treatment creates certainty.
- Another approach is to use the 2008–12 allocation (i.e. NAPS phase II) as a basis for all further allocations, together with an EU compliance factor. This compliance factor could be below or above that used to accommodate the results from international developments. In order to avoid freezing potential 'unfairness', notably from the 1998 Burden-Sharing Agreement and different levels of ambitions in the NAPS phase II, there should be *one-off* country- and sector-specific correction factors. Although agreement on such one-off compliance factors will inevitably be very difficult and subject to intensive economic analysis, the proposal provides for simplicity, transparency and a much-reduced risk of creating market distortions. The precondition would be the requirement for a particularly high level of harmonisation to be achieved by the time the EU ETS review is completed and before the next allocation is undertaken. The principal advantage is that it would offer a very high degree of flexibility regarding the allocation as well as an equally a high degree of predictability regarding the allocation rules.
- A third idea that has been discussed is that of price caps and floors. Governments would guarantee a bandwidth of prices in which EU allowances are traded to provide certainty, yet with adaptability. A price *cap* system foresees that when the price reaches a particular threshold, the regulator will make special allocations by giving away some volume of additional permits, which would lower permit prices.[34] As to price *floors*, a regulatory authority could set up an absolute price floor in the EU ETS by agreeing to purchase an unlimited number of allowances at a fixed price. The general question is whether such a government 'guarantee' would indeed increase predictability, as nothing would change in respect to prices, since ultimately prices – at least indirectly through allocation – have

---

benchmarks and activity rates for a number of selected sectors or a commitment to a minimum percentage of auctioning under EU-wide caps per sector (or both). For the second phase the percentage of auctioning could be increased, dependent on greater global participation. At the end of the third period, there could be a commitment for full auctioning if a suitable, comprehensive global agreement is achieved.

[33] The reference years would be updated on a rolling basis, i.e. from 2000–02 to 2001–03, etc. This approach creates long-term predictability with the allocation rules known 10 years in advance. New entrants would receive allocations according to emission rate benchmarks (to be standardised across the EU member states or even established at the EU level) for 10 years, and afterwards would switch to updating on the rolling base period alongside the incumbents. If existing installations were shut down, they would receive allowances for 10 years, thereby diminishing any perverse incentives to continue operation. As this is a notional concept, it is clear that many open questions remain, e.g. how meaningful a 10-year old baseline is or how to manage a new entrant reserve over 10 years.

[34] If the allowance price keeps hitting the price cap (i.e. it is too low), then the price cap would in fact work as a tax. This can be done either free of charge or in the form of loans, which would amount to borrowing.

been set by government policy. Moreover, we should expect another layer of governance being introduced with governments tinkering with the market. It is also difficult to see how this 'governance' of a price cap or price floor could be managed in a decentralised political system such as the EU. Such a scheme would risk speculative runs to break the price cap and get more allowances onto the market, making prices more volatile. Finally, it is difficult to imagine how a price cap would ever be set above a modest price for reasons of political pressure. There are also major questions about the impact on innovative behaviour if the returns on technological breakthroughs are limited.

3.4 No magic solution

There have been other ideas and approaches to modifying the EU ETS, to provide additional predictability for investors. What they have in common is that they 'play' with elements of the four options discussed in section 2. Ultimately, the question boils down to picking one of the above four options and adapting it in the most suitable way to work in the EU and in the existing international environment.

4. Shaping an uncertain global environment

As an open scheme, the EU ETS should encourage broader participation and new investment. A number of measures can support this.

4.1 Completing the trading infrastructure

There are several ways of improving predictability further, beyond what has been discussed in section 2 on design, such as

1) completing the development of the infrastructure for emissions trading, and notably the International Transaction Log (see chapter 3 in the Companion Report);
2) making progress on international emissions trading as set forth in Art. 17 of the Kyoto Protocol; and
3) creating a legal framework for carbon capture and storage to be used in the ETS and in international carbon markets.[35]

4.2 Improving project mechanisms

The Linking Directive (European Union, 2004) allows for credits of the Kyoto Protocol's project mechanisms to be used for compliance with the EU ETS. It means that the EU can advance climate policy objectives at a global level by achieving more cost-effective emissions reductions (i.e. improving sustainability, incentives for participation, decarbonisation and accelerating technology transfer). The efficiency of the CDM/JI and that of the EU ETS become interlinked. As long as other national or regional schemes allow for the use of project mechanisms as well, there will be a possibility of arbitrage among the schemes, ultimately leading to a convergence of carbon prices in these schemes. Limits on the use of the project mechanisms as proposed by the European Commission's decision on the NAPs phase II may be detrimental to broader participation. Thus in the longer term, there are good arguments in favour

