CENTRE FOR EUROPEAN POLICY STUDIES

REVIEWING THE EU EMISSIONS TRADING SCHEME (PART II)

PRIORITIES FOR SHORT-TERM IMPLEMENTATION

REPORT OF A CEPS TASK FORCE

CHAIRMEN: **DAVID HONE,** GROUP CLIMATE CHANGE ADVISOR, SHELL

LASSE NORD, SENIOR VICE PRESIDENT, CLIMATE AND ENVIRONMENT, NORSK HYDRO

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

NORIKO FUJIWARA, RESEARCH FELLOW, CEPS

CEPS TASK FORCE REPORT NO. 57

MARCH 2006

This report is based on discussions in the CEPS Task Force on Reviewing the EU Emissions Trading Scheme, dealing with priorities for adapting the National Allocation Plans for the second phase of allocation. The Task Force met several times over a concentrated period of time from April to September 2005. 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 Annex.

The members of the Task Force engaged in extensive debates in the course of their 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 92-9079-675-8

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

REVIEWING THE EU EMISSIONS TRADING SCHEME (PART II)

PRIORITIES FOR SHORT-TERM IMPLEMENTATION

REPORT OF A CEPS TASK FORCE

CO-CHAIRMEN: DAVID HONE & LASSE NORD

RAPPORTEURS: CHRISTIAN EGENHOFER & NORIKO FUJIWARA

Executive Summary

This report constitutes Part II of the CEPS Task Force Report on Reviewing the EU Emissions Trading Scheme. Part I was presented to the UK Presidency on 7 July 2005,[1] and subsequently published on the CEPS website.[2] It focused on a number of short-term implementation issues linked to the second round of allocation, including transparency requirements of the National Allocation Plans (NAPs), the definition of installations, treatment of small installations, new entrants, closure and transfer rules, allocation methodologies, the possibility of opt-ins as well as monitoring, reporting and verification. Part II examines deep-seated issues such as economic impact and effects on investment as well as the potential inclusion of aviation. These issues are expected to have a major influence on the second phase of the EU Emissions Trading Scheme (ETS) in 2008-12.

After reporting on the status of the ETS and reviewing its fundamental objectives in sections 1 and 2, the following sections cover investment incentives (3), competitiveness (4 and 5) and aviation (6). The main findings of the report are presented in this Executive Summary, containing Key Messages & Recommendations and an extended Full Summary.

I. Key Messages & Recommendations

Although there has been some progress in implementing the EU ETS, it remains a work in progress in many respects with critical elements of the infrastructure still under creation. As of December 2005, oonly around two-thirds of the 25 national registries were in place, the installation level allocations had not yet been decided in several member states, implementation of the International Transaction Log was still far from complete and the member states were taking only the most hesitant steps towards transposing the Linking Directive into national law. Moreover, governance issues affecting the UN CDM Executive Board have hindered the inflow of CDM (Clean Development Mechanism) credits to the EU. This delay comes at a time of an increased spread between coal and gas prices, but so far power plants have continued to burn more coal, thereby causing CO_2 prices to climb. Since fuel switching – from coal to gas – is a principal way to reduce CO_2 emissions in the short term, an increased use of coal has a major impact on allowance prices. While the lack of infrastructure generally inhibits trading activity and efficient price-setting, for the EU allowance market it has generally meant it was mainly the power sector, which is short due to allocation and the coal/gas price spread, that has engaged in the trading market. The industrial sector – generally long – has been less engaged in the market. In addition, most active trading participants come from those member states with tighter

[1] See http://www.ceps.be/files/EUETSLondonLaunch070705.pdf

[2] See http://shop.ceps.be/BookDetail.php?item_id=1288

allocation, and hence are buyers. In addition, market participants from those countries with less tight allocation, i.e. potential sellers from mainly but not only the new member states, have not yet engaged in trading as a result of a lack of infrastructure and in some cases, the absence of installation-level allocation.

Completion of the trading infrastructure

1. It is important that the missing infrastructure of the EU ETS, such as registries and the International Transaction Log, comes into operation as soon as possible. Otherwise, supply, notably but not exclusively from new member states, or CDM will be hampered.

   Recommendation 1. Priority must be given to putting all registries in place.

   Recommendation 2. The Linking Directive should be transposed into national law and implemented by mid-2006 at the latest.

   Recommendation 3. The International Transaction Log should be operational by the end of 2006.

   Recommendation 4. The reform of the CDM Executive Board must ensure a greater flow of CDM credits available for use in the EU ETS.

   [See Full Summary, "Introduction" and "Options to create investment incentives", items 2 & 13.]

Cost-effectiveness

2. The EU ETS will ultimately be judged on whether it will be able to reduce greenhouse gas emissions in a cost-effective way. It is essential that the EU ETS achieves its objectives in order to demonstrate to other countries that greenhouse gas emissions can be reduced without damaging the economy. For the second round of National Allocation Plans (NAPs), it will be of critical importance that member states develop strategies to ensure that compliance costs for all sectors are more or less the same.

   Recommendation 5. The second round of National Allocation Plans must reflect the trajectories of current and planned overall greenhouse emissions for each member state, including information on all sectors, whether or not they are covered in the ETS. This should be guided by a philosophy that abatement costs for the individual sectors are by and large the same. Data should be presented to show the planned emissions reductions as well as the use of credits from the Kyoto mechanisms.

   [See Full Summary, "Existing climate change targets", items 4 & 5.]

Optimisation of EU ETS implementation

3. In many respects, the EU ETS has been close to an economist's ideal structure for an emissions trading scheme, whereas in other respects, it differs significantly. Short-term allocation periods, grandfathering combined with changing the baseline year (i.e. updating)[3]

[3] Grandfathering potentially allocates economic rents that may result in windfall profits (if opportunity costs are passed through) or social inefficiencies (if it does not result in the internalisation of external

and the lack of consistency between member states with regard to allocation methodologies may undermine efficiency and especially effectiveness, and create distortions between different participants. Of particular importance for the optimisation of the ETS is the review of possible allocation mechanisms, including benchmarking and auctioning, and especially by avoiding updating. In addition, the short-term targets of current allocation rules disconnect target-setting from the investment cycle, heightening fears that the EU ETS inhibits rather than fosters investment. If the EU ETS is to become a global showcase, these issues need to be addressed.

Recommendation 6. The EU and the member states should address the issue of investment incentives immediately, starting with the second National Allocation Plans. Member states should review the numerous existing proposals and measures that could increase investment certainty. Incentives for investment should become more closely aligned between different member states.

Recommendation 7. Member states must avoid updating, i.e. allocation based on historical emissions based on a changing (updated) reference year.

Recommendation 8. If benchmarks are considered, member states should apply i) consistent rules across member states on the types of benchmarks to be used (e.g. fuel, technology or product-specific) and ii) consistent methods of measure (e.g. installed capacity, projected utilisation rates, projected output or best available technology and techniques, sometimes referred to as BATNEEC[4]).

Recommendation 9. Should auctioning be considered in conjunction with the recycling of revenues, there is a need to set clear rules for the mechanics well in advance, including the timing and frequency of auctioning, the potential necessity for EU-wide auctioning, the number of allowances, participation rules and how to recycle the revenues.

[See Full Summary, "Investment uncertainty" and "Options to create investment incentives", items 6 & 7]

Competitiveness

4. The EU ETS seeks to minimise costs. Nevertheless, meeting the Kyoto Protocol targets does entail costs. Since major competitor companies outside the EU are not subject to a similar carbon constraint, EU industry is placed at a competitive disadvantage.

   a. There is both theoretical and empirical evidence that some energy-intensive industries are negatively affected by the EU ETS. The aluminium industry, for example, reports a considerable additional cost increase, representing on average more than 10% of its sales revenues. For the cement sector, additional costs at a CO_2 price of €20 to €25 per tonne are about the same as total fixed costs of cement production. This might lead to a loss of export markets. The steel industry may face a similar situation, especially when the global boom slows down.

---

costs). As concluded in a previous CEPS Task Force (Egenhofer, Fujiwara & Gialoglou, 2005), grandfathering may be justified in the initial stages of the EU ETS on grounds of protecting investments that predate the EU ETS. However, if continued by merely changing the reference year, i.e. updating, there is little incentive for companies to cut emissions.

[4] Best available technology, not entailing excessive costs.

b. There is no doubt that power prices have increased. However, power prices are influenced by many factors, of which the EU ETS is but one. In general, it is difficult to assess the impact of CO_2 allowance prices as these are determined by a variety of factors, including fuel prices, available generation capacity, weather conditions and imports or market expectations. Even the extent to which CO_2 prices are passed through to power prices varies by market, load factor and the power market in question. The EU ETS' objective was to include the CO_2 price in the marginal cost of power. While this may push up power prices, it may also exert further downward pressure on coal and hence fuel prices to keep coal competitive on the EU power market. The increase in the price differential between coal and gas compels power plants to burn more coal and push up EU allowance prices. In addition, current allocation rules act as a disincentive to close inefficient plants, and allow windfall profits for the power sector, which are possible because of a lack of competition and owing to distortions in EU power markets.

This report analyses a number of options to address competitiveness impacts for the sectors that are significantly affected. However, there seems no ideal option to address implications. Two different categories have been identified: The first category is 'alleviation' measures. They aim at changing the incentive structure and the functioning of the allowance market essentially through regulation. Attention is needed to ensure that such measures do not impede efficiency of the EU ETS, power or other markets. The second category consists of 'compensation' measures, in principle executed through recycling of revenues, allocation or subsidies. They try to correct undesirable economic and social outcomes from the trading market. They raise issues on the organisation of this compensation (i.e. allocation, raising and distribution of funds), notably, how to minimise government intervention. Measures from both categories may have unintended consequences.

Recommendation 10. Since the competitiveness effect of the EU ETS is critical for future development, any discussion about it must be continued and ultimately satisfactorily settled. The European Commission should take the lead in identifying, together with member states and in consultation with the covered industry and other stakeholders, possibilities to address the issue. Rather than comparing no regulation with participation in the EU ETS, a useful analysis would assess the impact of realistic alternative policy instruments. It should also take into account the economic impacts of the different covered sectors, i.e. power sector or industrial sectors.

Recommendation 11. If measures have to be taken, preference should be given to compensation measures that try to correct undesirable outcomes and that minimise the role of government. Policy-makers must pay attention to avoid creating inefficiencies and distortions in other markets, notably EU power markets or unintended consequences.

[See Full Summary, "Competitiveness" and "Options to address competitiveness issues", items 8 to 19.]

Aviation

5. Including aviation in the ETS raises many questions, such as non-CO_2 impacts, common metrics and issues related to allocation. The practical resolution of most of these issues is a necessary prerequisite for linking the air transport sector with the EU ETS, even on a CO_2-only basis. Even if they can be solved, the most critical issue is ensuring that aviation will

remain a net buyer. Although expected demand from aviation is estimated to be between 1-2% of total allocated allowances, this would however constitute the amount of allowances by which the market is currently considered to be short. The price effect could be considerable. This demand will even be considerably higher in case radiative forcing is taken into account.

Recommendation 12. Full inclusion of aviation in the ETS should only be undertaken if all identified technical issues – such as certainty of the full impact of aviation on the climate, common metrics for measuring non-CO_2 impacts, effects of radiative forcing, the choice of a base year, or the definition of new entrants – have satisfactorily been settled.

Recommendation 13. Allocation must not create perverse incentives for airlines.

Recommendation 14. The EU and member states should further study the economic impact on the sectors already covered.

[See Full Summary, "Aviation", items 20 to 24.]

II. Full Summary

Part I of this report discussed a number of short-term implementation issues and outlined how they could progressively be addressed during the second round of National Allocation Plans (NAPs phase II). Addressing short-term implementation issues, which are central to the efficiency, effectiveness and equity of the EU ETS on its own, however, may not be enough. The EU ETS raises a number of fundamental issues that influence the behaviour in the second phase. These are discussed in this Part II report.

Introduction

1. The objective of the EU ETS was to reduce GHG emissions in a cost-effective way. Meeting the environmental objective in a cost-effective way would not only minimise the competitive impact on EU industry but also demonstrate that emissions reductions can be achieved without damaging the economy. If the ETS were to be successful, it would ideally facilitate the engagement of other countries to participate in similar trading schemes now and especially after the Kyoto Protocol expires in 2012.
2. Ultimately, cost-effectiveness will depend on the actual market architecture, comprising both design (e.g. directives) and implementation practice, such as NAPs, and the trading infrastructure. Major parts of the implementation, such as the creation of registries or transposition of the Linking Directive are still missing in many member states, thereby hampering the market. At international level, the absence for some time to come of the International Transactions Log, and the problems the CDM Executive Board has in processing CDM projects, continue to hold back liquidity in the EU allowance market.
3. At the same time, the EU ETS has caused distributional effects between sectors, which portend serious negative impacts on competitiveness for some energy-intensive sectors. These are mainly related to allocation and the effects of power prices. Member states have attempted to address these concerns in the allocation process. This is reflected in the overall shortage of allowances for the power sector throughout the EU, whereas other sectors are overall long. However, the benefits for the manufacturing sectors should not be over-estimated and the non-covered sectors, such as aluminium or chemicals, do not benefit from this 'generous' allocation at all. Ways will also need to be found for creating investment

incentives for low or zero-carbon technologies, both in the power and manufacturing sectors.

