

AUCTIONING OF CO2 EMISSION ALLOWANCES IN THE EU ETS

**Report under the project
“Review of EU Emissions Trading Scheme”**



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1 INTRODUCTION

The EU Emissions Trading Scheme (EU ETS) was launched in January 2005. It is the largest cap-and-trade scheme in the world and the core instrument for Kyoto compliance in the EU. This first environmental market established in the EU involves thousands of operators who have obligations for limiting the carbon dioxide emissions from their plants. In an average week more than 10 million allowances are traded, resulting in a market worth several billion Euro already in the first year of operation.

Article 30 of the Directive implementing the EU ETS requires the Commission to review the application of the EU Emissions Trading Scheme and report to the European Parliament and to the Council. The report may be accompanied by proposals for amendments to the scheme.

The European Commission's DG Environment appointed McKinsey & Company and Ecofys to support it in developing the review. Amongst other things, they were asked to develop an understanding of the impact of the scheme on the competitive position of participants and to analyse possibilities for the design of the scheme after the second trading period.

Their work deals with a number of the issues listed in Article 30 as ones that should be addressed in the Commission's report, as well as other relevant issues. Each report discusses approaches taken in the first phase and important lessons learnt. The analyses focus on the post-2012 design. For each design element, future options are investigated. This involves discussion of the advantages and disadvantages of design options, harmonization opportunities, and impact on competitiveness.

The work conducted in the period June 2005–July 2006 consists of a web survey to consult stakeholders on their views on the EU ETS, as well as extensive topical analyses.

This report reflects the views of McKinsey & Company and of Ecofys and does not constitute official views or policy of the European Commission.

Other reports delivered in the scope of this work are available at http://ec.europa.eu/environment/climat/emission/review_EN.htm.

2 AUCTIONING: THE SETTING

The EU Emission Trading Directive ("the Directive") requires in its Article 10 that for the first phase of the EU Emission Trading System (EU ETS) (2005-2007) Member States shall allocate at least 95 % of the allowances free of charge. For the second phase beginning 1 January 2008, at least 90 % of the allowances must be allocated free of charge. This implies that Member States can sell or auction a maximum of respectively 5% and 10 % of the allowances. Apart from limiting the volume of auctioning or sale in the first two phases, the Directive does not contain any provisions on the actual design and modalities, e.g. on whether or not auctioning or sale shall be open to potential bidders from outside the national territory. Limiting the auction to a restricted circle of participants, e.g. to those on the national territory, may however raise concerns under the European State aid rules as in view of the restricted demand the resulting price is likely to be systematically lower than the actual market price.

In the first period, most countries chose to allocate all allowances free of charge. Exceptions are Denmark that will sell 5% of the allowances and Hungary, Ireland and Lithuania that will auction respectively 2.5%, 0.75% and 1.5% of the allowances. In addition, various countries are considering auctioning the surplus allowances remaining in the New Entrants Reserve (NER). The phase 1 NAPs of these Member States do not however describe which auction design will be applied. In 2005, the UK government organised a public hearing on applying auctioning for distributing the surplus allowances in the NER of the first phase of the EU ETS. For this purpose discussion documents were developed to support the hearing. Chapter 3 of this document is partly based on these documents.

As stated in article 30 of the ETS Directive, the Commission will consider further harmonisation of the method of allocation, including auctioning for the time after 2012. This paper discusses the use and design of auctioning as a way of distributing allowances in the EU ETS for the longer term, i.e. with a larger share of auctioning, discussing the pros and cons of auctioning compared to allocating free of charge in achieving an efficient distribution of allowances. The efficiency of the distribution of allowances is defined as cost effectiveness of the allocation involving total costs to the government and to industry. The paper gives an overview on the various options for auction design within the EU ETS. For distribution of smaller volumes in some cases sale of allowances is a better option than auctioning.

This paper however does not elaborate on options for sale. Comparison between auction and sale for auctioning of small volumes is described by DTI (2005).



3 AUCTION INITIATIVES IN THE FIRST PHASE

Various countries have indicated that they will consider auctioning part of their allowances. The experience to be gained with the auctioning events will be useful for future ETS designs. It should however be noted that the current market dynamics with a small share to be auctioned will differ considerably from an EU ETS market with full auctioning.

Four countries announced in their NAP for the first trading period that they will apply auction of part of the allowances: Denmark, Hungary, Ireland and Lithuania. Another 9 governments may decide later to auction allowances, primarily the surplus from the NER: Austria, France, Italy, Latvia, Luxembourg, Netherlands, Spain, Sweden, UK (Point Carbon, 2005, Ecofys, 2005).

Denmark has set aside a pool of 5 million allowances during the first period, corresponding to 5% of the total number of allowances. As announced in the Danish NAP I, the allowances will be sold at one or more open auctions. Proceeds from the auctions will accrue to the Danish treasury after deduction of related costs. However, it is unclear whether the Danish government will proceed with auctioning of allowances in the first phase of the EU ETS.

The government of Ireland will auction 500,000 allowances during the first trading period, of which 250,000 allowances were auctioned in February 2006 (Point Carbon, 2006). Details of the auction in Hungary (2.3 million allowances) and Lithuania (550,000 allowances) have not yet been announced

To date, the UK has not decided how it will distribute the spare NER allowance for the first phase, either through auctioning or through selling on one of the trading platforms. Other countries that will auction the spare NER have not yet given any indication on their planned auctioning method or other details on their auction approach.