[35] Emissions trading is an important mechanism for creating incentives for the deployment of clean technologies such as carbon capture and storage (CCS). Recognition of CO_2 stored as part of a CCS operation from installations included in the EU ETS, through the approval of appropriate monitoring and reporting guidelines for CCS, is a critical part of utilising market mechanisms to reduce emissions cost-effectively.

of an extension towards a broader range of forestry and bio-energy projects, unilateral CDM projects and the development of the CDM into a more programmatic or sectoral crediting mechanism (see the Companion Report) although many open questions such as permanence exist. More importantly, massive expansion of the CDM or other credits needs to be matched by *demand*, most of which is currently provided by the EU ETS or other Kyoto Protocol countries. Priorities for the EU should be to

1) explore further improvements in the functioning of the CDM and JI;
2) continue to guarantee the continuation of CDM and JI projects beyond 2012 through their recognition in the EU ETS post-2012, so that the project mechanisms would not fail from lack of certainty. This guarantee for CDM projects could be given to least-developed countries without conditions, but with respect to other developing or industrial countries, in the case of JI, it could be given on the condition that they take on appropriate commitments; and
3) avoid sending signals about restrictions to the use of credits from project mechanisms without proper explanation.

4.3 Coverage of sectors and gases

The fundamental argument for bringing more sources of emissions under the EU ETS is economic. Broader coverage increases the options for emissions reductions within the ETS and thus lowers the total costs for society to reach climate targets. Additional gases and sectors expand the scope of reduction options, offer additional innovation potential if innovation lead times are respected, increase liquidity and ultimately the efficiency of the market. Additional gases and sectors can add complexity and raise administrative costs, however. Bringing several sectors with very different abatement costs under a single cap also has re-distributional effects. For example, the high abatement costs of the (air) transport sector[36] could lead to an increase in the demand for allowances, thereby raising the price of allowances. If some distributional effects or significant impacts on competitiveness should arise, governments may set the carbon constraint (i.e. through allocation) in such a way that it remains 'bearable' for the most vulnerable sector, setting an emissions cap lower than the level warranted to meet climate change objectives. Furthermore, taking into account both abatement and administrative costs, alternative instruments may be superior to the EU ETS and thus enable emissions reductions at a lower cost.

4.3.1 Conditions for broader coverage

Inclusion of new gases and sectors is recommended under the following conditions:

1) the accuracy of monitoring and reporting and the verification of emissions can be assured;
2) the price signal can be linked to opportunities to reduce emissions;
3) the administration costs for both governments and the covered sources are proportionate;
4) the abatement costs are expected to be similar in both the covered and non-covered sectors of the EU ETS; and
5) the reduction of emissions is technically feasible.

[36] The point being made here does not mean that there are no low-cost potentials in the transport sector. Gillen, Morrison & Stewart (2003) demonstrate that for aviation in North America there are differences in price elasticity for long and short distances as well as for business and leisure travel.

4.3.2 Domestic off-set projects

Domestic off-set projects (DOPs) mirror the concept of the project mechanisms articulated in the Kyoto Protocol, but are used within the home country to reduce emissions in the non-trading sectors (e.g. transport and buildings). The principal argument in favour of DOPs is that they reduce total compliance costs by bringing hitherto non-identified low-cost reduction sources into the fold and thereby assist in decarbonisation (see the Companion Report). The precondition here is that the reductions are additional. Under a Kyoto-type of national cap in combination with only minimally constraining NAPs, if member states allow the ETS sectors access to the non-trading sectors, this would mean that low-cost options would be picked up by the EU ETS sectors. While this can lower the EU ETS allowance price, reaching the Kyoto Protocol targets can be more costly from the macroeconomic point of view. This would be so if the emissions reduction obligations in the non-trading sectors were not adapted by taking into consideration that the low-cost reductions are accounted for by the EU ETS sectors. In addition, there is fear that DOPs are potentially complex and incur transaction costs inherent in all project mechanisms. Nevertheless, this 'market search function' of identifying low-cost reduction opportunities remains.