Existing climate change targets

4. After the (near) completion of all first-round NAPs, which obliged member states to develop strategies to meet the Kyoto Protocol targets, it is now clear that many member states are not on track to meet these targets. This shortfall needs to be addressed in the second round of allocation. It is important to distribute the burden across all sectors, both those included and those not included in the ETS, such that overall abatement costs are minimised. Otherwise, overall compliance costs will increase as many low-cost abatement possibilities would be missed, as has been suggested by the European Climate Change Programme.

5. Alternatively, the gap in reaching the target could be compensated for by credits from the Kyoto Protocol's project mechanisms – Joint Implementation (JI) and the Clean Development Mechanism (CDM). However, as there is major uncertainty about the availability of such credits, member states may have to resort to the purchase of AAUs (Assigned Amount Units). Both, however, might be limited by 'supplementarity' provisions in the Kyoto Protocol and the Linking Directive, and will also entail significant expenditure by governments, the money for which will have to be collected through taxes.

Investment uncertainty

6. In the long-term, a critical element for meeting the climate change challenge will be investment in new and carbon-friendly technologies. Such investment can be facilitated by a greater degree of certainty, but certainty is reduced by a number of factors, some of which are beyond the EU's control.

    a) Beyond the EU's control, for example, are both the nature of commitments and the structure of a future global agreement, but also the impact of the Linking Directive in the period to 2012.

    b) The EU ETS adds to investment uncertainty. The main causes are the possible depletion of new entrants' reserves and short-term allocation, which provides certainty for only three, and then five years – periods that are far shorter than those associated with investment cycles. In the first round of allocation, it has become clear that the considerable degree of member state discretion in allocation has put pressure on member states to not treat industry any more harshly than the treatment meted out in other member states (see Part I). Hence, the final allocations reflect a strong element of the negotiations between member state governments and industry combined with an element of 'willingness to pay'.

Options to create investment incentives

7. There have been discussions on how to create greater stability and predictability for the covered sectors of the EU ETS. This report has reviewed a number of options including allocation-related solutions (e.g. a 14-year guaranteed allocation based on fuel-specific benchmarks in the Geram NAP I), the alignment of targets with the investment cycle by using for example long-term efficiency targets as a basis for setting a cap for the

manufacturing industry, benchmarks and auctioning, or the so-called 'ten-year rule'[5] or long-term indicative targets.

a) Rules for new entry and closures can be designed to add more certainty. Nevertheless, they run up against the fact that the Directive has foreseen multiple short allocation periods, making it difficult to extend certainty beyond these periods.

b) There is strong interest and support among member states to further analyse and develop benchmarks (see also the Part I report). In order to do so, there is a need to ensure: i) consistency across member states on both the types of benchmarks (e.g. fuel, technology or product-specific) and the metrics to apply (e.g. installed capacity, projected utilisation rates, projected output or best available technology and techniques, sometimes also referred to as BATNEEC) and ii) data availability.

c) Long-term efficiency targets for the manufacturing industry, for example based on benchmarks, are another potential way to increase long-term certainty for the sector. The principal item is how such a system could be incorporated into the EU ETS, which operates on absolute caps. Setting relative targets would transform the ETS into a baseline and credit scheme, which is not foreseen under the Directive. Hence, this would require a change of the Directive, and therefore becomes a topic for the 2006 formal review. However, nothing would stop member states from basing their allocation to the energy-intensive sectors on long-term efficiency targets.

d) Using auctioning in combination with recycling of revenues has also been proposed as a possible way to create investment incentives as it is thought that it would create a more reliable forward curve, and hence clearer price signals. The downside is that auctioning would have a negative impact on costs, thereby affecting the competitiveness (i.e. profits, market share) of energy-intensive industries. In addition, this would open a 'secondary allocation' debate on how to recycle revenues and raise questions on the mechanisms of auctioning. The current Directive, however, only foresees limited auctioning, i.e. a maximum of 10% of the allowances for the second phase. Any higher degree of auctioning would require a change in the Directive.

e) A so-called 'ten-year rule' has been proposed to balance efficiency considerations, including investment, with perceived issues of fairness. This concept attempts to acknowledge the need both to compensate incumbent installations for sunk costs and to not discriminate against new entrants for reasons of fairness. It can be used for both emissions and performance-based allocation. The main criticism has been the risk that insufficient reserves of new entrants would deter new investment.

f) To provide a signal to the power sector, the idea has been proposed to develop long-term indicative targets for the EU as a whole, or, if more appropriate, for the relevant national or regional markets. In order for such an indicative target to serve its purpose, it would require extending them far beyond the short-term allocation periods. This would imply, however, that member states develop energy strategies on how to arrive at the needed reductions. Another issue is the legal nature of such indicative targets. Non-binding targets have very often been of little practical effect, as can be seen from the EU energy efficiency targets in the 1980s, or more recently,

[5] Under the Ten-Year Rule (see 3.5), a member state will allocate allowances based on the average of, say, three reference years (e.g. 2000-2002) for 10 years. After ten years, the reference years would be updated on a rolling basis, i.e. from 2000-02 to 2001-03, etc. Hence, there is some compensation for sunk costs but not forever. A new entrant would receive allowances from a reserve according to emission rate benchmarks (to be standardised across the EU member states).

from 'soft' targets agreed under the Lisbon agenda. In order to be effective, targets could be attached to a revised EU ETS, in much the same way that indicative targets have been formulated in the Annex of the Renewables Directive. Long-term certainty would be helped by a common EU energy policy.

Competitiveness

8. The potential economic impact of the ETS can either stem from the need to cover process emissions – not covered by free allocation – or power price increases. The actual impact on each sector or installation then depends on: i) a sector's ability to pass through costs in different product markets, ii) geography (i.e. the proximity of competitors) and iii) the structure of national or regional power markets. In an increasingly globalised economy, however, analysis shows that moderate increases in production costs will have long-term implications for the investment patterns of all affected industries over the medium term by freezing new capacity.

9. The most controversial issue has been power prices, but power prices are influenced by many factors, of which the EU ETS is but one. In general it is difficult to assess the impact of CO_2 allowance prices, as these are determined by a large variety of factors, including fuel prices, available generation capacity, euro/dollar exchange rates, investment costs, power imports, weather conditions, heat demand ('must runs'), the flexibility of gas contracts as well as market expectations and more. Even the extent to which CO_2 prices are passed through to power prices varies by market, load factor and the power market in question.

10. The objective of the EU ETS was to include the CO_2 price in the marginal costs of power. While the ETS is likely to push up power prices, it may at the same time reduce coal prices. It must also be noted that the EU ETS was launched at a time of very high energy prices, which has influenced power prices. In addition, high gas prices make power plants continue to burn more coal and push up EU allowance prices. This is coupled with the fact that current allocation rules provide for disincentives to close inefficient plants, and allow for potential windfall profits for the power sector, which are possible because of a lack of competition and because of distortions in EU power markets.

11. Given that the EU ETS started only as of 1 January 2005, the market is still immature. Moreover, major essential parts of the trading infrastructure are still missing. Less than two-thirds of the 25 registries are in place and in a few member states the installation level allocations have not yet been decided. The International Transaction Log is expected to be missing for some time while member states make rather hesitant steps towards implementing the Linking Directive, hampering the supply of credits from outside the EU. A second important factor for the EU allowance market has been the increased spread between coal and gas prices. In the short term, fuel switching – from coal to gas – is the principle way to reduce CO_2 emissions. However, the coal/gas spread increase has made power plants continue to burn more coal, which in turn has made CO_2 prices climb. While the lack of infrastructure generally inhibits trading activity and efficient price-setting, for the EU allowance market it has generally meant it was mainly the power sector, which is short due to allocation and the coal/gas price spread, that has engaged in the trading market. The industrial sector – generally long – has been less active in the trading market. In addition, most active trading participants come from those member states with tighter allocation, and hence are buyers. On the other hand, market participants from those countries with less tight allocation, i.e. potential sellers from mainly but not only the new member states, have not yet engaged in trading as a result of a lack of infrastructure and in some cases, the absence of installation level allocation.

Options to address competitiveness issues

12. The first step should be to complete the trading infrastructure. This refers to the operation of registries, the International Transaction Log, completion of installation level allocation as well as the transposition and implementation of the Linking Directive. Completion of the infrastructure will increase trading activity by allowing all potential market participants to take part in the EU allowance market. This should increase liquidity and more generally the efficiency of the allowance market.

13. In addition, this report distinguishes between two broad categories of measures: i) 'alleviation measures', designed to ease the impacts and ii) 'compensation' measures through allocation, recycling of revenues or subsidies. Measures can aim at reducing either the CO_2 or the power price.

A) Alleviation measures

14. Alleviation measures to ease impacts attempt to reduce the effects of the ETS on the affected sectors by changing the incentive structure of the ETS and hence company decisions. There is a risk that distortions will emerge in the EU power or other markets, and hence, they need to be carefully analysed.

15. The following alleviation measures have been considered:

    a) Some have argued that the *auctioning of allowances*, as long as it is combined with revenue recycling, could be a suitable way to address the competitiveness issue. Auctioning ensures that all participants are treated in the same way. In addition, it is preferable from an efficiency point of view and reflects the 'polluter-pays' principle. Finally, it generates revenues to be recycled to address public policy objectives, such as reduction of other taxes, or to address market distortions. The disadvantages on the other hand are well-known: it increases the cost for participating industries and is comparable to a tax and hence enjoys little political acceptability. Recycling of revenues can mitigate these effects, but it is not evident how to do this efficiently. It then becomes a matter of the management of a 'secondary allocation'. Of particular concern are internal market issues and the role of the EU but also the impact on companies' cash flow. Most important, however, is the temporary limitation of auctioning under the current Directive, i.e. 5% and 10% maximum, for the first and second period respectively. While some have argued that the Directive would allow for a higher level of auctioning as long as it is accompanied by full recycling, the issue would almost certainly have to be settled by the European Court of Justice. Furthermore, using 100% auctioning would lead to higher power prices as a result of full-cost pass through. For the medium and longer term, this would lead to a shift to less carbon-intensive fuels, most likely gas. Such a shift to gas could further increase import dependency on mainly Russian gas, potentially increasing risks associated with security of supply. The effects of higher power prices of course could be offset by the revenue recycling, depending on the exact rules for recycling.

    b) Limiting the CO_2 allowance price has sometimes been mentioned as a possible measure. This could be done for example by relaxing the overall cap of the covered sector or by encouraging the influx of CDM and JI credits into the EU ETS as a result of the Linking Directive. Relaxing the overall cap implies that emissions reductions will have to be undertaken by other sectors – given the Kyoto Protocol's targets – which is likely to increase overall compliance costs for member states, as low-cost reduction options in the covered sector would be omitted. On the other hand,

compensating for the relaxing of the overall cap by member states using the Kyoto Protocol's project mechanisms (i.e. CDM/JI credits) is likely to run against current political, technical and other constraints related to those mechanisms. While the EU can attempt to address them, it will need the cooperation of all international partners in the UNFCCC. Encouraging the influx of CDM/JI credits through the Linking Directive faces the same difficulties. The purchase of AAUs by member states, as an alternative, might be politically difficult unless such AAUs are 'greened' through for example the Green Investment Scheme (GIS), which earmarks revenues from the sale of excess AAUs for projects that reduce greenhouse gas emissions. Ultimately, the use of flexible mechanisms finds its limit in the Kyoto Protocol's and the Linking Directive's supplementary provisions. Another option that has been discussed to limit the CO_2 price is to set a maximum price on an EU allowance, but this does not seem to be a viable option for the second period (2008-12) as the current Directive does not allow the setting of a maximum price. Moreover, setting a maximum price risks missing the environmental objective of the covered sector with the consequence that reductions would have to be achieved by other sectors, which would increase overall compliance costs. Another downside of setting a maximum price is that it would reduce liquidity and therefore may actually undermine trading activity and so could be seen as 'managing a market'.

c) Another possible measure that has been discussed is a system of *allocation* of emissions allowances based on *relative quota or a Performance Standard Rate* (PSR) such as an energy/carbon efficiency benchmark per unit of output. A benchmark could be multiplied by the expected output to determine the allowance *ex-ante* or alternatively, multiplied by the realised output, i.e. with *ex-post* adjustment. The major advantages are that it would virtually avoid windfall profits, reward carbon efficiency and be popular with industry since it is less restrictive of economic growth. There are a number of shortcomings, however: lower economic efficiency, less environmental certainty and higher information and other transaction costs. The principal issue is that a relative quota system does not fit into the present Directive (and the political consensus) and hence could not be implemented before 2012.

B) Compensation measures

16. *Compensation measures* attempt to correct undesirable effects of the EU ETS from a societal perspective. When assessing their relative merits, it is important to assess the potential environmental, economic or social effects against the principal objectives of the ETS, i.e. to reduce CO_2 emissions in a cost-effective way. There are a number of *compensation* measures including government support in the form of tax breaks, other reductions of burdens, government subsidies, re-distributed 'windfall taxes', but also more subtle mechanisms that could work through the ETS. They also raise a number of questions, however.