4 AUCTION METHODS

4.1 Background

Auctioning a fixed supply of identical items such as emission allowances is a common, relatively well-understood situation within auction theory. The buyers submit bids at the auction to express their willingness to buy various quantities at various price levels. A characteristic of the EU ETS is that a trading market (secondary market) exists and buyers are thus not solely dependent on the auction to purchase allowances. The existence of this trading platforms and a known market price will influence bidding behaviour. In addition, in current EU ETS design, the larger part of the allowances is distributed for free requiring only a small volume to be auctioned. With smaller volumes it needs to be assessed whether auctioning the allowances is cost-effective, taking into account the transaction costs of an auction. The transaction costs for auctions are largely fixed and do not depend on volumes offered, whereas transaction costs for sale of allowances increases with the volume sold (e.g. broker fees). Therefore, for distribution of low volumes, sale of allowances is considered a better option than auctioning (DTI, 2005b). For future EU ETS designs, full auctioning is being considered. The preferred auction method will depend to a large part on the scale of auctioning within the scheme.

Many approaches exist to conducting auctions. The auction can be designed so that all successful bidders pay the same price or each pay the price they bid. Several bidding options exist for conducting the auctions of which the most common options are discussed. We first discuss the more familiar static auctions. We then explain the advantages of ascending-bid auctions, and specifically the standard ascending-clock auction. Subsequently we will discuss several other design elements of auctioning.

Attention will be paid in particular to the degree to which the auction design stimulates the participation of smaller participants and allows for an economically efficient allocation. An auction is efficient if allowances are assigned to the bidders who value them most. Since a secondary market already exists (i.e. allowances are traded between EU ETS companies), the marginal value of bidders that are also active in this secondary market will be related closely to the market price of allowances. For companies that do not have easy access to the trading platforms, their marginal value will be more related to their marginal costs of emission reductions. Other requirements are that auctions should not damage confidence in the existing market system

and remain within the European rules of state aid and internal market regulation.

4.2 Static Auctions

In a static auction there is only one round of bidding. The bidders simultaneously submit their individual demand schedules, i.e. the number of allowances they aim to purchase at different prices. The auctioneer adds these demand schedules to form an aggregate demand curve, see the example in Figure 1. The intersection of the aggregate demand curve and the supply curve determines the clearing price (p). All demands at or above this clearing price are accepted and those below are rejected. The price to be paid by the winners depends on which pricing method is used. The two most common pricing methods are uniform pricing (all winners pay the clearing price) and pay-your bid pricing (all winners pay the price they bid). The two approaches lead to quite different bidding behaviour.

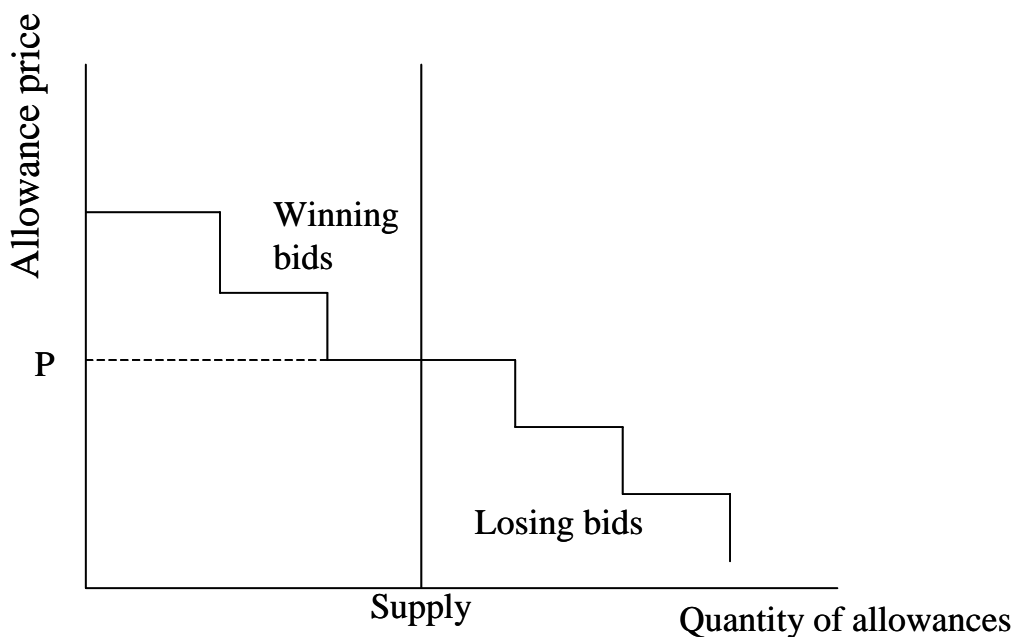


Figure 1: Example of an aggregate demand curve

Since static auctions only have one round of bidding, the process is simple to administer. However, bidders do not have an opportunity to refine their bidding strategy.

The existence of a secondary market, as in the EU ETS, will influence the bidding behaviour of the participants of the auction. Since the main motive for participating in an auction is that participants expect to achieve a lower price at the auction than on the traded market, no offers will be made at the secondary market prices at the time of bidding. This mechanism may also lead to market distortions (see section 4.7).