Although in the future DOPs may play a role, a possible way to deal with the matter could be to develop a number of pilot projects, which could then inform policy-makers of the suitability of DOPs. Pilot projects should also consider whether DOPs could be implemented *de facto* by Art. 24 on unilateral opt-in. A precondition for any of these approaches would be that numerous practical/technical points such as consistency with national inventories should be taken into account and settled at the member state level.

5. Priority steps

This report has identified several areas that the EU ETS review needs to address to allow the scheme to become a showcase and attractive for other countries or regions to consider. Specific steps to address these areas are to

1) ensure that the ETS reduces GHG emissions;
2) increase harmonisation of the rules notably but not only in relation to allocation;
3) recognise the need for greater predictability and possibly the extension of the allocation period to foster investment;
4) pursue the creation of a global carbon market, more specifically
    a) make progress on the global infrastructure and rules, such as the project mechanisms, the International Transaction Log or international emissions trading;
    b) continue the efforts to make the EU ETS a docking station for comparable schemes;
    c) keep the EU ETS open to arbitrage with other emerging emissions-trading schemes through the project mechanisms;
    d) prepare a legal framework for carbon capture and storage soon, through the adoption of appropriate monitoring and reporting guidelines;
    e) ensure that the EU ETS works within a more general approach towards carbon prices including the use of other instruments such as taxes and green or white certificates; and
5) deal with the competitive impacts of the EU ETS (direct and indirect) for the transition period until a global climate-change regime is set in place.

References

Åhman, M., D. Burtraw, J. Kruger and L. Zetterberg (2006), "A Ten-Year Rule to Guide the Allocation of EU Emission Allowances", *Energy Policy*, Vol. 35, No. 3, March, pp. 1718-30.

Egenhofer, C., N. Fujiwara, M. Åhman and L. Zetterberg (2006), *The EU Emissions Trading Scheme: Taking Stock and Looking Ahead*, European Climate Platform, A Joint Initiative of CEPS and CLIPORE, Special CEPS Report, CEPS, Brussels, July (retrieved from http://shop.ceps.be/BookDetail.php?item_id=1360).

Ellerman, D. and B. Buchner (2006), *Overallocation or abatement? A preliminary analysis of the EU ETS based on the 2005 emissions data*, Nota di lavoro 139.2006, Fondazione Eni Enrico Mattei, Milan.

European Commission and Ecofys (2006a), *Auctioning of CO_2 emission allowances in the EU ETS*, Brussels and Utrecht, October.

_____ (2006b), *Inclusion of additional activities and gases into the EU Emissions Trading Scheme*, Brussels and Utrecht, October.

_____ (2006c), *The Approach to New Entrants and Closures in the EU ETS*, Brussels and Utrecht, December.

European Commission, McKinsey and Ecofys (2006), *EU ETS Review: Report on International Competitiveness*, Brussels and Utrecht, December.

_____ (2005), *Review of emissions trading scheme: Survey highlights*, Brussels and Utrecht, November (retrieved from http://europa.eu.int/comm/environment/climat/pdf/highlights_ets_en.pdf).

European Commission (2006a), *Emissions trading: Commission decides on first set of national allocation plans for the 2008-2012 trading period*, Press Release IP/06/1650, Brussels, 29 November.

_____ (2006b), Communication on the assessment of national allocation plans for the allocation of greenhouse gas emission allowances in the second period of the EU Emissions Trading Scheme accompanying Commission Decisions of 29 November 2006 on the national allocation plans of Germany, Greece, Ireland, Latvia, Lithuania, Luxembourg, Malta, Slovakia, Sweden and the United Kingdom in accordance with Directive 2003/87/EC, COM(2006) 725 final, Brussels, 29 November.

_____ (2006c), *Building a global carbon market – Report pursuant to Article 30 of Directive 2003/87/EC*, COM(2006) 676 final, Brussels, 13 November (for an overview, see also in this list Egenhofer et al., 2006).

European Union (2003), Directive 2003/97/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emissions allowance trading within the Community and amending Council Directive 96/61/EC, OJ L 275, 25.10.2003, pp. 32-46.

_____ (2004), Directive 2004/101/EC of the European Parliament and of the Council of 27 October 2004 amending Directive 2003/87/EC, OJ L 338, 13.11.2004, pp. 18-23.