17. The fundamental assumption upon which compensation or redistribution rests depends on whether energy-intensive companies choose to cross-subsidise their production by the amount of the compensation they have received – at least in the short-term – or whether they base their investment decisions on opportunity costs, meaning that the revenues are invested where they promise the highest return, i.e. possibly in other regions than the EU. Hence, compensation measures would need to be designed to create incentives for investing in the EU.

18. Another critical element is where the financial resources for compensation come from and how they are redistributed. If it is the government that compensates, it is likely that revenues will first be collected via a tax on windfall profits, auctioning, or through other measures. Compensation raises many equity issues and internal market issues.

19. An option that has been discussed in this and the previous CEPS Task Force on the business consequences of emissions trading is indirect allocation of emissions allowances. In such a system of grandfathering, electricity users receive emissions allowances for free while power generators are responsible for surrendering allowances according to their actual emissions. They would buy their allowances from the energy-intensive sector, for which this would constitute compensation. While this would allow for full pass-through of CO_2 costs (the intended objective of the ETS), reduce possible windfall profits and compensate energy-intensive industries, it raises issues of fairness for the non-covered sector and households remain uncompensated. Including them in such a scheme would, however, increase the complexity of the EU ETS significantly. Furthermore, those energy-intensive sectors that in fact are able to pass through the cost increases due to higher power prices would be compensated twice, reaping in fact windfall profits.

Aviation

20. The question of whether aviation is suitable in principle to be included in the EU ETS hinges on the answers to three questions. The first concerns the impact on the allowance price. The second is whether a number of still-open questions related to the full impact of aviation, measuring and monitoring, and allocation can be solved. The third is whether the intended controlling of greenhouse emissions from the aviation sector would in fact be achieved.

21. The first challenge is how to treat the full impact of aviation on climate that goes beyond the effects of CO_2 emissions. Second, if the EU ETS is extended to non-CO_2 gases, there would need to be some common metric, which to date is not easily available.[6] Third, there are a number of open issues associated with allocation under current ETS rules. As the aviation sector as a whole, as well as aircraft and airport operators, are highly sensitive to economic circumstances in individual countries and regions, and to isolated local and regional events, the choice of a particular base year could have major distributional effects. In addition, the definition of new entrants could create a serious barrier to the application of grandfathering to aviation, since the definition in aviation is more complex than for stationary sources. Further problems include reliability and availability of aircraft-specific emissions data.

22. Given these open questions, including air transport in the ETS from 2008 onwards will be a considerable challenge. However, if the sector were included in the ETS at a later stage, free allocation could create perverse incentives for airlines to increase activity and/or delay fleet renewal in the reference period *before* joining the EU ETS, to get as many allowances as possible. A technology benchmark could tackle the second incentive, while responsibility for addressing the first incentive rests with governments by setting the cap for the sector. The effect would also limit the timing for bringing aviation into the ETS. Bringing aviation into the ETS *during* the second allocation period would have important consequences for NAPs phase II and for how the uncertainties of potential aviation emissions are treated.

[6] Such a common metric would need to capture different phenomena, such as GHGs, changes in particles, clouds, solar variation and land-use change, and allow the calculation of equivalence between different gases.

23. According to a European Commission-sponsored study, the economic impact on the aviation sector appears to be minimal for a number of reasons related to the sector's business model, the high degree of regulation and the generally limited impact of the ETS on airline costs. The latter, however, rests on the debatable assumption that the opportunity costs of allowances issued free of charge are not passed on to passengers. There will also be distributional impacts among different airlines. Low-cost airlines would experience greater impacts, as the cost increases would be proportionally higher than for higher-cost airlines. The latter could eventually offset some of the higher costs in the higher-price business class segment where price elasticity is lower.

24. It is estimated that marginal abatement costs in air transport are far higher than in sectors already included in the ETS, which almost certainly would make aviation a net buyer of allowances. Therefore, allowance prices would rise. It is assumed that air transport would buy around 1-2% of the total quantity of EU allowances. This would equal the amount of allowances by which the market is currently expected to be short. The price effect could be considerable. This demand will even be considerably higher in case radiative forcing[7] is taken into account. Finally, this also assumes that the trading market is efficient, notably that it is both liquid and free of distortions, which is not necessarily the case in a newly created market.

[7] Radiative forcing is the change in the balance between radiation coming into the atmosphere and radiation going out.

REVIEWING THE EU EMISSIONS TRADING SYSTEM
(PART II)
PRIORITIES FOR THE SHORT-TERM IMPLEMENTATION
REPORT OF A CEPS TASK FORCE

CO-CHAIRMEN: DAVID HONE & LASSE NORD

RAPPORTEURS: CHRISTIAN EGENHOFER & NORIKO FUJIWARA

Introduction

This report constitutes Part II of the twin reports of the CEPS Task Force on Reviewing the EU Emissions Trading Scheme. The Part I report, which was presented to the UK Presidency on 7 July 2005,[1] focused on a number of short-term implementation issues including transparency requirements for the National Allocation Plans (NAPs), the definition of installations, treatment of small installations, new entrants, closure and transfer rules, allocation methodologies, the possibility of opt-ins as well as monitoring, reporting and verification. This follow-up Part II report examines deep-seated topics such as whether the EU Emission Trading System (ETS) contributes to meeting Kyoto Protocol targets, economic impacts, effects on investment and the potential inclusion of aviation. These issues lie at the interface of NAP phase II and the long-term formal 2006 review. Neither of the two reports (Part I or Part II) examines issues related to the formal review of the EU ETS, which the Directive calls for no later than June 2006. Since this formal review, which will lead to an amendment of the Directive by co-decision, is likely to trigger a fundamental and longer-term debate, it is being treated in a separate CEPS Task Force launched in early 2006.

After a status report of the ETS and a reminder of some fundamentals in sections 1 and 2, the following sections cover investment incentives (3), competitiveness (4 and 5) and aviation (6). The main findings of the report are contained in the Executive Summary, including Key Messages & Recommendations and an extended Full Summary.

Appendix 1 presents a list of members of the Task Force and invited guests and speakers.

1. Status of the EU ETS

Even though the ETS will ultimately be judged on the basis of its effectiveness as a tool to reduce GHG emissions, the underlying rationale for choosing emissions trading was based on economic considerations. From the outset, those designing the ETS have attempted to internalise a market externality (i.e. CO_2 emissions) with minimal impact on competitiveness. Under the ETS, the market price of carbon is equal to the lowest marginal abatement cost amongst all controlled sources, thereby ensuring that the environmental objective is achieved at the least cost. The resulting market price was expected to create long-term predictability, which is critical for spurring investment. In addition, the ETS should offer flexibility to management to choose the most cost-effective compliance strategy. And finally, the EU ETS has attempted to add extra flexibility and potentially low-cost abatement options by allowing credits from the Kyoto Protocol's project mechanisms to be used for compliance via the Linking Directive. The Linking Directive could also be a tool to smooth the differences across member states as a result of the 1998 Burden-Sharing Agreement (BSA).

[1] Available for free downloading (http://shop.ceps.be/BookDetail.php?item_id=1288).

It is too early to pass final judgement until at least the first compliance period comes to a close at the end of March. Although the ETS has been adopted in a very short period of time – reflecting the strong political will in the EU to meet its obligations under the Kyoto Protocol – implementation is far from complete. In many respects, the EU ETS is still a construction site with many critical elements of the infrastructure still under creation. For example, only around two-thirds of the 25 registries are in place. Moreover, in some member states, the installation level allocations have not yet been decided, the International Transaction Log will not be functional for some time and only the most hesitant steps are being taken towards implementing the Linking Directive.[2] A lack of infrastructure inhibits trading activity and efficient price-setting.

While this infrastructure is progressively being put into place, the initial phase of the EU ETS has coincided with high energy prices, which in the context of non-functioning energy markets generally has increased costs to enterprises. Beyond that, another important factor for the initial results of the EU ETS has been the increased spread between coal and gas prices, which has pushed up EU allowance prices. In the short term, fuel switching – from coal to gas – is the principle way to reduce CO_2 emissions. However, the coal/gas spread increase has compelled power plants to burn more coal, which in return has made CO_2 prices climb. In addition to shortcomings due to the lack of infrastructure, this has generally meant that it was mainly the power sector, which is short due to allocation and the coal/gas spread, that has engaged in the trading market. The industrial sector – generally long – has been less engaged. In addition, most active trading participants come from those member states with tighter allocation, and hence are buyers. On the other hand, market participants from those countries with less tight allocation, potential sellers from mainly but not only the new member states, have not yet engaged in trading as a result of a lack of infrastructure and in some cases, the absence of installation level allocation.

Against this background of an incomplete trading infrastructure and high energy prices, a number of general comments on the ETS can nevertheless be made. While in some respects the EU ETS has been close to an economist's ideal structure for internalising environmental costs, in other respects it differs significantly. A number of observations can be made for the initial evaluation of the scheme. For example, short-term allocation periods, grandfathering combined with changing the baseline year (i.e. updating)[3] and the lack of consistency between member states with regard to allocation methodologies could undermine efficiency and cause distortions between different participants (see Kruger & Pizer, 2004; Neuhoff et al., 2005; Sijm et al., 2005; Keats & Neuhoff, 2005). Historical grandfathering, if based on updating, induces gaming and undermines incentives to reduce emissions. Similarly, limited new entrants' reserves may hinder new investment, namely at the moment that reserves are used up. Many of these issues have been discussed in the Part I report.

Some criticism was raised regarding the absence of a long-term target and the fact that targets are not in line with the investment cycle. Combined with allocation in the ETS, the absence of a long-term target has heightened fears that the EU ETS inhibits rather than fosters investment (IEA, 2003; IEA, 2005a). The EU ETS does not operate in a political vacuum and is affected by international developments, which are beyond the control of the EU.

---

[2] This was the status as of December 2005.

[3] Grandfathering potentially allocates economic rents that may result in windfall profits (if opportunity costs are passed through) or social inefficiencies (if it does not result in the internalisation of external costs. As was concluded in a previous Task Force (Egenhofer, Fujiwara & Gialoglou, 2005), grandfathering may be justified in the initial stages of the EU ETS on grounds to protect investments predating the EU ETS. However, if continued by merely changing the reference year, i.e. updating, there is little incentive by companies to cut emissions.

The fact that major competitors, in for example the US or fast-growing developing countries, are not subject to a similar carbon constraint has generated concerns about the competitiveness of European energy-intensive industries. Such concerns were originally less prominent as it was thought that the combination of the economic efficiency of the ETS and 'moderate' carbon prices, due in part to the possibilities emerging from the Linking Directive, would keep the additional burden 'manageable'. However, recent developments suggest that this may not naturally be the case. Although the impact on competitiveness is subject to controversy since competitiveness depends on many factors far beyond environmental costs (see the previous CEPS Task Force on the Business Consequences of the EU ETS, Egenhofer, Fujiwara & Gialoglou, 2005), studies (see Carbon Trust, 2004; IEA, 2005a; IEA 2005b) concur that industries are directly affected in their net value as a result of the fact that the sector cannot pass through price increases, as product prices are set by international commodity markets. This is particularly the case for primary aluminium and for cement in certain locations. The same may become true for other sectors, such as for example BOF (basic oxygen furnace) steel, should the global boom come to a halt. The principal reason for such potential consequences is the so-called 'indirect effects' of the EU ETS through power price increases (see e.g. Mannaerts & Muldur, 2003; Sijm, 2004).

Somehow less conspicuous have been the potential effects on EU power markets. Under certain conditions, the EU ETS can potentially increase market power concentration, which according to the European Commission and national regulatory authorities, in some member states has become a major obstacle to competition (European Commission, 2005a). At the centre of attention have particularly been the windfall profits that the ETS is likely to generate. It has even been argued that windfall profits in effect remunerate the polluter and is therefore contrary to the 'polluter-pays' principle.

A major challenge of the ETS is the wide sector coverage, including notably process emissions from different industrial sectors as well as those from power generation. While this raises many issues on monitoring and reporting, there may be different economic impacts on sectors. While some of the ETS concerns affect all sectors in similar ways (e.g. investment incentives), in other respects there are very different effects at play. For example, for power companies, a main concern may be the impact on the power market structure, while for energy-intensive industries concerns about competitiveness in global markets may take precedence. The power sector generally can pass through cost increases. Energy-intensive industries do not always have this option. Although as the preliminary results from the European Commission, McKinsey & Ecofys (2005) ETS survey show, some companies expect to be able to pass through CO_2 costs. A more recent related concern is about differentials in abatement costs in the covered sectors. While the concept of emissions trading is built on the existence of abatement costs differentials, big differentials can lead to distributional impacts. This fear has recently been highlighted as a result of the discussions over the possible inclusion of air transport into the scheme.

While major changes to the EU ETS will require a revision of the Directive, which implies a process stretching over several years from now, the following sections discuss possible improvements to deal with perceived issues of the ETS in the near term. These include environmental effectiveness, investment incentives, competitiveness and aviation.