4.2.1 Uniform price auction

Uniform pricing is the most common approach in sealed-bid auctions for a homogeneous, divisible good such as emission allowances (DTI, 2005b). Under uniform pricing, each winner pays the clearing price P for each allowance. Thus, all bidders pay the same price (the market clearing price) on all of the allowances they win. This simple pricing rule has many advantages. In particular, if no individual bidder is able to influence the market price, this pricing mechanism is efficient and the bidders who place the highest value on allowances get the allowances.

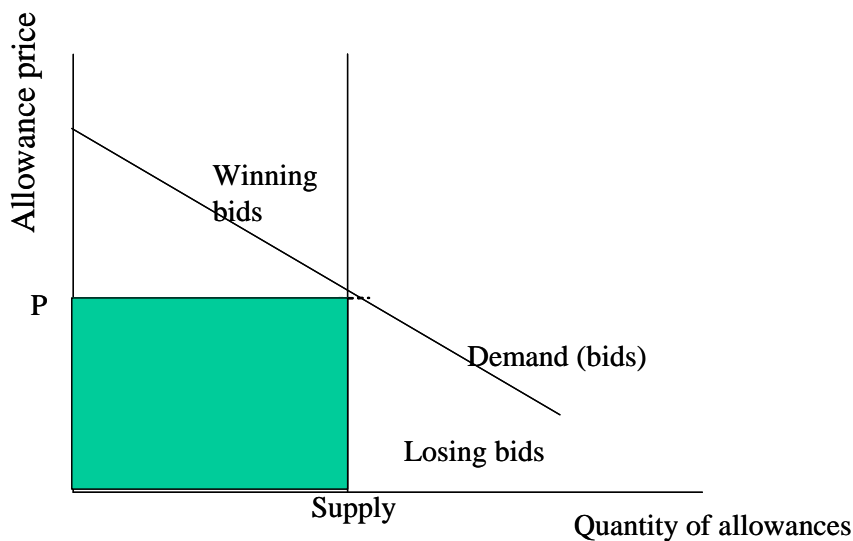


Figure 2: Uniform-price auction

The approach can also be used in two-sided markets, i.e. one in which both suppliers and demanders bid. This is an important feature as it potentially allows more than one country to offer allowances in the auction. Each participating country would offer its supply, possibly at differing (minimum) prices. (DTI, 2005b)

Uniform pricing may lead to an inefficient outcome when bidders with market power participate in the bidding. These bidders may bid below their true

marginal value in an attempt to use their influence to reduce the market price. This phenomenon is called 'shading' of bids. The incentive to bid below marginal value increases with the quantity of units bid, since any decrease in price will be received on the total quantity that the bidder wins. To use this strategy, a bidder will need to make an estimate of the quantity of the bids of the other powerful market players to estimate their chance of influencing the market price effectively. Considering the large financial incentive to reduce the clearing price, larger bidders are willing to take a larger risk of bidding below the clearing price. However, given the low concentration in the market for EU ETS allowances, this is unlikely to be a significant issue in open auctions. It may however lead to inefficiencies in a restricted auction (see section 5.2).

If we assume that none of the bidders in the EU ETS has market power, uniform pricing can be viewed as an efficient auction method. Relative to pay-your-bid pricing (see next section), uniform pricing has the benefit that everyone pays the same price. Uniform pricing is strategically simple for small bidders and they benefit from the price reduction by the large bidders. This encourages participation by small bidders.

4.2.2 Pay-your-bid auction

With pay-your-bid pricing, each winner pays against the price of its bids. Each bidder attempts to guess what the clearing price will be and then bids slightly above it. While it might at first sight be thought that the pay-your-bid auction would result in higher revenues to the seller than the uniform-price auction, bidders will tend to bid lower prices in a pay-your-bid auction than in a uniform-price auction so there may not be much difference in the total revenue (DTI, 2005b).