Gillen, D.W., W.G. Morrison and C.S. Stewart (2003), *Air Travel Demand Elasticities – Concepts, Issues & Measurement*, Department of Finance of Canada, Ottawa, Ontario (retrieved from http://www.fin.gc.ca/consultresp/Airtravel/airtravStdy_e.html).

Godard, O. (2000), "L'expérience américaine des permis négociables", *Economie Internationale*, Vol. 82, No. 2, Paris.

Grubb, M. and K. Neuhoff (2006), "Allocation and competitiveness in the EU emissions trading scheme: Policy overview", *Climate Policy Climate Policy*, Vol. 6, No. 1, pp. 7-30.

Kawamura, H. (2006), "Views of the current ETS", presentation on the occasion of a seminar by the EU-Japan Centre for Industrial Cooperation on "Review of the EU Emissions Trading Scheme and its Future Developments", held in Brussels, 14 December 2006.

Klaassen, G. (1996), *Acid Rain and Environmental Degradation: The Economics of Emissions Trading*, Cheltenham, UK and Brookfield, US: Edward Elgar.

Koutstaal, P.R., A.M. Gielen and H.R.J. Vollenbergh (2002), "Comparing Emission Trading with Absolute and Relative Targets", paper presented at the CATEP Workshop on "Design and Integration of National Tradable Permit Schemes for Environmental Protection", held at University College London, 25-26 March.

Kruger, J. and C. Egenhofer (2006), "Confidence through compliance in emissions trading markets", *Sustainable Development Law & Policy, Climate Law Special Edition*, Vol. VI, No. 2, pp. 2-13 (also published as CEPS Policy Brief No. 99, CEPS, Brussels, April, 2006).

LIFE Emissions Trading Scheme (LETS) Update (2006), *Decision Makers Summary: LETS/LIFE Emissions Trading Scheme*, report produced for the LETS Update Partners, AEA Technology Environment and Ecofys, UK.

Matthes, F., V. Graichen and J. Repenning (2005), *Power switch: The environmental effectiveness and economic efficiency of the European Union Emissions Trading Scheme*, Report to the WWF, Öko-Institut, Freiburg.

Montgomery, D. (2005), *Creating Technologies to Reduce Greenhouse Gas Intensity: Public Options & Opportunities*, George Marshall Institute, Washington, D.C.

Radov, D., D. Harrison and P. Klevnas (2005), *EU emissions trading scheme benchmark research for phase II*, Final report, Entec UK Ltd and NERA Economic Consulting, July.

Rogge, K., J. Schleich and R. Betz (2006), *An Early Assessment of National Allocation Plans for Phase 2 of EU Emissions Trading*, Working Paper on Sustainability and Innovation No. S1/2006, Fraunhofer Institute Systems and Innovation Research and the University of New South Wales, Karlsruhe, Sydney, 9 November.

Schleich, J. and R. Betz (2005), "Incentives for energy efficiency and innovation in the European emissions trading system", in *eceee 2005 Summer Study proceedings: What works & who delivers?* (held in Mandelieu), European Council for an Energy-Efficient Economy (eceee), Paris.

Schyns, J.A.J.V. (2005a), "Climate changes challenges and the search for a sustainable policy", paper presented at the 8th International Conference on "Carbon Dioxide Utilization (ICCDU-VIII)", held in Oslo, 20-23 June, p. 10.

_____ (2005b), "Options and consequences for the allocation of allowances to electricity producers", paper presented at the European Chemical Regions Network meeting, held in Maastricht, 21-22 December, pp. 24-27.

_____ (2006), "How to fit benchmarks with ex-post adjustment in the present EU Emissions Trading Directive", paper presented at the 4th Congress of the European Chemical Regions Network, held in Tarragona, Spain, 10 November.

Sijm, J., K. Neuhoff and Y. Chen (2006), "CO_2 cost pass-through and windfall profits in the power sector", *Climate Policy*, Vol. 6, No. 1, pp.49-72.

Appendix

List of Task Force Members and Invited Guests and Speakers

Chairmen: Dan Gagnier
Senior Vice President
Corporate and External Affairs
Alcan Inc.