2. Measuring the ETS against environmental objectives

The overall objective of EU climate change policy is to reduce greenhouse gas emissions in general and to meet the Kyoto Protocol targets in particular. Since the EU ETS is the most important single instrument with which the EU and its member states intend to achieve these objectives, it will ultimately be judged on the basis of its effectiveness. It is member state caps

under the National Allocation Plans (NAPs) that determine the environmental benefit of the ETS.

After the completion and the European Commission approval of all first-round NAPs, there is concern that some national caps, in combination with other policy measures might not be able to ensure emissions reductions in line with EU and member states' climate targets (see e.g. Grubb et al., 2005). According to CAN Europe (Duwe, 2005), in the first learning phase from 2005-07, only two of the EU-15 member states that are part of the Burden-Sharing Agreement (BSA) have imposed reductions on the covered sectors from historic levels. All other member states allow for increases, despite the fact that most are off-track towards fulfilling their obligations under the BSA. If the EU ETS is to achieve its objectives to demonstrate to other countries that greenhouse gas emissions can be reduced without damaging the economy, it will also need to show to achieve reductions in line with EU member states' Kyoto Protocol targets. In order to do so, the second round of National Allocation Plans should provide more clarity on the trajectories of current and planned overall greenhouse emissions in each member state. This should include information and data on all – both covered and non-covered – sectors as well as the use of credits from the Kyoto mechanisms. This should be guided by a philosophy that abatement costs for the individual sectors are more or less the same in order to ensure that the planned trajectories will lead to cost-efficient reductions.

During the second round of National Allocation Plans (NAPs), it will be of critical importance for member states to develop strategies to ensure that compliance costs for all sectors are more or less the same. Otherwise, overall compliance costs for meeting the Kyoto Protocol targets will increase, as lower than expected contributions in one sector will need to be made in other sectors. This is most likely to miss low-cost abatement opportunities, as for example has been shown in the European Climate Change Programme. As for the EU ETS, underperformance of the non-covered sector will increase uncertainty for the ETS sector, notably for national caps and allocation. Alternatively, a lack of reduction at member state level could be compensated for by credits from the Kyoto Protocol's project mechanisms, as many member states have suggested. However, since the availability of such credits is highly uncertain, member states may have to resort to the purchase of AAUs (Assigned Amount Units).[4]. Both, however, find their limit in the 'supplementarity' provisions of the Kyoto Protocol and the Linking Directive. 'Unrealistic' member state strategies will increase risks and uncertainty in the covered sector.

3. Creating investment incentives

In the long-term, a critical element to meet the climate change challenge will be investment in new and carbon-friendly technologies. Such investment can be facilitated by a high degree of certainty, but this quality is reduced by a number of factors, many of which the EU cannot control. This is the case for example both for the nature of commitments and the structure of a future global agreement but also for the impact of the Linking Directive in the period to 2012.

In addition to these exogenous factors, the EU ETS itself may add to further investment uncertainty in the covered sector and as a result, new investment may be deferred. The reason for this is mainly short-term allocation, which provides certainty only for a three- or possibly five-year period, which is far shorter than those associated with investment cycles. The situation is aggravated by the fact that ambiguity of allocation rules and their lack of harmonisation or consistency across member states increase the pressure on member states to treat their industry no worse than other member states (see Part I report). Hence, there might be a risk of a 'race to

[4] The assigned amount is the total amount of greenhouse gas that each country is allowed to emit during the first commitment period of the Kyoto Protocol. This total amount is then broken down into measurable units.

the bottom', only ultimately controlled by the European Commission and EC law. Such a race to the bottom would not only be detrimental to investment but would also increase overall compliance costs as has been discussed in the previous section.

As a result, discussions have focussed on how to create greater stability and predictability for the covered sectors of the EU ETS. Given that about half of the EU's power plant park is nearing the end of their lives and, combined with the growth in power consumption, the European Commission expects that up to 600 GWe of the installed capacity needed in 2020 has yet to be built. While this constitutes a major opportunity from a climate change perspective – as the EU could embark on low-carbon power generation – it also carries risks. Investment uncertainty is detrimental to a stable and secure power supply. Hence, investment uncertainty is not only a concern for climate change policy but also for energy policy and security of supply.

The situation for the manufacturing sector is not much different. Uncertainty will lead firms to defer investment. As a consequence, existing installations will run longer and hence the emissions will be higher than they otherwise would be.

In a short-term perspective, the allocation process, i.e. the National Allocation Plans (NAPs) is of critical importance. We therefore also analyse allocation methodologies in this Part II report while making reference to the Part I report, where appropriate. There have been a number of additional ideas such as establishing longer-term allocation periods or aligning targets with the investment cycle by using for example long-term efficiency targets as an instrument to set a cap for the manufacturing industry or different or changing allocation rules. Since some of these suggestions would necessitate changes in the Directive, not all of them will be considered in the report, which concentrates on improving the second round of NAPs.

3.1 New entrants and closure rules

Our Part I report singled out new entrants and closure rules as one of the most important areas for allocation and documented the complexities involved (section 3.4). The report listed five reasons in support of free allocation to new entrants, despite the fact that theory argues in favour of making them buy allowances. These reasons are: fairness, possible capital constraints, overcompensation of existing firms through grandfathering, existing closure rules and limiting wholesale power price rises and windfall profits. Hence, treating new entrants the same way as existing companies may actually help the deployment of new and more efficient technology. The other side of the coin is that the rules governing new entrants and especially the setting up of new entrants' reserves have increased complexity, thereby adding costs, reducing efficiency, and as a result, possibly blurring the economic incentives for investment. In addition, there is a risk that new investment will be stopped in case the new entrant's reserve is depleted.

Furthermore, new entrants rules must be seen in connection with closure rules. Theory suggests that allowances should not be removed in case of closure in order to increase the incentives to close down inefficient installations earlier than would otherwise be the case. Closing down inefficient installations would make space for new and more efficient investment. On the other hand, since allowances are given for free, they constitute a transfer from the government to firms. With closure, the justification for this transfer disappears. Since allocation periods, however, are short, in reality this impact does not extend beyond the three- to five-year allocation periods. Member states have introduced transfer rules or attempted to provide longer-term certainty to notably the power sector. To take one example, the German NAP guarantees 100% of allowances for free for new power plants for 14 years if based on BAT (best available techniques), although such long-term allocation may not be covered by the Directive.

Providing additional certainty to both the power and manufacturing sector runs counter to the provision in the Directive for multiple short allocation periods, unless it is based on carbon-

efficiency, e.g. benchmarks. Hence total certainty cannot be extended beyond these periods. This sets limits on what member states can do within the current framework of allocation.

3.2 Benchmarks

Another measure that has been proposed for addressing investment was benchmarks, which, as explained in Part I of this report, offer a number of additional advantages. They can increase fairness, facilitate new entrants and closure rules, reward CO_2-efficiency and early action, and as a result, could increase the acceptability of the EU ETS. For a full discussion, see section 3.5 of the Part I report and Radov et al. (2005). On the other hand, benchmarking requires processing significant volumes of data, which are not always readily available. This is notably the case for complex production processes with different legal operators.

Benchmarks have been used in phase I of the NAPs in a number of countries for allocating to new entrants or a number of specific installations. While the Directive explicitly covers the use of benchmarks, one practical problem has been that the metrics used by the member states have differed, ranging from installed capacity, projected utilisation rates, projected output or BAT (see Part I report).

While there seems to be strong interest and support among member states to further analyse and develop benchmarks (see Part I report), there are two preconditions to allow benchmarks to be applied in the NAPs phase II in a systematic way to address the investment issue. First, member states would need to agree both on which benchmarks to use (e.g. fuel, technology or product-specific) and which metrics to apply (e.g. installed capacity, projected utilitisation rates, projected output or BAT). Second, the availability of data will need to be ensured. Most likely, this implies that the industry sectors covered by the ETS broadly would need to agree to such an approach, although legally speaking, industry consent would not be needed.

Nevertheless, member states will continue to use and even to extend the application of benchmarking in the allocation process, and the lessons are likely to inform allocation processes in the future. However, as the next allocation period will only extend to 5 years, the application of benchmarks will not be able to provide major certainty beyond 2012.

3.3 Long-term efficiency targets for the manufacturing sector

During the first round of allocation, when establishing the overall cap under the NAP, member states have been sensitive to industry's concerns not to limit production through a cap that is too tough to meet. This stance is consistent with member states' responsibility to maintain good conditions for economic development, including job creation. And indeed, NAPs in many respects have shown features of negotiations between the governments and industry in member states showing the political limitations member states encounter when trying to impose consistent targets in line with the Kyoto Protocol commitments. This is especially true for manufacturing or energy-intensive industries, which are in many cases is subject to global competition. The situation for the power sector is different as it generally can pass on the CO_2 costs. The first round of national allocation has exposed the fact that there is an implicit upper limit of the 'willingness to pay' in the industry and government in member states. This situation is likely to continue throughout the second round of allocation, and member states can be expected to continue to avoid imposing constraints on economic growth on their industry. As a result, emissions would grow.

Short-term allocation combined with somewhat lenient targets, however, firstly do not lead to GHG emission reductions and second, as a direct consequence, are not able to trigger

investment. It has therefore been proposed[5] that the allocation to the energy-intensive sector be based on long-term efficiency (or relative) targets based on Performance Standard Rates (PSRs) as has been used for voluntary or negotiated agreements or covenants. According to Schyns (2005), in the Netherlands alone about 100 so-called world-top PSRs were established for different processes for a variety of industry sectors.

The advantage of such an approach is that it could provide long-term certainty for the sector and hence provide investment certainty. However, certainty cannot extend beyond the allocation period. In addition, there is a danger of regulatory capture. For instance, if targets were set too lenient and did not go beyond business as usual, the unambitious targets would be frozen for a considerable time, to the detriment of the environment and investment. Another issue is how such a system could be incorporated into the EU ETS, which operates on absolute caps. Setting relative targets would transform the ETS into a baseline and credit scheme, which is not foreseen under the Directive. Hence, this would require a change of the Directive, and therefore makes it a topic for the 2006 formal review. Nothing, however, will stop member states from basing their allocation to the energy-intensive sector on benchmarks. Such an approach would still fall short of relative targets but nevertheless has the potential to increase certainty in the manufacturing industry as it would provide broad guidance to allocation and therefore, to the industry. The issue of relative targets should however be revisited in the formal 2006 review.

3.4 Auctioning

Using auctioning has also been proposed as a possible means of creating investment incentives as it would create a more reliable forward curve, and hence clearer price signals. On the other hand, auctioning will be likely to create the impact on costs and resulting effects on competitiveness (i.e. profits, market share) for the energy-intensive industries, whose competitors are not subject to a similar carbon constraint. There will be a 'secondary allocation' debate on how to recycle revenues. Moreover, there will be open questions on the mechanics of auctioning because those member states that want to use it are likely to inhibit the broad use of auctioning. While the Directive says that for the second period, 90% of the allowances must be allocated for free, it is not clear whether member states could not auction more than 10% as long as they recycle the revenues to the covered sector. Some have argued that the Directive would allow for a higher level of auctioning as long as it was accompanied by full recycling. But as this remains controversial, the issue would almost certainly have to be settled by the European Court of Justice. In the event that 100% of allocations were to be auctioned, power prices would increase due to the fact that the costs of CO_2 allowances would become part of the investment calculations based on full costs for new plants. In the medium and longer term, however, this would lead to a shift to less carbon-intensive fuels, most likely gas. Such a shift to gas could further increase import dependency on mainly Russian gas, potentially increasing risks associated with security of supply. Effects of higher power prices of course could be offset by the revenue recycling, depending on the exact rules for recycling.

3.5 The Ten-Year Rule

The 'Ten-Year Rule' (Ahmann et al., 2005) is an approach for balancing efficiency considerations including investment with perceived issues of fairness. The concept acknowledges both the need to compensate incumbent installations for sunk costs and not to discriminate against new entrants for reasons of fairness. At the same time, the notion addresses possible perverse incentives to continue operation under the current rules. As was outlined in

[5] By Entreprises pour l'Environnement.

the Part I report, the right to keep allowances that are received for free increases the incentive to continue running a less efficient existing plant.

Under the Ten-Year Rule, a member state will allocate allowances based on an average of say three reference years (e.g. 2000-02) for 10 years. This creates certainty. After 10 years, the reference years would be updated on a rolling basis, i.e. from 2000-02 to 2001-03, etc. Hence, there is some compensation for sunk costs but not forever. A company cannot count on keeping the property rights forever. A new entrant would receive allowances from a reserve according to emission rate benchmarks (to be standardised across the EU member states). The new entrant would receive its allocation on this basis for 10 years, after which time it would switch to update on the rolling base period as the incumbent. If existing installations are shut down, they would receive allowances for 10 years, thereby diminishing any perverse incentives to continue operation. Allocation of allowances would slowly shift towards different installations as sources that shut down cease receiving allowances. The Ten-Year Rule can be applied for different allocation methodologies, including grandfathering, benchmarking and auctioning. An open question is what happens if production processes change. A pressing problem is also limited new entrants' reserves. Over a period of 10 years, the management of new entrants' reserves becomes more difficult if not impossible.