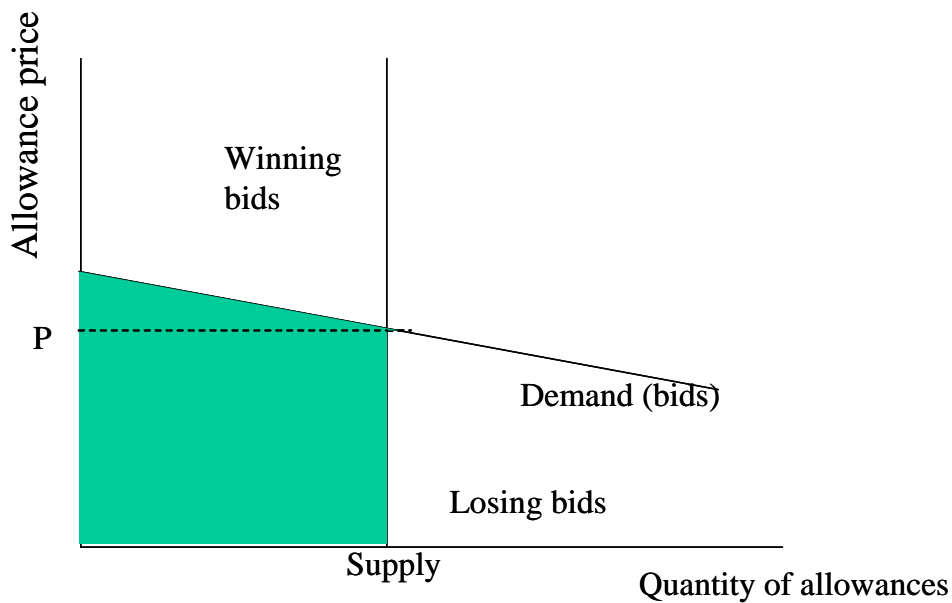


Figure 3: Pay-as-bid auction

A disadvantage of pay-your-bid pricing is that it exposes small bidders to strategic risks, since they may be less able to gauge the probable level of the clearing price. Large bidders not only have greater resources for market analysis to estimate the clearing price, but also have better information about the clearing price as a result of knowledge of their own bids, which strongly influences the clearing price. The combination of market knowledge on other bidders and their own influence on the bidding price allows them to estimate which bid will be from the marginal bidder and thus estimate the clearing price. Thus, pay-your-bid pricing tends to favour larger bidders, and the exercise of market power (i.e. manipulating the market clearing price) tends to be at the expense of smaller bidders.

In contrast, under uniform pricing the small bidders may benefit when large bidders exercise market power. Market power under uniform pricing is dampened through the competitive response of entry (as the price becomes lower, more bidders enter the market to buy allowances) and the problem of market power is self-correcting. In contrast, market power under pay-your-bid pricing may be reinforced. Manipulation of the clearing price by large bidders makes successful bidding by small bidders more difficult and thus discourages the entry of new bidders. As mentioned above, we assume that none of the bidders in the EU ETS has market power and therefore the issue of market power does not need to be taken into account in choosing auction methods. Market power may however occur in a restricted auction and thus lead to inefficiencies (see section 5.2).

In the case where a secondary market already exists, for example when EU ETS allowances are auctioned after the start of a trading period and the market has reached a certain level of liquidity, the estimation of the clearing price will no longer be an advantage to larger bidders since all bidders will base their bid on the price in the secondary market.

Under pay-your-bid pricing, optimal bids relate more to a best guess of the clearing price, rather than the bidders' marginal values. As an auction is considered efficient if allowances are assigned to the bidders who value them most, pay-your-bid pricing increases the potential for an economically inefficient allocation – the allowances are not necessarily won by the bidders who value the allowances most highly but by the bidders who most accurately estimate the clearing price. Inefficient allocation occurs whenever bidders guess incorrectly about the clearing price.

Finally, pay-your-bid pricing is not readily adapted to two-sided markets (in which both suppliers and demander bid). With two-sided markets, pay-your-bid pricing generates a surplus, since the winning demand bids (all bids at or above the clearing price) are at or above the winning supply offers (all offers at or below the clearing price).

4.3 Dynamic Auctions: Ascending clock

With dynamic auctions there is more than one round of bidding and bidders have an opportunity to revise their bids based on the information revealed in the previous rounds of bids. Both price and allocation are determined through a process of open competition. In the end, all buyers have good information about price and those willing to pay the most win the allowances. A primary advantage of ascending auctions is this reliable process of price discovery.

An ascending process is especially desirable when bidders' valuations depend on market information held by others. Then the bidding process reveals information, which improves the bidders' valuation estimates. Dynamic auctions can be conducted in two main ways: with an ascending clock or with demand schedules. In the context of selling a divisible good, an ascending clock auction is widely viewed as the best design because it is simple, both for the bidders and for the auctioneer, and it is most effective at promoting price discovery (DTI, 2005b). The demand schedule approach can be thought of as a multiple-round version of the static sealed-bid auctions. In each round, bidders submit a demand schedule. The process repeats until no bidder is willing to improve (raise) its bids.

An ascending clock auction is a simple, yet powerful tool for auctioning divisible goods such as EU allowances. The auctioneer announces a price, and bidders respond by indicating the quantity of allowances they wish to buy at the announced price. If bidders wish to buy more allowances at that price than are available (i.e. there is excess demand), the price is increased and bidders are invited to bid again.

This process is repeated until there is no excess demand. At that point bidders are awarded their quantities bid at the final price. The process can readily be adapted to both multiple types of goods (e.g. EU allowances covering different time periods) and multiple sellers (e.g. different participating Member States). According to DTI in their advice to the UK government, an ascending clock auction is superior to other auction methods as it is robust to both market liquidity and market volume (DTI, 2005b).

A clock auction is slightly more expensive to implement than a sealed-bid auction for a homogeneous, divisible good. However, clock auctions tend also to generate higher revenues than sealed-bid auctions as bidders will continue bidding until their marginal value. At moderate volumes this will be sufficient to cover the additional cost. Clock auctions are generally regarded as more transparent and open processes than sealed-bid auctions. Although clock auctions are relatively new, they have already been applied successfully in high-stakes auctions in half a dozen countries, especially in the EU, and including the environmental sector. Applications have included electricity capacity auctions in France, Belgium, the Netherlands and the US, and gas auctions in Germany, France, and Austria. The UK Emissions Trading Scheme Auction in 2002 used a clock auction for GHG emission reduction incentives, and the Clear Skies legislation in the US proposes a clock auction for SO₂, NO_x, and mercury emission allowances (DTI, 2005b).

One important element of the design of dynamic auctions, such as the ascending clock auction, is the activity rule, which requires bidders to behave in a reasonable way. An activity rule improves the auction's performance. In a clock auction for homogeneous goods, it is usually sufficient to have a simple rule that as the price rises, bidders cannot increase the quantity of their bid, they can only bid the same quantity as at the previous price or less. This ensures that bidding is consistent with a downward sloping demand curve (DTI, 2005b).