Rapporteurs: Christian Egenhofer
Senior Research Fellow
CEPS

Noriko Fujiwara
Research Fellow
CEPS

Members

Monica Alessi
Research Fellow
CEPS

Richard Armand
General Secretary
Entreprises pour L'Environnement

Roberto Asin
Regulation Specialist
Endesa
Georg Bäuml
Environmental Strategy
Volkswagen AG

Markus Becker
Economist, European Union Affairs
Brussels Office
RWE AG

Lieven Bloeyaert
Electrabel

Frank Brannvoll
Managing Director
Brussels Office
Point Carbon Brussels

Ruta Bubniene
Policy Officer
Climate Action Network Europe (CAN)

Barbara Buchner
Research Fellow
Fondazione Eni Enrico Mattei (FEEM)

Nick Campbell
Environment Manager
Fluorinated Products
ARKEMA S.A.

Jean-Yves Caneill
Environmental Affairs
Electricité de France (EDF)

Peter Carter
Associate Director
Head of Environmental Unit
European Investment Bank (EIB)

Deborah Cornland
Director
Climate Change Policy Research Programme
CLIPORE/MISTRA

Michel Cruciani
Public Affairs
Electricité de France (EDF)

Hubert David
Advisor
European Insulation Manufacturers Association (EURIMA)

Matthias Duwe
Director
Climate Action Network Europe (CAN)

Christine Fedigan
Director, CO_2 Strategy
Gaz de France

Francesco Giorgianni
Head of European Affairs
ENEL SpA

Christoph Grobbel
Senior Expert
McKinsey & Company

Sandra Grüger
Assistant to the Head of the Office
Brussels Office
ThyssenKrupp AG

Stephan Herbst
Manager
Environment Strategy Dept
Toyota Motor Europe

David Hone
Group Climate Change Advisor
Corporate Centre – PXE
Shell International Ltd

Esa Hyvärinen
Vice President
Public Affairs
Fortum Corporation

Staffan Jernick
Director & Director of Corporate Relations
CEPS

Helle Juhler-Kristoffersen
Director
Energy Policy
Confederation of Danish Industries (DI)

Johanna Jussila Hammes
Research Fellow
CEPS

Kari Kankaanpää
EHS Manager
Fortum Corporation

Tom Keij
Saint Gobain Isover B.V.

Wilhelmina Kip
Coordinator European Affairs
Head of Environmental Dept
Energie Nederland

Hans-Erik Kristoffersen
Senior Economist
Confederation of Danish Industries (DI)

Bill Kyte
Advisor
Sustainable Development
E.ON AG

Benoit Leguet
Chargé de Mission
Mission Climate
Caisse De Depot et Consignations

Frederike Lehmann
Shell Deutschland Oil GmbH

Didier Lutsen
Manager, European Union
ExxonMobil Petroleum & Chemicals

Andrei Marcu
President
International Emissions Trading Association (IETA)

Carmela Masella
Alcan

Manfred Meier
Volkswagen AG

Roland-Jan Meijer
Vice President
Environmental Affairs
Holcim Group Support (Brussels) S.A.

Bo Nelson
Corporate Strategic Advisor
Vattenfall AB

Patrick Nollet
Senior Advisor
Entreprises pour L'Environnement

Lasse Nord
Senior Vice President
Climate and Environment
Norsk Hydro Asa

Brigitte Poot
Climate Change Coordinator
Total S.A.

Hugh Porteous
Vice President, Corporate Affairs
Alcan

Martina Priebe
Manager, EU ETS
International Emissions Trading
Association (IETA)

Oliver Rapf
Senior Policy Officer
Climate Change & Business
WWF European Policy Office

Elke Robbrecht
Market Analyst
GE Energy

Georg Rosenbauer
Manager
Climate Change
Siemens Power Generation

Alexander Savelkoul
Emisisons Portfolio Manager
Essent

Stig Schjolset
Point Carbon A/S

Detlef Schmitz
Government & Product Affairs
Bayer AG

Markus Schulze
Environmental Manager
ThyssenKrupp Environmental Protection
ThyssenKrupp Stahl AG

Vianney Schyns
Energy Coordinator
Utility Support Group B.V.