The perceived advantage of the Ten-Year Rule is that it addresses the political dilemma of how to treat all participants in a trading scheme in a fair way while maintaining as much of the economic efficiency that the EU ETS can have. It strives to achieve a compromise between not giving an indefinite allocation of allowances but maintaining the incentives to close down, which is a prerequisite for new investment.

3.6 Long-term indicative targets for the power sector

The issue of investment incentives is particularly important for the power sector. It is generally assumed that a large cut-back will have to be achieved in the electricity sector. Moreover, expected growth in consumption and the fact that about one-half of the existing power plant park will need to be replaced offer the EU power sector a particular opportunity to move towards less carbon-intensive power production. Such changes however require a very long time as the investment cycle in the power sector runs for 40 years or more.

Price changes induced by the ETS, as well as uncertainty related to allocation and the absence of a long-term international climate change agreement are generally not expected to lead to major changes in power generation technologies, with the exception of natural gas. Against this background, there has been an interest in providing a longer-term signal to the power sector. One idea mentioned has been to develop long-term indicative targets for the EU as a whole or if more appropriate, for the relevant national or regional markets. In order for such an indicative target to serve its purpose, it would need to extend far beyond the short-term allocation periods. This would however mean that member states would be forced to develop an energy strategy on how to arrive at necessary reductions as has for example been attempted in the UK Energy White Paper. A precondition for setting realistic targets would therefore be an agreed energy policy dealing with fuel mix, security of supply as well as other parameters. While such a policy initially could still be formulated at member state level, progressively the integration of energy markets as well as climate change policies will necessitate the formulation of an EU-wide policy. Unfortunately, any attempts to this end have been frustrated by member states' reluctance to allow for any meaningful energy policy competencies at EU level.

Another issue is the legal nature of such indicative targets. Non-binding targets have very often been of little practical effect, which can be seen from the EU energy efficiency targets in the

1980s[6] or the more recent 'soft' targets set in the Lisbon agenda. In order to be effective, targets could be attached to a revised EU ETS, similar to what has been the case in the Renewables Directive, whose Annex contains formulated targets. While the status of these targets is still uncertain – and may ultimately be decided by the European Courts – the European Commission maintains that they constitute a commitment by member states, at least to move towards achieving them. Prior to the review of the ETS Directive, targets will most likely remain by and large unilateral commitments by member states without any legal binding character.

4. Economic and distributional impacts

There is a general consensus that environmental objectives, including those related to climate change, should be achieved in the most cost-effective way possible. Reaching such objectives will not be without costs, however. Irrespective of which instrument is chosen, there will be additional costs falling on the industry. This is potentially causing problems in a situation where European companies face competition from non-EU firms that are not subject to a similar constraint. Another matter, however, is how this burden is distributed among the sectors.

4.1 How the ETS affects different sectors

The EU ETS does not affect all installations and sectors the same way. Broadly speaking, there are four trends at work. First, as a result of the burden-sharing agreement and member states' progress towards the Kyoto Protocol and the fact that allocation is undertaken at member state level, there are differences in the way in which member states allocate to their industries. Second, some industries are able to pass through full costs. Others are not. Third, the power sector is affected once, i.e. by the increase of production costs, while energy-intensive industries can be affected twice: in addition to the increased costs for process emissions – in case these emissions are not covered by free allocation – by higher power prices. Fourth, in some cases, power generators can even earn windfall profits to the detriment of energy-intensive industries.

As a result, the potential economic impact of the ETS can either stem from the need to cover process emissions – not covered by free allocation – or power price increases. The actual impact on each sector or installation then depends on: i) a sector's ability to pass through costs in different product markets, ii) geography (i.e. the proximity of competitors) and iii) the structure of national or regional power markets from which the industries buy their power. In an increasingly globalised economy, however, analysis shows that moderate increases in production costs will have long-term implications for the localisation patterns of all affected industries over the medium term by freezing new capacity.

4.2 Power price increases

The most controversial issue has been the ETS' impact on power prices. As a market-based instrument, the EU ETS was designed to change the relative prices to reflect the price of carbon and thereby provide incentives to reduce CO_2 emissions. Since power prices for annual standardised contracts have, according to for example Argus, increased throughout continental Europe at an average of 50% or more in 2005, some energy-intensive companies note that a significant part of that inflation can be attributed to EU allowance price developments. In fact, power prices are influenced by many factors, of which the EU ETS is but one. In general it is difficult to assess the impact of CO_2 allowance prices as these are determined by a large variety

[6] For example, the 1985-95 EU energy objectives foresaw a 20% increase in energy efficiency, whereas a mere 5.7% was finally achieved. Intergovernmental coordination in the field of energy policies has not worked.

of factors, including fuel prices, available generation capacity, euro/US dollar exchange rates, investment costs, power imports, weather conditions, heat demand ('must runs'), the flexibility of gas contracts and well as market expectations and more. Even the extent to which CO_2 prices are passed through to power prices varies by market, load factor and the power market in question (see e.g. Christiansen et al., 2005; Sijm, 2004; Sijm et al., 2005).

The EU ETS was launched at a time of very high energy prices, in the context of non-functioning energy markets. Naturally this had an upward effect on power prices. A second and possibly more important factor for the EU allowance market has been the increased spread between coal and gas prices. In the short term, fuel switching – from coal to gas – is the principal way to reduce CO_2 emissions. However, the coal/gas spread increase has made power plants to continue to burn more coal, increasing demand for EU allowances. Hence, CO_2 prices have climbed. Third, the situation has been aggravated by the absence of trading infrastructure such as registries, the International Transactions Log and in some cases, even completion of installation-level allocation. While the lack of infrastructure generally inhibits trading activity and efficient price-setting, its impact has been even greater. Due to these shortcomings, it was mainly the power sector, which is short due to allocation and the coal/gas price spread, that has engaged in the trading market. The industrial sector – generally long – has engaged to a lesser extent. In addition, most active trading participants come from those member states with tighter allocation, and hence are buyers. On the other hand, market participants from those countries with less tight allocation, i.e. potential sellers from mainly but not only the new member states, have not yet fully engaged in trading as a result of a lack of infrastructure and in some cases, the absence of installation level allocation. Fourth, current allocation rules provide disincentives to close inefficient plants, and allow for potential windfall profits for the power sector, which are possible because a lack of competition and because of distortions in EU power markets. A fifth reason might be that transposition of the Linking Directive has been slow and in some cases restrictive. Sixth, organisational issues with the CDM Executive Board that have hampered supply of CDM credits have been addressed at the Conference of Parties (COP 11) in Montreal in November/December 2005. Finally, it should not be forgotten that the EU ETS' objective to include the CO_2 price into the marginal costs of power, although very likely pushes up power prices, may at the same time reduce coal prices. Coal prices may actually decrease as a result in order to stay competitive in EU power markets with the EU ETS. This depends however on the influence of EU demand on the global coal market.

4.3 Impact on industrial sectors

Several studies such as IEA (2005) and Carbon Trust (2004), have concluded that at a price of around €10 per tonne of CO_2 and taking into account both direct (i.e. the need to cover process emissions) and indirect effects (i.e. impacts due to power price increases) the competitiveness of European industry, with the exception of aluminium, would be muted. This conclusion was based on the assumption that there would be a full or almost full pass-through of the allowance price, irrespective of whether they are provided for free or not (Carbon Trust, 2004; IEA, 2005, summarised in Egenhofer, Fujiwara & Gialoglou, 2005). According to the IEA (2005a) full pass-through of the carbon opportunity cost in power prices would on average lead to an 11% increase in the price of the continental European power at a price of €10 per tonne of CO_2. Since the actual price of CO_2 is double that sum, the impact will be significantly higher. In the meantime, Sijm (2005) provides evidence for north-western Europe, using a variety of analytical approaches, including interviews with stakeholders, empirical and statistical analyses, theoretical explorations and economic models, that pass-through is around 50% to 80%. Similar figures have been given in personal conversations with the rapporteurs. According to highlights of the European Commission, McKinsey and Ecofys (2005) survey of the EU ETS, some companies expect to pass through costs.

As a matter of fact, the actual impact on competitiveness will largely depend on the ability of sectors to pass through costs in different product markets.[7] Different sectors' 'ability to pass through costs' depends among others on how quickly non-EU producers can increase their production in the short-term. It is, therefore likely, that negative effects on competitiveness do not fully come into play in the short-term with the notable exception of the aluminium, cement and possibly steel industries, especially should the 'China boom' falter (see also Quirion & Hourcade, 2003). Impacts depend also on geography. Some energy-intensive industries may suffer a competitive disadvantage owing to the fact that competitors of the EU industry may not be subject to the same constraints. For some industries the competitive disadvantage is related to the geographical proximity of their competitors' particular installations (e.g. refining or cement production in the Mediterranean countries). For a more detailed analysis see IEA (2005b).

Studies (Carbon Trust, 2004; IEA, 2005) conclude that it is aluminium sector – which is not included in the EU ETS – that very likely will experience the biggest economic impact. According to the aluminium industry, the power price constitutes more than 25% of the total production costs of primary aluminium. As primary aluminium is a globally traded commodity, its price is set by the world market and the European aluminium industry has no opportunity to pass on the increased costs. Preliminary conclusions from a study that Mc Kinsey is undertaking for the European Commission to study the impact indicate that a price of €25/t CO_2 will lead to a 14% cost increase for primary aluminium production. An internal analysis by Hydro (Nord, 2005) shows an even greater increase. The aluminium industry reckons that this would represent an average 10% of the selling price of metal at today's prices (Stevens, 2005).

Under a €10 per tonne of CO_2 scenario by the IEA (2005b) study, basic oxygen furnace steel, cement and aluminium would incur high reductions in margins of between 6-8%. At current CO_2 prices, the impact is significantly higher. Contrary to the IEA study, the Carbon Trust (2004) concluded that at a price of €10 per tonne of CO_2, only aluminium would be directly affected in its net value. At a price of €25 per tonne of CO_2, however, Carbon Trust (2004) estimated that aluminium, cement and steel would need to be able to pass on significant price increases in order to maintain their market share. The figures are 31.4% for aluminium, 7.3% for steel and 17.4% for cement. Although there is major controversy on the ability of pass-through of sectors, it is hard to imagine that industries are able to pass-through cost increases in that magnitude.

Neither of the studies has examined the specific effects that occur due to geographical proximity of non-EU competitors for example in the Mediterranean in cement or refining. Some energy-intensive industries may suffer a competitive disadvantage owing to the fact that competitors of the EU industry may not be subject to the same constraints. For some industries the competitive disadvantage is related to the geographical proximity of their competitors' particular installations (e.g. refining or cement production in the Mediterranean countries).

According to Lafarge (Nollet, 2005) for the European cement sector costs due to the ETS are about the same as total fixed costs of cement production at a CO_2 price of €20 and €25 per tonne. Traditionally, the European (as well as the global) cement industry is submitted to competitive pressures from imports from non-EU countries from for example Asia or elsewhere

[7] According to the theoretical and empirical literature, environmental policy is but one of many factors that firms take into account when making investment decisions. Empirical knowledge of country-specific relocation effects is very limited, especially in Europe. The existing empirical evidence of the interaction between environmental policy and the effects on competitiveness remains largely inconclusive (Scholz & Stähler, 1999 and Ederington et al., 2003). The idea that environmental policy undermines competitiveness is often based on a static view of competitiveness, in which technology is considered exogenous (i.e. decoupled from environmental regulation).

and which enter the EU via the Mediterranean. Generally speaking these imports are based on short-term marginal costs of producers plus costs for transport and loading, maritime transport cost, margin for importer and if prices allow, a possible top up fee for producer on top of short-term marginal costs. This puts the markets close to the costs under pressure with a possible domino effect on inland markets. In addition, it reduces the competitiveness of Lafarge exports, which represent about 10% of total turnover.

Beyond these identified sectors – i.e. aluminium (as some long-term contracts might not be renewed upon their expiration), cement, steel and possible not yet identified product markets – it is uncertain whether CO_2 prices in Europe up to 2012 will strongly modify the product competitiveness of the European industry in general.[8] However, in an increasingly globalised economy, economic analysis shows that moderate increases in production costs may affect far more significantly the profit margins and the stock values. This may have long term implication for the localisation patterns of these industries by freezing any new capacity in a significant set of industrial sectors in Europe.

5. Possible options to address competitiveness concerns

Since the competitiveness effect of the EU ETS is critical for future development, numerous proposals have been proposed to address the competitiveness concerns. They have been reviewed in NERA (2002) – partly – IEA (2003; 2005b), Sijm et al. (2005), Harrison & Radov (2005) as well as during a previous CEPS Task Force (Egenhofer, Fujiwara & Gialoglou, 2005). The general conclusion has been that there was no "perfect" solution to address the power price issue or at least that many of the options that have been put forward need careful analysis. Measures can aim at reducing either the CO_2 or the power price. For an authoritative, yet still short overview, see Sijm et al. (2005; chapter 8, pp. 82-97).