3.4 Other design elements in auctioning

3.4.1 Minimum price

To set a minimum price may reduce the risk of the auctioneer of selling against too low prices. This is a particular risk in the case where a limited number of buyers leads to opportunities for gaming. Considering the large amount of buyers in the EU ETS market, a minimum price will not be necessary in open auctions.

3.4.2 Frequency of auctioning

The following are factors to consider when determining the frequency of conducting auctions (e.g. annually, quarterly, biannually): (a) the lifetime of an allowance and the length of the compliance period; (b) the administrative burden of conducting auctions; and (c) other methods of distributing allowances. Since in the EU ETS the auction is used in conjunction with free allowance distribution, the preferred frequency also depends on whether the auction is set up with a specific purpose: is it intended as a means to provide a price signal at the start of a new trading period or is it especially aimed at generating revenues without disturbing the market? In the case where the aim is to provide a price signal to EU ETS participants, only one auction needs to be held at the start of the trading period. In the case where the auction is mainly aimed at generating revenues, several auctions throughout the trading period may be more effective.

The effect on the liquidity of the market is determined by the number of allowances to be auctioned compared to traded volumes in the market (see section 4.7). Therefore several smaller auctions will have a smaller effect on market liquidity than one large auction. Moreover, it may give more certainty to companies compared to more frequent auctioning. It should also be noted that a one-off auction at the start of a trading period of five years or more requires large initial investments from companies. This may put smaller companies at a disadvantage. The high initial investment may lead to a smaller number of participants than would otherwise be interested, which may result in a clearing price that is below the market price.

3.4.2 Spot and Advance auctions

Member States can decide to auction either spot or advance allowances or both. Spot auctions refer to allowances that are sold for immediate delivery against emissions. Advance auctions refer to allowances for surrender against emissions in future years. Early auctions can facilitate development of an active future and options market, thus improving risk allocation.

It may be appropriate for auctions for allowances to be used in the 2008-2012 to start in 2007, once the allocation plans for the second period are approved and the final allocation decisions are taken at national level.

3.4.3 Participation requirements

In principle auctions are open to all purchasers, and not restricted to EU ETS participants. To avoid distortions by fraudulent participation, participants should be screened on requirement related to issues such as liquidity and bankruptcy.



4 PROS AND CONS OF AUCTIONING

4.1 Efficient distribution of allowances

The efficiency of the distribution of allowances is defined as cost effectiveness of the allocation considering total costs to the government and to industry. In principle, full auctioning leads to a more efficient distribution of allowances compared to an allocation free of charge. Individual allocation requires complex allocation methodologies to distribute allowances to individual plants and to establish the NER, involving thorough assessments of expected growth on a sector level, structural developments in the sector and a critical assessment of company growth expectations. Member States' preparation of NAPs for the first trading period showed that the allocation process involves intensive discussions with industrial organisations and individual companies.

However, in a system with full auctioning Member States will still need to establish the total amount of allowances to be available for the industry. This requires an estimate of business as usual developments per sector, which as a result will also require focusing on developments of at least the larger companies in each sector. The extent to which full auctioning leads to an increase in the efficiency of distribution thus depends on the level of detail of Member States' approaches in determining business as usual growth of sectors.

The efficiency gain of a full auction in the distribution of allowances may potentially be partly cancelled out by the need to distribute auction revenues back to the industries to compensate for the increased compliance costs. (see section 4.3).

4.2 Environmental effectiveness

Whether auctioning would lead to an increase in environmental effectiveness of the scheme depends on the effect of auctioning on the market price of the allowances. We assume here that a higher market price will lead to a stronger incentive to implement emission reduction measures. In principle, the market price with auctioning should be similar to a situation with allocation free of charge as total demand and supply are the same. On the other hand, the difference in market dynamics in a system with full or partial auctioning compared to a scheme with allocation free of charge may lead to a different market price (see also 6.1). Considering the uncertainty in the effect on

market prices it is difficult to estimate whether auctioning will lead to a difference in the environmental effectiveness of an emission trading scheme.

4.3 Distribution of auction revenues

In the current EU ETS with limited volumes auctioned, each member state can decide how auctions revenues will be spent. In the Irish NAP for example, it is stated explicitly that revenues will be used to defray the costs of administering the EU ETS scheme. Full auction however will generate large amounts of revenue for Member States, ranging from to 113 million Euro for Cyprus per year to 10 billion Euro for Germany (based on 20 Euro/ton).

Member States may choose to distribute all or part of the auction revenues back to industry to compensate for increased compliance costs. To do so, Member States will need to develop a distribution methodology. This may partly cancel out the main advantage of full auctioning: the fact that no allocation methodology is needed to distribute allowances. If large differences exist between Member States in the share of the revenues to be distributed to industry and/or in the distribution methodology, this may lead to competitive distortions.

ECN (2005) has elaborated on recycling the revenues from auctioning allowances for the power sector. They state that 'This revenue could be recycled to the power producers, channelled to the power consumers in order to compensate them for the higher electricity price, or used to finance general fiscal measures such as reducing taxes or enhancing public expenditures. If the auction revenue would not be recycled to the power producers (or recycled in proportion to their electricity output rather than to the attendant CO2 emissions), the competitive position of coal-based electricity would deteriorate while it would improve for CHP, nuclear and renewable electricity. Depending on the method of channelling the auction revenues to the energy-intensive industries, this option may nullify the positive impact of higher electricity prices on the energy efficiency of these industries.'

