

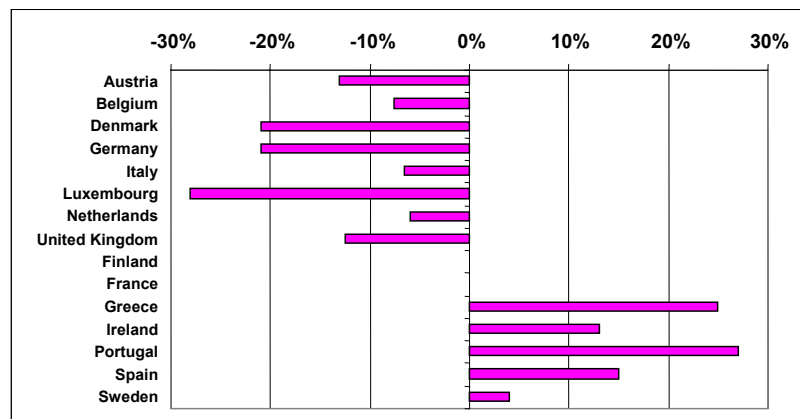
## ENERGY REGULATION BRIEF

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TO EMISSIONS  
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The European Commission issued in October 2001 a plan for greenhouse gas (GHG) emission trading in Europe that could affect virtually every firm and citizen in Europe.<sup>1</sup> During its initial phase (2005-2007), the programme will apply only to carbon dioxide (CO<sub>2</sub>) emissions. The Commission's proposal is a major element of Europe's strategy for complying with the Kyoto protocol, under which Europe must reduce its emissions of GHGs by 8 percent below 1990 emissions levels. Each European Member State has its own target for reducing emissions, which may be above or below the 8 percent average reduction, based on the so-called "Burden Sharing Agreement." The European proposal represents the most significant CO<sub>2</sub> trading programme planned to date, although several programmes have been and are being developed by individual countries in Europe. Indeed, one of the challenges for the EU programme is to integrate these disparate national plans. This brief reviews the European GHG trading programme, focusing on the initial allowance allocation and other outstanding issues. The brief draws on a major recent study on initial allocation prepared by NERA for the European Commission.<sup>2</sup>

EU Burden Sharing Agreement - Target GHG Emissions  
Reductions Relative to 1990 Levels



<sup>1</sup> Proposal for a Directive of the European Parliament and of the Council Establishing a Framework for Greenhouse Gas Emissions Trading Within the European Community and Amending Council Directive 96/61/EC. European Commission, Brussels, October 2000.

<sup>2</sup> David Harrison, Jr. and Daniel B. Radov 2002. *Evaluation of Alternative Initial Allocation Mechanisms in a European Union Greenhouse Gas Emissions Allowance Trading Scheme*. Prepared for DG Environment, European Commission, Brussels, March 2002.

<sup>3</sup> Covered sources will include facilities above size thresholds in selected sectors, including electricity generation, petroleum refining, ferrous metal production, non-metallic building materials (including cement and glass), and pulp and paper. The Commission has estimated that these sectors account for nearly 45 percent of EU CO<sub>2</sub> emissions.

<sup>4</sup> *Green Paper on Greenhouse Gas Emissions Trading within the European Union*. European Commission, Brussels, March 2000.

## The Appeal of Emissions Trading

The underlying rationale for an emissions "cap-and-trade" approach is straightforward and compelling: using emissions trading rather than "command and control" regulations reduces the cost of lowering GHG emissions. In theory, trading gives all firms the right incentives to implement the "least-cost" measures for reducing emissions to a given level. Costs are reduced by including sources from many sectors across a diverse geographical area, which allows participants to benefit from low-cost options for reducing emissions across the entire continent.<sup>3</sup> According to the Commission, the cost savings from trading relative to less flexible measures will be 11 billion Euros per year, or more than 50 percent of the total annual cost of achieving the targets.<sup>4</sup>

Although the Commission's proposal outlines major elements of the programme, certain key aspects will be decided by individual Member States, subject to review by the Commission. Member State governments, as well as affected parties, will want therefore to clarify exactly how the plan will be implemented, and how each of them will be affected.