They can be grouped into two broad categories: *alleviation* and *compensation* measures. But logically, before such measures should be considered, a first step is to address existing implementation issues such as the missing trading infrastructure (e.g. registries, International Transaction Log, installation level of allocation, where missing), the transposition of the Linking Directive, allocation-related inefficiencies, efficiency of the CDM Executive Board but also the working of EU power markets. These measures – completing the trading infrastructure being the most important one – can be expected to ease EU allowances prices in the EU.

5.1 Alleviation measures

Alleviation measures ease impacts of the ETS on the affected sectors by changing the incentive structure of the ETS and hence company decisions. There is a risk of distortions in the EU power or other markets, able to undermining market functioning. Hence, alleviation measures need to be carefully analysed as to this effect.

In the follow we will consider auctioning, regulatory measures, measures to limit CO_2 prices and allocation based on benchmarks.

Auctioning

In theory auctioning is preferable to other allocation methodologies such as free allocation or benchmarking. Theoretical advantages are related to equal treatment of all participants, higher

[8] The expected modification of production prices in carbon intensive industry will be around one tenth lower than the one triggered by the large changes in €/$ exchange rate during the three last decades (Quirion & Hourcade, 2004).

efficiency, better reflection of the polluter-pays principle and the revenue generation effect.[9] Such revenues can be recycled to address public policy objectives such as reduction of other taxes, to address market distortions or also to compensate for distributional effects of the ETS. The main disadvantage is that it raises costs to participating industries. Typically industry views auctioning as a tax, albeit set by the market. Hence, it has little acceptability. If applied to the EU only, it will negatively affect competitiveness of EU industry. While recycling of revenues would mitigate these effects, it raises questions on how to recycle the revenues in the most efficient way, i.e. the management of a "secondary allocation". Particular issues are internal market issues and the role of the EU but also impacts on companies' cash flow. Most important however is the temporary limitation of auctioning under the current Directive, i.e. 5% and 10% maximum, for the first and second period respectively. While some have argued that the Directive would allow for a higher level of auctioning as long as accompanied by full recycling, the issue would almost certainly have to be settled by the European Court of Justice. Beyond 2012, using 100% auctioning would lead to higher power prices at least in the short term as a result of full cost pass through. For the medium and longer term, this would lead to a shift to less carbon-intensive fuels, most likely gas. Such a shift to gas could further increase import dependency on mainly Russian gas. Effects of higher power prices of course could be offset by the revenue recycling, depending on the exact rules for recycling.

Limiting the allowance price

Power price impact could equally be addressed by limiting the CO_2 allowance price. A lower EU allowance price translates into a lower power price increase. A number of theoretical possibilities exist. One is to relax the overall cap of the covered sector or to encourage the influx of CDM and JI credits into the EU ETS as a result of the Linking Directive. A relaxation of the overall cap – without subsequent purchases of CDM and JI credits – means that emissions reductions will have to be undertaken by other sectors. This will increase overall compliance costs for Member States, as low-cost reduction options in the covered sector would be omitted. Substituting the shortfall by purchase of CDM/JI credits on the other hand, runs against current political, technical and other constraints related to those. While the EU can attempt to address them, it will need the co-operation of all international partners in the UNFCCC. Encouraging the influx of CDM/JI credits through the Linking Directive faces the same difficulties. Similarly, the use of AAUs by Member States, as an alternative might politically be difficult unless such AAUs are "greened" through for example earmarking revenues from sale of excess AAUs for projects that reduce greenhouse gas emissions (typically referred to as Green Investment Scheme or GIS). It is also clear that the use of flexible mechanisms finds its limit in the Kyoto Protocol's and the Linking Directive's supplementary provision.

Another option discussed to limit the CO_2 price is to set a maximum price on an EU allowance. However, the current Directive does not enable the setting of a maximum price and hence this does not seem to be a viable option for the second period (2008-12). Moreover, setting a maximum price risks missing the environmental objective of the covered sector with the consequence described above. Another downside is this would reduce liquidity and therefore may actually undermine trading activity and so could be seen as "managing a market".

Benchmarking

Another possible measure is a system of free allocation based on *relative quota or a Performance Standard Rate* (PSR) such as energy/carbon efficiency benchmark per unit of

[9] For a brief discussion, see Bohm & Convery (2003), CATEP Policy Brief, No. 1.

output (e.g. Schyns, 2005; Schyns, 2004; Radov, Harrison & Klevnas, 2005). Benchmarks could be multiplied by the expected output to determine the allowances *ex-ante* or alternatively, multiplied by the realised output, i.e. with ex-post adjustment. The major advantages are that it would virtually avoid windfall profits, rewards carbon efficiency, and is popular with industry since it is less restrictive on economic growth. The major shortcomings that are generally associated with benchmarks or standard performance rate are lower economic efficiency, less environmental certainty and higher information and other transaction costs. While these issues might not constitute absolute obstacle, they nevertheless pose challenges for implementation. The most important obstacle to a relative quota system is however that it is note covered by the present Directive and does not fit in the existing political consensus and hence can not be implemented before 2012.

5.2 Compensation measures

In addition to alleviation measures, that attempt to diffuse the effects of the ETS, there are a number of potential *compensation* measures. Compensation measures attempt to correct undesirable effects from the EU ETS from a societal perspective. They can include for example, government support in form of tax breaks, other reductions of burdens, government subsidies, re-distributed "windfall taxes" but also more subtle mechanisms that could work through the ETS. All of them raise important questions.

When assessing their relative merits, it is important to assess the potential environmental, economic or social effects against the principal objectives of the ETS, i.e. to reduce CO_2 emissions in a cost-effective way. Another common issue is where to find financial resources for compensation. If it is the government that compensates, it will be very likely that revenues will first be collected for example in form of a windfall tax, auctioning or through other measures. Redistribution in itself raises new major issues; compatibility with EC state aid rules and the "secondary allocation" debate on how to redistribute revenues. Most important, the assumption upon which compensation rests depends on whether energy-intensive companies make a strategic choice to cross-subsidise their production by the amount they have received for compensation – at least in the short-term – or whether they base their investment decisions on opportunity costs, meaning that the revenues are invested where they promise the highest return. Hence, the compensation money may be used for investment in other parts of the world than in the EU. Therefore there seems to be a preference for compensation schemes that have the re-distributive mechanism built in the scheme and minimising the government role.

One of these mechanisms is the concept of auctioning power-related allowances and recycling the revenues to mitigate adverse competitiveness effects (Sijm, 2003; Mannerts & Mulder, 2003). This would to some degree mitigate the effects on energy-intensive companies or more generally reduce other charges. Another option that has been in the discussion for some time (see NERA, 2002; pp. 62-63) has been the *indirect allocation of emissions allowances.* The basic idea is to allocate all allowances to the industrial sectors for free rather than to power plants. In such a system of grandfathering, electricity users receive emissions allowances for free while power generators are responsible for surrendering allowances according to their actual emissions. Power generators would buy their allowances from the energy-intensive sector, for which this would constitute compensation. While this would allow for full pass-through of CO_2 costs – the intended objective of the ETS –, reduce possible windfall profits and compensates energy-intensive industries, it raises other equity issues. The non-covered sector and households remain un-compensated. Including them in such a scheme would however increase the complexity of the EU ETS significantly. Furthermore, those energy-intensive sectors that in fact are able to pass through the costs increase due to higher power prices would

be compensated twice, in fact reaping windfall profits. Economic rents would simply be distributed differently.

6. Extension to aviation

Both the European Commission (2005) and the EU Council of Ministers have expressed their interests in analysing whether air transport emissions could be included into the EU ETS.

Air transport constitutes a fast-growing sector. It is particularly low cost airlines that have been expanding at a rapid pace. For example the UK Department of Transport (DETR, 2000) estimated that in 2000 aviation emissions accounted for about 13% of UK CO_2 emissions, which could rise to 31% by 2030. A recent completed study commissioned by the European Commission (CE, 2005) concluded that while the EU's total GHG emissions fell by 5.5% from 1990 to 2003, CO_2 emissions alone from the international aviation of the EU-25 increased by 73% in the same period (CE 2005:1). The strategy of the Association of European Airlines (AEA) proposes a four element strategy [10] consisting of i) developing more efficient technologies, notably engines, improvement of air traffic management, which could reduce CO2 production by 12%; iii) best-practice operation of aircraft; iv) and market-based policy options. There may particularly be efficiency improvements due to new aircraft such as the Boeing dream liner or the Airbus A380. However, despite fuel efficiency improvements of over 75% since the beginning of the jet age, continued incremental improvements in efficiency will not be sufficient to offset emissions growth in the sector. An approach based on emissions trading may provide an efficient and cost-efficient instrument for addressing the externalities associated with climate change. Nevertheless, there are a number of technical and political and economic issues that are still subject to debate.

Note that this section covers the issue of including of air transport generically without discussing in detail the various options in which to cover air transport, for example, regarding geographical cover or trading entities. For further elaboration on these issues, see CE (2005).

6.1 Technical issues

First, there is the issue of the non-CO_2 effects of air transport. As with other sectors, the full impact of aviation on climate goes beyond the effects of CO_2 emissions. Aircraft can contribute to the formation of GHG ozone through NOx emissions, trigger formation of condensation trails or contrails and possibly enhance the ormation of cirrus clouds, although the scientific understanding of these effects is not considered sufficiently developed to define what mechanisms may be necessary to mitigate them. The Intergovernmental Panel on Climate Change (IPCC, 1999) estimated that these non-CO_2 effects on global warming could be about 2 to 4 times greater than those of CO_2 alone, even excluding the potential impact of cirrus clouds enhancement. If the EU ETS were extended to non-CO_2 gases, there would be a need for some common metric,[11] which is not easily available to date. If not, there would be a need to develop mechanisms to deal with the non-CO_2 effects.

[10] AEA Information, 18 July 2005.

[11] Such a common metric would need to capture different phenomena, such as GHGs, changes in particles, clouds, solar variation, and land-use change, and allow the calculation of equivalence between different gases.

6.2 Allocation

Issues related to allocation remain, broadly speaking, the same as for the ETS in general, with one exception. According to CE (2005: 85), there is a case for allocation to be made at EU level, at least for two reasons. First, as a result of international regulation over aviation for decades, it can be assumed that economic conditions for those involved in air transport are more homogeneous than for stationary sources. Therefore aviation might be better suited to harmonised allocation than stationary sources. Second, international aviation is not subject to the EU Burden Sharing Agreement, which gives a good reason for allowing a higher degree of centralisation.

Assuming that air transport would be included in 2008, allocation would be undertaken under current rules, i.e. minimum 90% for free. This raises for example the issue of base year. According to CE (2005: 86), the aviation sector as a whole as well as aircraft and airport operators are highly sensitive to economic circumstances in individual countries and regions and to isolated local and regional events. Depending on a particular base year, the outcome of allocation could be very difficult. This, however, would contradict the argument that initial allocation should be undertaken at EU level as it would be hard to find a common base year. This could possibly be solved by setting a period of several years rather than a single year as a basis.

CE (2005: 94-95) argues that the definition of new entrants would create a serious barrier to the application of grandfathering to aviation. The definition in aviation is more complex than in stationary sources. Linking the definition to either operating entities or aircrafts entering the scheme after allocation decisions had been taken would create incentives to circumvent the scheme. Restricting allowances has been discussed, ranging between €0.4 and €4.6 for a short-haul, between €0.9-€9.0 for a medium and between €1.0 and €6.9 for long-haul flight at a price range of €10 to €30 per tonne of CO_2. This rests however on the highly debatable assumption that the opportunity costs of allowances issued free of charge are not passed on to passengers. If they were to be passed on, the potential price increases could be seven-fold (CE, 2005). If opportunity costs are fully passed on, CE (2005; 138) find that the ticket price increases five-fold.[12] As airlines – at least in intra-EU travel – are expected to be able to pass on costs, we should expect similar windfall profits in the magnitude of the amount of allowances received for free as a result of higher ticket prices without additional costs. There may, however, be a rerouting of intercontinental traffic as international airlines might try to avoid European hubs. Restricting the definition to truly new aircraft would discriminate against new air carriers starting out with used aircrafts.

More practical problems include reliability and availability of entity-specific emissions data, which is a prerequisite for grandfathering (CE 2005: 87). Data for calculating CO_2 is routinely collected by aircraft operators and can be estimated by EUROCONTROL. However, data constraints exist for contrails, cirrus clouds and to a lesser extent, NOx. If these climate impacts not directly correlated to fuel consumption are covered by the ETS, which would require examination of additional data such as routes, flight profile, and weather conditions, it would be difficult to determine historical emissions (CE 2005: 87, 94).