Distributing auction revenues, however, may be politically contentious and may conflict with European state aid restrictions, depending on the way it is carried out.

4.4 Early auction as an initial price setting mechanism

An auction that takes place at the start of a trading period provides an immediate reliable price signal in the allowance market. This increases market confidence, especially for the smaller participants, and will stimulate market participation. Without an auction at the start of a trading period, the prices of the first trades in a relatively illiquid market and speculation by market specialists deliver rather unreliable price signals, thus requiring a longer period of uncertainty about the 'real' market price than in the situation with such an auction. Moreover, it is likely that market players will not obtain full details of these price signals since many transactions are bilateral trades, which are often not disclosed. Auctions, on the other hand, give clearer price signals since those prices are made public.

Auctions that take place in later stages in a trading period may still lead to price discovery depending on the liquidity of the market at the time of the auction. In established markets like the EU ETS, auctions do not have this effect since the secondary market will provide the price signal.

4.5 Equal opportunity for new entrants

In the first phase of the EU ETS all Member States have opted for setting aside a number of allowances in a so-called New Entrants Reserve (NER). In most cases, the allowances are provided to new entrants for free. Member States have different approaches if the new entrant reserve runs out. In some cases Member States will buy the extra allowances for the installation, whereas in most Member States operators will have to buy the extra needed on the open market. This may potentially lead to unequal opportunities for new entrants, whereas a trading scheme with full auctioning is considered to provide an equal opportunity to obtain allowances for new entrants as for existing parties.

4.6 Participation of small participants

Currently small players in the ETS market have difficulties in purchasing allowances through bilateral trades on the market as there are barriers to developing contracts. For smaller companies it is difficult to meet the contract-related requirements for trading allowances. In addition, purchasing forward JI/CDM credits directly from project developers requires significant market knowledge and the involvement of contract specialists. Therefore, smaller participants will mainly purchase through intermediary organisations

such as brokers at higher prices than the bilaterally traded. Auctioning would thus provide an smaller companies with an accessible way to purchase allowances at competitive prices, especially when the uniform pricing method is applied.

4.7 Risk of market distortion

Auctioning of allowances in an active secondary market may disturb the market. The degree of market disturbance depends of the liquidity of the market at the moment of auctioning, the number of allowances to be auctioned compared to market activity and the transparency in timing of auction events.

As we saw in chapter 2, two member states are currently planning auction events at the end of 2006. Considering the limited volumes of these auctions, this will most likely not influence the market. In a situation where a larger number of Member States auction a high share of the allowances, the supply may be significant compared to the volumes traded.

One distortionary effect may be that liquidity will decrease before an auction event.

The main motive for the larger buyers at the market is that they expect to achieve a lower price at the auction than on the traded market. Therefore, in case larger volumes will be auctioned, market participants are likely to wait for auction events instead of participating in the traded market. The speculation on the auction clearing price may also lead to a downward pressure on the traded market price. In order to avoid market distortion, auctions should thus occur regularly and transparently at smaller relative volumes (DTI, 2005). This requires coordination between Member States on volumes and frequency of auction.

4.8 Auctioning versus sale

Instead of auctioning allowances, the Member States could also consider sale. For sale of allowances, governments make use of the existing secondary market, just like a private party. The most appropriate way to sell is through (a sequence of) market orders: an order to sell at the market price on one or more of the exchanges handling EU allowances (DTI, 2005b).

Auctions are considered to lead to a more efficient distribution of allowances than sales, except for small volumes of allowances, especially in conditions of low market liquidity. In addition, auctions are highly transparent, and can

potentially generate more participants than sales. On the other hand, the costs for organising an auction are much higher than for a sale.

In the case where ETS participants expect a liquid market in the second trading period, there would be no need for participants to purchase allowances at auction since they can purchase at the market in the next five years. The bidding behaviour of active bidders at the auction will therefore be aimed at realising a lower market price than their expected market price. The smaller participants, that face barriers in participating on the secondary market (see section 4.6), will most likely tend to bid the actual market price. Whether the revenue for the government will be lower or higher than in the case of sale, will depend on liquidity, transparency and size of the auction.



5 SCOPE OF AUCTIONING

5.1 Efficient allocation with 100% auctioning

Currently countries are allowed to auction a maximum of 5% of the allowances for the first trading period and 10% in the second period. For future schemes it may be considered to apply 100 % auctioning. Any other share of auctioning is also possible but a less than 100% auctioning may offset the advantages of full auctioning that are elaborated in more detail below.

Auctioning leads to an efficient distribution of allowances, as it replaces the need for complex allocation methodologies to distribute allowances to installations and to establish the new entrants reserve.

- Auctioning reduces “windfall” profits from participants that might otherwise accrue to emission sources if allowances are allocated at no charge.

These advantages however only apply for 100 % auctioning. For allocation methods with less than 100 % auctioning, the need for a sectoral allocation methodology will remain.

Auctioning a part of the allowances does not lead to the same level of efficiency in distribution as can be achieved with 100% auctioning. Partial auctioning does however still have some of the other advantages, such as the market participation of smaller players and the equal opportunities for new entrants.

Full auctioning however may only be feasible if it were implemented in all Member States. If, in some countries, allowances are (partly) distributed for free and in others 100 % is auctioned, this may lead to competitive distortions. Full auctioning would thus need to be a mandatory element of the EU ETS in the context of further harmonisation of the scheme. The paper on harmonisation of allocation methods elaborates in more detail on this issue.