## Importance of the Initial Allocation

One attractive feature of cap-and-trade programmes is that they provide a simple mechanism for compensating those hardest hit by the new price on GHG emissions. This mechanism is the “initial allocation” of allowances. Because allowances are potentially valuable, their initial allocation can represent one of the most important (and contentious) elements of trading programme design.<sup>5</sup>

An initial allocation involves many choices – now and in future. The Commission asked NERA to study these choices and to assess alternatives. The report, just released by the Commission, goes further than previous reports on the topic in assessing real empirical issues in the context of European GHG emissions trading. For example, it finds that no single existing database would allow the application of a single allocation mechanism throughout the EU. The empirical realities will be crucial as the Commission moves from the theory of emissions trading to its practice.

This brief draws on NERA’s study to discuss the major alternatives for initial allocation. We focus on the alternatives’ different effects on the cost savings from emission trading, as well as distributional impacts on firms and sectors. In choosing from amongst the alternatives, Member States will face a difficult balancing act.

## Auction Allowances or Allocate Free of Charge?

There are three major allocation alternatives that are typically considered in the design of a cap-and-trade programme. The first of these is the allowance auction. Under an auction, the government (or some other independent entity) offers allowances for sale to the highest bidder or bidders until all available allowances for a given year are sold. Auction rules vary, and can be designed with a range of goals in mind (e.g. revenue maximization, fairness to small bidders), but all auctions involve the direct payment for CO<sub>2</sub> allowances, and therefore a direct charge for emissions.

The other two alternatives – “grandfathering” and “updating” – both involve distributing allowances free-of-charge to participating facilities, usually in proportion to some quantity that measures facility activity over a certain period.<sup>6</sup> Under grandfathering, allocations are set from the beginning, based on historical facility activity. These allocations can change over time – for example, as emissions limits are reduced – but they do not vary because of *subsequent* facility activity. In contrast, under updating, allocations *can* vary depending on a firm’s later actions. Examples of updating include mechanisms under which defunct firms lose their allocations, or where a facility’s allocation in each year is based on its share of the previous year’s total production.

To date, nearly all emissions trading programmes have distributed allowances free-of-charge. Most of these programmes have grandfathered to incumbent facilities, but some have used updating. Auctions have only been used to a limited extent.

## Assessment of Initial Allocation Methods

Each of the three basic alternatives has advantages and disadvantages. Under auctioning, firms are expected to implement the “least-cost” emissions reductions measures. Another oft-cited advantage of auctions is that their revenues can be used to reduce other taxes that may act as a drag on economies, such as income taxes or VAT, and thus benefit all consumers and companies. Auction revenues also could be rebated in part or in full to the sectors covered by the trading programme. Auction critics note, however, that they impose very high direct costs on regulated firms: firms must pay to reduce emissions to the capped level and then must pay again for all of their emissions. Moreover, there is no guarantee that governments would in fact distribute revenues back to the firms. Finally, auctions may be subject to “gaming” unless they are properly designed.

<sup>5</sup> David Harrison, Jr. “Tradable Permit Programmes for Air Quality and Climate Change,” in *International Yearbook of Environmental and Resource Economics*, Volume VI, Henk Folmer and Thomas Tietenberg (Eds.). London: Edward Elgar, May 2002.

<sup>6</sup> For example, allowances could be distributed in proportion to share of total emissions in 1997, or share of total production between 1995-2000.

The primary argument in favour of free distribution of allowances is that it reduces the overall cost to firms that must cut their emissions. Many of these firms will have made investments based on the prior regulatory regime in which the cost of GHG emissions was not as high, and free allocations serve to ease the burden of any stranded costs associated with the tighter emissions rules. As a result, such allocations contribute to the long-term stability and predictability of costs. Of course, free allocation mechanisms do not provide the ancillary benefits to the economy that auctions can provide, since they do not generate any government revenues that can be used to reduce other taxes.

In most circumstances, grandfathering allows the trading programme to achieve the same “least-cost” emissions reductions as an auction. The reason is that although firms do not pay for their allowances, every allowance used to cover emissions incurs an *opportunity* cost, since the allowance might also have been sold. This opportunity cost affects firm behaviour in the same way as the *cash* costs incurred at an auction. In certain circumstances, however – e.g., if the sector in question is governed by rate-of-return or cost-of-service regulation – grandfathering may not achieve the same cost savings as an auction.