Assuming that air transport will be included in the ETS at a later stage, say in 2012, free allocation is likely to create also perverse effects. Under free allocation based on historical emissions, the EU ETS might create incentives for airlines to increase activity and/or delay fleet renewal in the reference period *before* joining the EU ETS to get as many possible allowances

[12] Figures would then range and ranges between €3.1 and €4.6 for a short-haul, between €6.0 and €9.0 for a medium and between €6.6 and €6.9 for long-haul flight at a price range of €10 to €30 per tonne of CO_2.

as possible. High emissions could result in a high proportion of free allowances while replacement of an old fleet would at the same time allow for relatively low costs abatement potentials. A technology benchmark could tackle the incentive to delay fleet renewal while addressing the incentive to increase activity rests on governments by setting the cap for the sector. Hence, there would be a need to reward early action. However, early action has been one of the most difficult areas of the first round of allocation. Another possible solution to reduce these perverse effects is to bring entry into the ETS forward. This however would have important consequences on NAPs phase II and how to treat the uncertainties of potential aviation emissions to be entered during an allocation period. To include aviation as of 2008 seem to be very ambitious, given the many open questions.

6.3 Economic effects

Economic effects can be broken down into the effects on the European airline industry on the one hand and on the other, on the current covered sector. Starting with the airline sector, CE (2005; 136) has estimated that ticket price increases are relatively small for a number of different options and that most impacts would be seen by low-cost airlines. A ticket price increase due to the EU ETS would be proportionally higher for low-cost airlines than for higher cost airlines. Other airlines could eventually offset some of the higher costs in the higher price business class segment where price elasticity is lower. But even within this group, the effects will vary. Those airlines with more intra-EU travel will be more affected than those that have a higher proportion of intercontinental travel. Thus, those most negatively affected will first be the low-cost airlines, followed by regional (EU) carriers with more intra-EU business. The big international airlines are in all likelihood least affected (Trucost, 2004). One possible consequence of the bias would be leakage. Airlines may adapt their flight paths to minimise the distance flown in EU airspace, which could result in longer flight distances and an overall negative impact on fuel use and emissions (CE 2005: 73).

The competitive position of EU airlines relative to non-EU airlines will be unlikely to be damaged (CE 2005: 15-16). First, all commercial aircraft flying on the covered route will receive equal treatment regardless of nationality of the aircraft operator or type of operation. Second, the impact on the size of the home market is too small to significantly affect the operating efficiency of EU carriers relative to non-EU carriers. Third, non-EU carriers might deploy their newest and cleanest aircraft on the covered routes while diverting older and less fuel-efficient aircraft to other routes. However, this effect may be limited by other constraints and commercial factors in the overall strategies of fleet management and deployment. In addition, aviation is less vulnerable to economic distortions to international trade than other sectors of the EU economy for reasons associated with the nature of the product and the market (CE 2005: 16). First, transport is geographically bound with passengers and freight having relatively fixed origins and relatively fixed destinations. Second, the air transport market is highly regulated by bilateral agreements that limit competition from non-EU carriers.

It is estimated that marginal abatement costs in air transport are far higher than in the covered sector and may well be beyond €100 or even €150. This will make aviation mainly a buyer of allowances with the potential effect that the allowance prices would increase. The effect of the increase, however, will depend on the respective sizes of emissions between the covered sector and aviation. CE (2005; 16) assumes that air transport would buy around 1% of the total quantity of EU allowances. In principle, the impact of aviation's entry on the EU ETS should be very modest. This assumes however that the trading market is efficient, notably liquid and free of distortions, which is not necessarily the case in a newly created market.

6.4 Environmental effects

The environmental effect is – at least to some extent – the other side of the economic impact, translated through the incentive provided to economic actors. As aviation will essentially be a net buyer of emissions, eventual reductions will depend on the price as all reductions will need to be made by the current covered sector. However, as we have seen, the price in the ETS depends on many parameters, notably allocation (in short periods) both for the existing covered sectors and aviation and the development of the markets for the Kyoto Protocol's project mechanisms. CE (2005) concluded that air transport volume could decrease between 0.2% and 3% maximum, depending on the different options. As to CO_2 reductions, CE (2005) concludes reductions of between 3% and 25% depending on the option finally chosen in a range of CO_2 prices between €10 and €30 per tonne.

7. Concluding remarks

The above Part II report should be read in conjunction with Part I. Both reports concentrated on the changes that can be implemented ahead and during the second round of allocation. Part I dealt with the principal short-term implementation issues associated with allocation; such as transparency of NAPs, definitions, small installations, allocation methodologies, opt-ins or monitoring, reporting and verification and to a lesser extent with market development. This Part II report has moved on to address the deep-seated issues related to effectiveness, economic impacts, investment and aviation. Both the short-term implementation and the medium to long-term issues associated with effectiveness, efficiency and fairness will be crucial to the future of the ETS and the role it can play both at EU and international level. Many of the issues that have been addressed in both reports will resurface in the context of the 2006 review of the EU ETS. All of these will be addressed in future CEPS work.

References

Ahman, Markus, Dallas Burtraw, Joseph Kruger and Lars Zetterberg (2005), *The Ten-Year Rule: Allocation of Emission Allowances in the EU Emissions Trading System*, RFF Discussion Paper-05/33, June, Resources for the Future, Washington, D.C.

AEA (Association of European Airlines) (2005), *ARE Information 18 July.*

Bohm, P. and F. Convery (2003), *Allocating allowances in greenhouse gas emissions trading*, Emissions Trading Policy Briefs No. 2 (http://www.emissionstradingnetwork.com).

Carbon Trust (2004), *The European Emissions Trading Scheme: Implications for Industrial Competitiveness*, Carbon Trust in the UK, June.

CE (Solutions for environment, economy and technology) (2005), *Giving wings to emissions trading*, Report for the European Commission, DG Environment, July (http://www.europa.eu.int/comm/environment/climat/pdf/aviation_et_study.pdf).

Christiansen, A.C., A. Arvanitakis, K. Tangen and H. Hasselknippe (2005), "Price determinants in the EU emissions trading scheme", *Climate Policy 5*, pp. 15-30.

Duwe, M. (2005), Submission to the CEPS Task Force, September.

Ederington, J., A. Levinson and J. Minier (2003), *Footloose and pollution free*, NBER Working Paper No. w9718, May (retrievable from http://www.nber.org/papers/w9718).

Egenhofer, C., N. Fujiwara and K. Gialoglou (2005), *Business Consequences of the EU Emissions Trading Scheme*, CEPS Task Force Report No. 53, Centre for European Policy Studies, Brussels, February.

European Commission, McKinsey and Ecofys (2005), *Review of emissions trading scheme: Survey highlights*, November (http://europa.eu.int/comm/environment/climat/pdf/highlights_ets_en.pdf).

European Commission (2005a), *Report on progress in creating the internal gas and electricity Market*, Communication from the Commission, forthcoming (http://www.europa.eu.int/comm/energy/electricity/report_2005/doc/2005_report_en.pdf).

European Commission (2005b), *Reducing the climate change impact of aviation*, European Commission Communication, COM(2005) 459 final, 27.09.05 (http://www.europa.eu.int/eur-lex/lex/LexUriServ/site/en/com/2005/com2005_0459en01.pdf).

Grubb M., C. Azar and U. Martin Persson (2005), "Allowance allocation in the European emissions trading scheme: A commentary", *Climate Policy*, 5, pp. 127-136.

Harrison, D. and D. Radov (2005), *Carbon markets, electricity prices and 'windfall profits'*, presentation at IEA-IETA-EPRI Emissions Trading Workshop, Paris, 27 September.

IEA (2003), *Emissions trading and its possible impacts on investment decisions in the power sector*, International Energy Agency Information Paper (author: Julia Renaud).

IEA (2005a), *Industrial competitiveness under the European Union emissions trading scheme*, International Energy Agency Information Paper (author: Julia Renaud).

IEA (2005b), *The European refinery industry under the EU emissions trading scheme-competitiveness, trade flows and investment implications*, International Energy Agency Information Paper (author: Julia Renaud).

International Federation of Industrial Energy Consumers (IFIEC) (2005), *Correcting the failures in the EU emissions trading scheme*, Brussels, 28 June.

Intergovernmental Panel on Climate Change (IPCC) (1999), *Aviation and the global atmosphere*, Report, April.

Keats Martinez, K. and Karsten Neuhoff (2005), "Allocation of carbon emission certificates in the power sector: How generators profit from grandfathered rights", *Climate Policy*, 5, pp. 61-78.

Kruger, J. and W. Pizer (2004), *The EU Emissions Trading Directive: Opportunities and Potential Pitfalls*, Discussion Paper 04-24, Resources for the Future (RFF), April.

Mannaerts, H. and M. Mulder (2003), *Emissions trading and the European electricity market: Consequences of emissions trading on prices of electricity and competitiveness of basic industries*, CBP memorandum, Centraal Plan Bureau, The Hague.

Neuhoff, K., M. Grubb and K. Keats (2005), *Impact of the allowance allocation on prices and efficiency*, Draft, August.

Neuhoff, K., M. Grubb and K. Keats (2005), *Emissions allowance allocation and the effects of updating"*, mimeo, Faculty of Economics, University of Cambridge, UK.

NERA (2002), *Evaluation of Alternative Initial Allocation Mechanisms in a European Union Greenhouse Gas Emissions Trading Scheme*, report prepared for DG Environment, European Commission by National Economic Research Associates (NERA) with assistance from Jaako Pöyry Consulting, March.

Nollet, P. (2005), Personal communication on 10 October.

Nord, L. (2005), Personal communication on 23 September.

Quirion, P. (2003), "Allocation of CO_2 allowances and competitiveness: A case study on the European iron and steel industry", paper presented at the ECEEE 2003 summer study, St-Raphaël, 2-7 June, European Council for an Energy Efficient Economy (http://www.eceee.org/latest_news/index.lasso).

Quirion, P. and J.-Ch. Hourcade (2004), "Does the CO_2 emission trading directive threaten the competitiveness of European industry? Quantification and comparison to exchange rates fluctuations", paper presented at the EAERE Conference, Budapest, June (retrievable from http://eaere2004.bkae.hu/download/paper/quririonpaper.pdf).

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

Schyns, V. (2004), *National allocation plans for emissions trading: A step from theory to practice to check the objectives concerning environment, competitiveness & employment*, report made for DSM, the Netherlands, version of 30 September.

Schyns, V. (2005), *Climate change challenges and the search for a sustainable policy*, report made for DSM, the Netherlands, version of 21 June.

Sijm, J. (2004), *The impact of the EU Emissions Trading Scheme on the price of electricity in the Netherlands*, ECN (www.ecn.nl).

Sijm, J., S.J.A Bakker, Y. Chen, H.W. Harmsen and W. Lise (2005), *CO_2 price dynamics: The implications of EU emissions trading for the price of electricity*, ECN-C—05-081, ECN (www.ecn.nl).

Scholz, A. and F. Stähler (1999), *Unilateral Environmental Policy and International Competitiveness*, Kiel Institute for World Economics, Kiel, Germany.

Stevens, F. (2005), Personal communication on 30 September.

Trucost (2004), *Emissions trading and European aviation*, Trucost Sector Report – European Aviation, March.

UK DETR (2000), *The future of aviation*, the Government's consultation document on air transport policy, Department of the Environment, Transport and the Regions, London.

Annex

List of Task Force Members and Invited Guests and Speakers

Co-Chairmen: David Hone
Group Climate Change Advisor
Shell International

Lasse Nord
Senior Vice President, Climate and Environment
Norsk Hydro asa

Rapporteurs: Christian Egenhofer
Senior Research Fellow
CEPS

Noriko Fujiwara
Research Fellow
CEPS

Members

Chris Anastasi
Senior Environmental Advisor
British Energy plc

Ruggero Arico
Manager Brussels Office
European and International Affairs
ENEL SpA

Vincent Artis
Lawyer
White & Case LLP

Nikolaas Baeckelmans
Manager EU Affairs
EU Government Relations
ExxonMobil Petroleum & Chemicals

Georg Bäuml
Environmental Affairs Strategy and
Business Processes
Volkswagen AG

Markus Becker
European Union Affairs
Brussels Office
RWE Aktiengesellschaft

Lieven Bloeyaert
Electrabel Trading
Electrabel

Frank O. Brannvoll
Vice President
Head of Corporate Affairs
StoraEnso Brussels

Nick Campbell
Environment Manager
Fluorinated Products
Arkema

Ruta Bubniene
Policy Officer
Climate Action Network Europe

Barbara Buchner
Research Fellow
Fondazione Eni Enrico Mattei (FEEM)

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

Frede Cappelen
Special Advisor
Corporate HSE
Statoil asa

Sonia Casino Diaz
Deputy Head of EU Liaison
Shell International

Deborah Cornland
Director
Climate Change Policy Research Program
MISTRA

Michel Cruciani
European Affairs
Electricité de France (EDF)

Jacques de Jong
Fellow
Clingendael

Kristy Devonport
Lawyer
Clifford Chance

Monica Diaz-Otero Nunez
Analyst
International Regulation
Endesa

Catrin Draschil
Analyst Energy Markets
Generation Strategy
Vattenfall Europe Generation AG&Co KG

Matthias Duwe
Policy Researcher
Climate Network Europe (CNE)