5.2 Closed auctioning

In future EU ETS schemes with partial auctioning, countries may decide to set up an auction exclusively for a certain sector and use allocation free of charge for the allocation in the other sectors. In particular, this is considered as a solution for sectors that can easily shift the additional costs to their customers, such as the power and aviation sector. Auction revenues can be used to compensate those customers for increased costs. In this way the currently observed wind-fall profits of the power sector can be mitigated.

Another example of closed auction is where a Member State aims to hold the auction only for the participating operators from the MS itself. A motive may be that a country wants to guarantee sufficient allowances for their own industry.

Uncertainty exists on whether or not restricting an auction to a selected group of participants would be allowed. The EU Emission Trading Directive does not elaborate on this issue. It is not clear whether closed auction is feasible from a legal point of view, taking into account the principles of the EC Treaty. Limiting the auction to a restricted circle of participants may raise concerns under the European State Aid rules as the restricted demand can result in price that is likely to be systematically lower than the actual market price. The uncertainty is reflected by different statements in reports on emission trading. ERM in their study for DTI (2005) state that any planned disposal must be open to all market participants. On the other hand, closed auction to the power sector only is presented as an option to deal with the windfall profit issue (ECN, 2005).

Apart from whether it would be allowed from a legal point of view, from an economic point of view closed auctioning may lead to inefficient auction results, i.e. to lower prices than the market prices. In this way, the companies involved are subsidised as they can subsequently sell allowances with a profit at the secondary market. For example, in case of a sector-based auctioning, the number of participants may be limited, thus increasing the risk of market power. In the Netherlands circa 40 installations, involving only around 10 companies, would participate in the auction involving the risk that companies will shade their bids. The same could occur in national auctions in countries with a limited number of participants such as the Luxembourg, Cyprus or Malta. Considering the legal risks and the potential economic inefficiency of closed auctioning, this is not considered a feasible option.

Member States might however consider auctioning the allowances of a selected sector at an open auction. The companies involved would tend to value the allowances most and bid for the highest volume. Potential inefficiencies are prevented as companies outside the sector can also participate and would thus ensure that the resulting price would roughly correspond to the market price. This option may however be politically infeasible as it would disadvantage the selected sector if other sectors, that received the allowances for free, can participate. The advantages and disadvantages of a closed auction, show that the design of an auction is very important in creating an efficient distribution through auctioning

6. Impact on competitiveness

The results from the EU ETS review survey among stakeholders showed that 80% of the industry is against an extension of auctioning of the current maximum of 5% in the first period and 10% in the second trading period (McKinsey/Ecofys, 2005).

Companies fear that increased auctioning will affect their competitiveness in comparison with non-participants due to increased costs. Also an inventory among experts and stakeholders by PWC (2005) shows that companies feel that auctioning is more acceptable if other countries also introduce auctioning schemes. On the other hand, some companies explicitly express a positive attitude towards auctioning, such as the Association of Danish Energy Companies (2005).

Auctioning involves costs at two levels:

- Higher compliance costs as companies have to purchase all allowances (in case of 100% auctioning) compared to only their 'short' allowances in the current situation.
- Transaction costs to prepare for and participate in the auction.

The level to which increased costs affect the competitiveness of a company depends on many factors, such as the level of global competition in the market to which the company is exposed. In the case where a company competes mainly on a national scale, influence on competitiveness will be low. For companies that compete across the Internal Market or globally, an impact on competitiveness may occur, depending on:

- The level of harmonisation of auctioning within the EU.
- The level to which auction revenue is fed back to the affected industry.
- The capability of the industry to pass through a share of the costs to customers.

The first two factors will be discussed in this paper, while the last factor is outside the scope of this paper but will be discussed in the paper on 'Competitiveness'.

While the above refers to competitiveness in relation to non-participants, auctioning may also affect competitiveness between incumbents and new entrants.

6.1 Effect on compliance costs to industry

The share of allowances that will be auctioned by Member States needs to be subtracted from the total amount of allowances to be allocated for free. In the case where a member state chooses to auction all or part of the allowances, the participating companies will thus receive fewer allowances than in situation without auctioning. Companies will need to purchase more allowances on the market or at the auction, leading to an increase in overall compliance costs unless proceeds are recycled. In case Member States will return partially or fully the auction revenue to the EU ETS participants (see section 4.3), this effect may be partially or fully mitigated.

Since the overall demand and supply will remain the same, in theory (partial) auctioning would not affect prices compared to a situation without auctioning. However, the difference in market dynamics in a system with full or partial auctioning compared to a scheme with grandfathering may lead to a different market price. With auctioning, the whole amount to be auctioned may not be available at the start of each compliance cycle but be distributed throughout the compliance cycle. In the first part of the compliance cycle, total supply could thus be less than in a situation without auctioning. In a market with limited market liquidity and transparency which may be observed at the start of a compliance cycle, the overall shortage of the participants may then also lead to higher market and auction prices. On the other hand, where a clear auctioning scheme is made public at the start of the compliance cycle, trading in the secondary market may be very limited as companies will anticipate future auction events.