Under grandfathering, the choice of the “metric” used as the basis for allocation – be it emissions, production, or some input measure – does not affect the trading programme’s incentives for the “least-cost” reduction measures. The choice of metric can, however, result in very different allocations to different firms. For example, compared to an allocation based on historical production, an allocation based on historical emissions may disadvantage firms that historically have been more efficient than their rivals.

### Concerns Over Updating

The choice of metric is more significant under updating. Because updating varies a facility’s allocation based on its behaviour in current and future years, updating alters facility incentives in a way that is tied to the metric. Under production-based updating, for example, a facility will have an incentive to step up production – even if it would be more cost-effective to cut emissions by reducing production – because future allocations will be based on today’s production levels.

In such circumstances, the price of emissions allowances and the cost of emissions reductions will be higher, and firm profits are likely to be lower relative to grandfathering. On the other hand, consumers may benefit under such an updating mechanism, because higher production levels will lead to lower product prices relative to auctioning or grandfathering.

Updating mechanisms also may raise concerns within Europe about competition between sectors in different Member States. Updating mechanisms are likely to face close scrutiny by European representatives concerned that the award of future allowances is an inappropriate subsidy that attracts investment to the Member State.

One alternative to updating that would avoid granting allowances in perpetuity would be an initial grandfathered allocation that was phased out gradually and replaced by an auction. No firm would receive its grandfathered allowances indefinitely, but no incentives would be given to modify emissions-reduction choices inefficiently. Gradually phasing out grandfathering would provide time for existing firms to recover any stranded costs and adjust to the new regulatory system, but would avoid anachronistic allocations decades on.

### Deciding the Allocation Method

The Commission’s proposal is currently being reviewed by several parliamentary committees. Once these committees have reviewed the proposal and suggested modifications, it will be passed to the full European Parliament, and then on to the Council of Environment Ministers from each Member State.

Under the current proposal, the EU programme will enter an introductory phase from 2005-2007, during which all allowances will be allocated free-of-charge to covered firms. As noted, Member States will have responsibility for deciding how to allocate the allowances. This process is likely to involve significant interaction with interested parties hoping to influence their share of the total. Favourable allocations could be short-lived, however, because the Commission may suggest that the allocation mechanisms be changed at the start of the first Kyoto commitment period in 2008.

### Other Key Issues

In addition to the initial allocation, a number of other issues remain to be resolved. We touch briefly on two broad categories:

#### *Coordination of EU and Member State Trading Programmes*

Trading programmes and other climate change policies developed by Member States will need to be coordinated with the EU programme if all are to work effectively. Trading and non-trading sectors will be concerned that each is bearing an appropriate share of the overall burden of reducing emissions. Other issues to be addressed include the voluntary nature of certain trading programmes, the treatment of GHGs other than CO<sub>2</sub>, potential interactions with renewable energy obligations, and the UK's exclusion of the electricity generation sector from its trading scheme.

#### *The Clean Development Mechanism (CDM) and Joint Implementation (JI)*

A second outstanding issue is the treatment of credits awarded for emissions reduction achieved outside the EU, which can provide an inexpensive way of meeting emissions targets. Several European Member States, including the Netherlands and Finland, have indicated that they intend to meet their GHG targets using credits generated elsewhere, under Kyoto's CDM and JI. The current EU proposal defers treatment of credit-generating projects to a later Directive. One major concern is that credits will not represent real emissions reductions. Firms and Member States therefore have an interest in the development of valid and low-cost methods for calculating "baseline emissions." A recent report by NERA on behalf of the Electric Power Research Institute provides recommendations on how to meet this challenge.<sup>7</sup>

The fate of the Commission's trading programme of course is tied to Europe's overall commitment to limiting GHG emissions. Any serious commitment seems destined to assign a major role to emissions trading, given the substantial cost savings that it offers. Indeed, the development of a European GHG trading programme provides an additional opportunity for Europe – as well as for the Member States and the firms that participate – to provide leadership in this innovative environmental policy area.

<sup>7</sup> David Harrison, Jr., S. Todd Schatzki, Thomas Wilson and Eric Haites 2000. "Critical Issues in International Greenhouse Gas Emissions Trading: Setting Baselines for Credit-Based Trading Programmes - Lessons Learned from Relevant Experience." Electric Power Research Institute, Palo Alto, CA, December 2000.

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