Christine Faure-Fedigan
Director CO_2 Strategy
Gaz de France

Kyriakos Gialoglou
Research Fellow
CEPS

Christoph Grobbel
Expert
McKinsey & Company

Stephan Herbst
Manager
Environment Strategy Department
Toyota Motor Europe

Gillian Hutton
Business Analyst
European Policy Analyst
Centrica plc

Lars Jacobsson
Director
Vattenfall European Affairs

Staffan Jerneck
Deputy Director and
Director of Corporate Relations
CEPS

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

Wiel Klerken
VNO-NCW (Confederation of Netherlands
Industry & Employers)

Bill Kyte
Head
Sustainable Development
E.ON

Frederike Lehmann
EU ETS Advisor
Shell Deutschland Oil GmbH

Joachim Löchte
RWE

Linda Lucinio
Institutional & Regulatory Affairs
ENEL SpA

Giuseppe Malinverno
Public Affairs Manager
Solvay

Andrei Marcu
Executive Director
International Emissions Trading Association

Manfred Meier
Director Technology & Science
Volkswagen AG

Roland-Jan Meijer
Vice-President
Environmental Affairs
Holcim Group Support (Brussels) SA

Anne Margrethe Mellbye
Advisor
EU Affairs
Statoil asa

Hermann Meyer
Director
Environmental Policy
Association des Constructeurs Européens d'Automobiles (ACEA)

Patrick Nollet
Senior Advisor
Entreprises pour L'Environnement

Heikki Niininen
Vice President
Climate and Emissions Trading
Fortum Corporation, Corporate EHS

Rolf Olofsson
Lawyer
White & Case LLP

Kris Pollet
EU Policy Advisor
White & Case LLP

Brigitte Poot
Climate Change
Total

Hugh Porteous
Vice-President Government Relations
Corporate Affairs
Alcan

Martina Priebe
Manager EU ETS
International Emissions Trading Association

Oliver Rapf
Senior Policy Officer
WWF European Policy Office

Henning Rentz
RWE AG

Erik Riedel
RWE AG

Julie Roden
Oil Marketing
BG-Group

Alexander Savelkoul
Advisor
Regulatory and Public Affairs
Essent

Jenny Schulz
Corporate Affairs Management
StoraEnso Brussels

Vianney Schyns
Energy Coordinator
Utility Support Group
DSM & SABIC

Gudmundur Sigurthorsson
Senior Vice President
Climate Change Services
Det Norske Veritas AS (DNV)

Sven Starckx
Coordinator EU ETS
Climate Change Services
Det Norske Veritas AS (DNV)

Francesca Stevens
Government Relations Manager
Corporate Affairs
Alcan

Andreas Theuer
Senior Counselor
Corporate Division Environment
ThyssenKrupp Steel AG

Jaakko Tusa
Vice President
EU and Russian Affairs
Fortum Corporation

Jan van Brummen
Coordinator Public Affairs
Saint Gobain

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

Henning vom Stein
Head of Brussels Office
ThyssenKrupp AG

Marko Voss
Market Analyst Emissions Trading
Generation Strategy
Vattenfall Europe Generation AG&Co KG

Klaus Willnow
Director
Group Communications
Siemens AG

Markus Wolf
Power Alstom

Simon Worthington
Senior Advisor
European Government Affairs
BP Europe

Mike Wriglesworth
Senior Advisor
CEPS

Mariya Yaneva
Intern
Corporate Affairs Management
StoraEnso

Peter Zaman
Associate
Clifford Chance LLP

Invited Guests and Speakers

Markus Åhman
Senior Research Fellow
Swedish Environmental Research Institute (IVL)

Chris Allen
Economist, Sustainable Development
DG Enterprise + Industry
European Commission

Maurits Blanson-Henkemans
Manager
Dutch Emissions Trading
Economics Ministry, The Netherlands

Chris Bolesta
DG Competition
European Commission

Peter Botschek
Manager
Environment & Energy
European Chemical Industry Council (CEFIC)

Jeroen Brinkhoff
DG Competition & Energy
Ministry of Economic Affairs
The Netherlands

Chris Dodwell
Head of EU ETS
UK Department for Environment, Food and Rural Affairs (DEFRA)

Joachim Ehrenberg
DG Enterprise
European Commission

Dirk Forrister
Managing Director
Services
NATSOURCE

Madeleine Infeldt
Administrator
European Commission

Hakan Karlström
DG Transport & Environment
European Commission

Chris Leigh
UK Department for Environment, Food and Rural Affairs (DEFRA)

Stefan Moser
Climate Change Unit, DG ENVIm
European Commission

Marek Przeor
Administrator Environmental Aspects of Entreprises Policy
DG Enterprise
European Commission

Brigitte Renner
DG Competition
European Commission

John Scowcroft
Head of Unit
Environment & Sustainability
Eurelectric

Sandra Stevens
Official
DG TREN B4
European Commission

Vivian E. Thompson
Assistant Professor
Department of Environmental Sciences
University of Virginia

Lieven Top
Flemish Government
Kabinet Minister Peeters

Hans Van Balken
Director Technology
European Fertilizer Manufacturers Association (EFMA)

Peter Vis
Acting Head of Unit
DG Environment
European Commission

Peter Zapfel
European Commission
DG Environment
European Commission

Lars Zetterberg
The Role of Emissions Trading in Climate
Swedish Environmental Research Institute

Recent CEPS Publications
(available at http://shop.ceps.be)

CEPS Paperbacks

From Words to Deeds: Continuing the Debate on European Security, Willem F. van Eekelen, March 2006

Integration without Membership: Switzerland's Bilateral Sectoral Agreements with the EU, Marius Vahl and Nina Grolimund, March 2006

Impact Assessment in the EU: The State of the Art and the Art of the State, Andrea Renda, January 2006

Multilateralism or Regionalism? Trade Policy Options for the European Union, Guido Glania and Jürgen Matthes, December 2005

Europe's Hidden Capital Markets: Evolution, Architecture and Regulation of the European Bond Market, Jean-Pierre Casey and Karel Lannoo, November 2005

Democratisation in the European Neighbourhood, Michael Emerson (ed.), October 2005

Readings in European Security, Vol. 3, Dana H. Allin and Michael Emerson (eds), October 2005

Migration, Borders & Asylum: Trends and Vulnerabilities in EU Policy, Thierry Balzacq and Sergio Carrera, July 2005

Deep Integration: How Transatlantic Markets are Leading Globalization; Daniel S. Hamilton and Joseph P. Quinlan (eds), published jointly with the Center for Transatlantic Relations of Johns Hopkins University, June 2005

EMU at Risk, Daniel Gros, Thomas Mayer and Angel Ubide, 7th Annual Report of the CEPS Macroeconomic Policy Group, June 2005

CEPS Task Force Reports

No. 57 *Reviewing the EU Emissions Trading Scheme: Priorities for Short-Term Implementation of the Second Round of Allocation* (Part II), Christian Egenhofer and Noriko Fujiwara, March 2006

No. 58 *Achieving a Common Consolidated Corporate Tax Base in the EU*, Malcolm Gammie, Silvia Giannini, Alexander Klemm, Andreas Oestreicher, Paola Parascandolo and Christoph Spengel, December 2005

No. 57 *Reviewing the EU Emissions Trading Scheme: Priorities for Short-Term Implementation of the Second Round of Allocation* (Part I), Christian Egenhofer and Noriko Fujiwara, December 2005

No. 56 *Market Stimulation of Renewable Electricity in the EU: What Degree of Harmonisation to Support Mechanisms is Required?,* Jaap Jansen, Kyriakos Gialoglou and Christian Egenhofer, October 2005

No. 55 *Towards a Global Climate Regime: Priority Areas for a Coherent EU Strategy*, Christian Egenhofer and Louise van Schaik, May 2005

No. 54 *EU Financial Regulation and Supervision beyond 2005*, Karel Lannoo and Jean-Pierre Casey, February 2005

No. 53 *Business Consequences of the EU Emissions Trading Scheme*, Christian Egenhofer, Noriko Fujiwara and Kyriakos Gialoglou, February 2005

CEPS Policy Briefs

No. 96 *Confidence through Compliance in Emissions Trading Markets*, Joe Kruger and Christian Egenhofer, March 2006

No. 95 *From Neighbourhood to Integration Policy: Are there concrete alternatives to enlargement*?, Eneko Landaburu, March 2006

No. 94 *The US Administration's 'Advanced Energy Initiative': New programmes and more funding or old programmes and less funding?,* Thomas L. Brewer, March 2006

No. 93 *Employment and Competitiveness: The Key Role of Education*, Daniel Gros, February 2006

No. 92 *Deadlock avoided, but sense of mission lost? The Enlarged EU and its Uncertain Constitution*, Sebastian Kurpas and Justus Schönlau, February 2006

No. 91 *The game's not over yet for the Capital Requirements Directive…,* Rym Ayadi, February 2006

No. 90 *Security Implications of Russian Energy Policies*, Keith C. Smith, January 2006

No. 89 *The Food Aid Debate in Trade and Development*, Andreas Schneider, December 2005

No. 88 *Who finances the Queen's CAP payments? The CAP as a dooH niboR Scheme*, Richard E. Baldwin, December 2005

No. 87 *Industry Location and Climate Change Policy-Making: in the United States*, Thomas L. Brewer, November 2005

No. 86 *Technology in a Post-2012 Transatlantic Perspective*, Christian Egenhofer, November 2005

No. 85 *An Interim Plan for South-East Europe: Customs Union with the EU and a Regional Schengen for the Free Movement of People*, Michael Emerson, November 2005

No. 84 *Capital Adequacy vs. Liquidity Requirements in Banking Supervision in the EU*, Karel Lannoo and Jean-Pierre Casey, October 2005

No. 83 *Is the IMF business model still valid?*, Angel Ubide, September 2005

No. 82 *The New Capital Requirements Directive: What pieces are still missing from the puzzle?* Rym Ayadi, September 2005

No.81 *Parties of Power as Roadblocks to Democracy: The Cases of Ukraine and Egypt,* Madalena Resende and Hendrik Kraetzschmar, August 2005

No. 80 *The EU's Fight against International Terrorism: Security Problems and Insecure Solutions*, Thierry Balzacq and Sergio Carrera, July 2005

No. 79 *The Black Sea as Epicentre of the After-Shocks of the EU Earthquake*, Michael Emerson, July 2005

No. 78 *Egypt's Moment of Reform: A Reality or an Illusion,* Emad El-Din Shahin, July 2005

No. 77 *Climate Change in the US Government Budget – Funding for Technology and Other Programmes, and Implications for EU-US Relations*, Thomas L. Brewer, July 2005

No. 76 *The Real Budget Battle: Une crise peut en cacher une autre*, Richard Baldwin, June 2005

No. 75 *Should ratification proceed? An Assessment of Different Options after the Failed Referenda*, Sebastian Kurpas, June 2005

No. 74 *Plan B*, Richard Baldwin, June 2005

No. 73 *The Europeanisation of the Transnistrian Conflict,* Marius Vahl, May 2005

No. 72 *Political Integration in Europe and America, Towards a Madisonian Model for Europe*, Mark C. Christie, May 2005

About CEPS

Founded in 1983, the Centre for European Policy Studies is an independent policy research institute dedicated to producing sound policy research leading to constructive solutions to the challenges facing Europe today. Funding is obtained from membership fees, contributions from official institutions (European Commission, other international and multilateral institutions, and national bodies), foundation grants, project research, conferences fees and publication sales.

Goals

- 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 across the whole of Europe.
- To disseminate our findings and views through a regular flow of publications and public events.

Assets and Achievements

- Complete independence to set its own priorities and freedom from any outside influence.
- Authoritative research by an international staff with a demonstrated capability to analyse policy questions and anticipate trends well before they become topics of general public discussion.
- Formation of seven different research networks, comprising some 140 research institutes from throughout Europe and beyond, to complement and consolidate our research expertise and to greatly extend our reach in a wide range of areas from agricultural and security policy to climate change, JHA and economic analysis.
- An extensive network of external collaborators, including some 35 senior associates with extensive working experience in EU affairs.

Programme Structure

CEPS is a place where creative and authoritative specialists reflect and comment on the problems and opportunities facing Europe today. This is evidenced by the depth and originality of its publications and the talent and prescience of its expanding research staff. The CEPS research programme is organised under two major headings:

Economic Policy

Macroeconomic Policy
European Network of Economic Policy Research Institutes (ENEPRI)
Financial Markets, Company Law & Taxation
European Credit Research Institute (ECRI)
Trade Developments & Policy
Energy, Environment & Climate Change
Agricultural Policy

Politics, Institutions and Security

The Future of Europe
Justice and Home Affairs
The Wider Europe
- South East Europe
- Caucasus & Black Sea
- EU-Russian/Ukraine Relations
- Mediterranean & Middle East

CEPS-IISS European Security Forum

In addition to these two sets of research programmes, the Centre organises a variety of activities within the CEPS Policy Forum. These include CEPS task forces, lunchtime membership meetings, network meetings abroad, board-level briefings for CEPS corporate members, conferences, training seminars, major annual events (e.g. the CEPS Annual Conference) and internet and media relations.

C E P S CENTRE FOR EUROPEAN POLICY STUDIES

Place du Congrès 1 · B-1000 Brussels
Tel: (32.2) 229.39.11 · Fax: (32.2) 219.41.51
www.ceps.be · info@ceps.be