John Scowcroft
Head of Unit
Environment & Sustainability
Eurelectric

Thomas Spiller
Director, Public Policy EMEA
SAS

Francesca Stevens
Government Relations Manager
Alcan

Andreas Theuer
Senior Counselor
Corporate Division Environment
ThyssenKrupp Steel AG

Bill Thompson
EU ETS Coordinator
BP Communications & External Affairs

Tina Tin
Climate Change Unit
WWF European Policy Office

Jan van Brummen
Government Relations Director
Saint Gobain Isover

Bruno Vanderborght
Vice President
Corporate Industrial Ecology
Holcim Group Support (Zurich) Ltd

Delia Villagrassa
Advisor
WWF EPO

Henning vom Stein
Head of Brussels Office
ThyssenKrupp AG

Adrienne Williams
Senior Consultant
Holcim Group Support Ltd.

Markus Wolf
TTC-TT Technology Centre
ALSTOM Power

Simon Worthington
Senior Advisor
European Government Affairs
BP Europe

Mike Wriglesworth
Senior Advisor
CEPS

Lars Zetterberg
Clipore Research Coordinator
ETIC Project Leader, CLIPORE
Swedish Environmental Research Institute

Invited Guests and Speakers

Richard Baron
Deputy Head of the Energy Efficiency and Environment Division
International Energy Agency (IEA)

Maurits Blanson-Henkemans
Manager
Dutch Emission Trading
Economic Ministry, The Netherlands

Joachim Ehrenberg
Policy Officer, Climate Change
DG Enterprise
European Commission

Mark Hayden
Deputy Head of Unit
DG ECFIN
European Commission

Hakan Karlström
DG Transport & Energy
European Commission

Stefan Moser
Climate Change Unit,
DG Environment
European Commission

Sandra Stevens
Policy Officer, Climate Change
DG TREN
European Commission

Stefaan Vergote
Climate Change Unit
DG Environment
European Commission

Peter Zapfel
Coordinator, EU ETS
DG Environment
European Commission

About CEPS

Founded in Brussels in 1983, the Centre for European Policy Studies (CEPS) is among the most experienced and authoritative think tanks operating in the European Union today. CEPS serves as a leading forum for debate on EU affairs, but its most distinguishing feature lies in its strong in-house research capacity, complemented by an extensive network of partner institutes throughout the world.

Goals

- To carry out state-of-the-art policy research leading to solutions to the challenges facing Europe today.
- To achieve high standards of academic excellence and maintain unqualified independence.
- To provide a forum for discussion among all stakeholders in the European policy process.
- To build collaborative networks of researchers, policy-makers and business representatives across the whole of Europe.
- To disseminate our findings and views through a regular flow of publications and public events.

Assets

- Complete independence to set its own research priorities and freedom from any outside influence.
- Formation of nine different research networks, comprising research institutes from throughout Europe and beyond, to complement and consolidate CEPS research expertise and to greatly extend its outreach.
- An extensive membership base of some 120 Corporate Members and 130 Institutional Members, which provide expertise and practical experience and act as a sounding board for the utility and feasability of CEPS policy proposals.

Programme Structure

CEPS carries out its research via its own in-house research programmes and through collaborative research networks involving the active participation of other highly reputable institutes and specialists.

Research Programmes

Economic & Social Welfare Policies
Energy, Climate Change & Sustainable Development
EU Neighbourhood, Foreign & Security Policy
Financial Markets & Taxation
Justice & Home Affairs
Politics & European Institutions
Regulatory Affairs
Trade, Development & Agricultural Policy

Research Networks/Joint Initiatives

Changing Landscape of Security & Liberty (CHALLENGE)
European Capital Markets Institute (ECMI)
European Climate Platform (ECP)
European Credit Research Institute (ECRI)
European Network of Agricultural & Rural Policy Research Institutes (ENARPRI)
European Network for Better Regulation (ENBR)
European Network of Economic Policy Research Institutes (ENEPRI)
European Policy Institutes Network (EPIN)
European Security Forum (ESF)

CEPS also organises a variety of activities and special events, involving its members and other stakeholders in the European policy debate, national and EU-level policy-makers, academics, corporate executives, NGOs and the media. CEPS' funding is obtained from a variety of sources, including membership fees, project research, foundation grants, conferences fees, publication sales and an annual grant from the European Commission.

E-mail: info@ceps.be
Website: http://www.ceps.be
Bookshop: http://shop.ceps.be

CENTRE FOR EUROPEAN POLICY STUDIES

Place du Congrès 1 • B-1000 Brussels
Tel: 32(0)2.229.39.11 • Fax: 32(0)2.219.41.51