6.2 Transaction costs to industry

Participants in an auction will incur some transaction costs. These costs involve IT resources, registration costs and preparation time. It should however be noted that participating in the secondary market also involves these transaction costs. Moreover participation under a scheme with an allocation free of charge also involves specific transaction costs such as costs of lobbying for free allowances. No information is currently available on the level of transactions costs of auctions and an allocation free of charge. According to DTI (2005b), participating in an auction will not involve additional IT costs for companies compared to the purchase of allowances at the secondary market.

It should also be noted that the preparation time for companies, which involves a significant share of the auction costs would be incurred just for the first auction. (DTI, 2005).

6.3 Harmonisation vs competitiveness

The level of harmonisation with respect to the allocation of allowances will influence the competitiveness of a sector in the event of auctioning taking place in a certain member state. The impact will be smallest in the case where the level of auctioning is equal in all Member States and

- The share of proceeds that is returned to the industry is equal in all states

The Community legislator may decide to impose a mandatory level of auctioning on all Member States, thus addressing the first aspect. 100 % auctioning would then be most feasible as that has the largest advantage compared to other allocation methods.

The second aspect will be more difficult to address since the tax structure is different in each country which hampers the implementation of a uniform feed-back mechanism.

6.4 New entrants

Auctioning is considered to provide an equal opportunity to obtain allowances for new entrants as for existing installations, thus minimising competitiveness effects on new entrants (see also section 4.5). This however depends on the timing and transparency of the auction. Equal opportunities for new entrants would need to be safeguarded in the final years of the trading period. This calls for a coordination of auctioning.

7. Harmonisation of full auctioning

In a scheme with a mandatory auction, a certain level of harmonisation is recommended to provide certainty for market participants. Participants should know in advance the frequency and volumes of auction events of all Member States. It should be guaranteed that auction events are sufficiently spread over the compliance cycle and trading period to prevent market distortions.

Uncertainty may also occur about total supply of allowances where a Member State does not give guarantees about the amount of allowances to be auctioned during the compliance cycle and the trading period. Member States may decide not to auction all the allowances that they initially reserved for the industry if it foresees a shortage of allowances and expects not to be able to purchase sufficient project based credits in order to comply.

Uncertainty may also occur where Member States apply different auction designs. As explained in chapter 3, each auction design requires a different bidding behaviour.

Harmonisation of full auctioning implies that the Community Legislator defines rules on auctioning design involving:

- Auction methodology and other auction design options such as minimum price setting, participation requirements.
- The frequency and total amount of allowances to be auctioned within the EU
- Rules on transparency in the method of establishing auction volumes per sector.
- Rules on transparency and consistency of auction timing and volumes.
- Rules on recycling of auction revenues.

It should also be considered whether auction events will take place at national level or at EU level. In the first case the EU could coordinate frequency and volume and the organisation of the event will be carried out by the Member State. In the second case the EU could set up an EU ETS auction platform in which all allowances of all Member States are auctioned. Apart from the coordination of auction volumes and frequency, then also transaction costs of auctioning would be reduced as only one auction platform needs to be set up. The auction revenues could be distributed to Member States, corresponding to the amount of allowances they have distributed to the central auction platform.

8. Conclusions and recommendations

8.1 Conclusions

- Several member states have decided to auction part of their allowances in the first phase of the EU ETS, which may provide useful information for auctioning design in future phases of the ETS.
 - Both uniform price auction and ascending-clock price auction are suitable auction methods for auctioning in the EU ETS market. Both methods stimulate the participation of small bidders. Relative to pay-your-bid pricing, uniform pricing is strategically simpler for small bidders and they benefit from the price reduction by the large bidders. The advantage of ascending auction is that it allows for a reliable process of price discovery.
 - Several design elements such as frequency and price forming mechanism will influence the auction results. Auction activities of Member States should be designed in such a way that the distortion of the existing secondary market will be minimised.
 - Auctioning part of the allowances may lead to higher compliance costs to industry than in a situation without auctioning, depending on how revenues are recycled.
 - Auctioning provides an equal opportunity to obtain allowances for new entrants as for existing participants.
 - Auctioning provides opportunities for small players to purchase allowances, since access to auction is easier for small players than access to the secondary market or the purchase of JI/CDM allowances.
 - Auctioning part of the allowances does not lead to an efficient allocation compared to a situation with full auctioning, as the allocation to individual installations still needs to be carried out.
 - In a situation with 100% auctioning, redistribution of auction revenues to EU ETS participants may be politically contentious and may conflict with European state aid restrictions. In addition, the need to develop a methodology to distribute the revenues may partly cancel out the main advantage of 100% auctioning: the fact that no allocation methodology is needed to distribute allowances.
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8.2 Recommendations

The experience that will be gained with partial auctioning in the coming years will be useful input for auction design in the second EU ETS phase, as well as in subsequent trading phases. The findings of the evaluation of auction experience can be used to initiate discussions about an increase of the share to be auctioned or an eventual full auctioning. The most important and complicated aspect of 100% auctioning is the recycling of auction revenues. How could these be (partly) returned to ETS participants? Are there any potential risks of market distortions? Will this be considered to be in line with state aid rules?

In schemes with a large share of auctioning, a coordinated approach may be required. This could, for example, be realised in the form of a EU ETS auction platform in which all Member States that wish to can take part. The Commission may consider what role it wants to take in such a platform and whether there is a need to develop rules for auctioning.

An auction event that will be open to all participating EU companies may in principle involve several thousands of participants and auctions of this size are at most rare. Therefore, further assessment is needed to determine the feasibility and effect of such a large number of participants in an auction event.

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