Auctioning

German Auctioning of Emission Allowances

Periodical Report: August 2018
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German Auctioning of Emission Allowances

The German auctions of the third trading period are held weekly on the European Energy Exchange (EEX) spot market. The German Emissions Trading Authority (DEHSt) at the German Environment Agency is the competent authority for the German auctions. Further updated information on the third trading period auctions can be downloaded from the EEX website. Reports on the second and third trading period auction results are available on the DEHSt auction website. The 2018 auction calendar is published on the EEX website.

The following tables summarise the key data of the German auctions on the EEX in 2018:

<table>
<thead>
<tr>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auction product</td>
</tr>
<tr>
<td>Third trading period EUA spot contracts</td>
</tr>
<tr>
<td>Third trading period EUAA spot contracts</td>
</tr>
<tr>
<td>Period</td>
</tr>
<tr>
<td>12/01/2018 to 09/11/2018</td>
</tr>
<tr>
<td>10/10/2018</td>
</tr>
<tr>
<td>Auction volume entire year</td>
</tr>
<tr>
<td>172,220,000 EUA¹</td>
</tr>
<tr>
<td>800,500 EUAA</td>
</tr>
<tr>
<td>Auction volume per auction</td>
</tr>
<tr>
<td>4,360,000 EUA</td>
</tr>
<tr>
<td>(2,180,000 EUA in August)</td>
</tr>
<tr>
<td>800,500 EUAA on 10/10/2018</td>
</tr>
<tr>
<td>Auction frequency</td>
</tr>
<tr>
<td>Weekly</td>
</tr>
<tr>
<td>(Fridays, 09:00 to 11:00 a.m. CET)</td>
</tr>
<tr>
<td>On 10/10/2018</td>
</tr>
<tr>
<td>(13:00 to 15:00 a.m. CET)</td>
</tr>
<tr>
<td>Bid volume</td>
</tr>
<tr>
<td>500 EUA/EUAA</td>
</tr>
<tr>
<td>Auction mode</td>
</tr>
<tr>
<td>Single-round, uniform-price procedure with a closed order book</td>
</tr>
</tbody>
</table>

1 Current Developments

DEHSt publishes 100th auction report

This report is the 100th edition of a DEHSt auction report. The first report was published more than eight years ago in February 2010. Since then, we have regularly published evaluation reports to inform the public and market participants. In addition to the detailed analysis of German auction results, DEHSt’s monthly auction reports also contain a comprehensive overview of secondary market developments.

On the occasion of this anniversary edition, the annual revenues and German auction results since the start of the sales/auctioning are shown graphically in Chapter 2.3. In addition, we present a new chart showing the market shares of the successful bidders at the German primary market auctions (see Chapter 3.1).

¹ The amount of emission allowances to be auctioned by Germany in 2018 initially totaled 194,027,000 EUA. Auctions that were previously provisionally scheduled for the period after 14/11/2018 have been removed from the 2018 auction calendar. The corresponding volume of 21,807,000 EUA will be distributed over the volume to be auctioned in 2019. Germany’s current contract with EEX expires on 14/11/2018. In March, the German Environment Agency appointed the EEX as a new auction platform from November 2018. However, before the auctions can be continued under the new mandate, the EEX must be formally listed as an auction platform in the Annex to the Auctioning Regulation as part of an EU Commission review procedure. As this process takes longer, the originally planned auction dates for Germany cannot be continued in the auction calendar from 14/11/2018. According to the latest information, we expect the German auctions to resume in the course of the first quarter of 2019. We will inform you in time.
2 Overview

2.1 August 2018

In August, five auctions of emission allowances (EUA) of the third trading period were successfully carried out for Germany at the EEX. Following the requirements of the EU Auctioning Regulation, only half of the regular auctioning amount (2.18 million EUA) per date was auctioned in August.

Overall about 11 million EUA with a total value of over € 207 million were auctioned. This results in a volume-weighted average price per allowance of € 19.02 (+16.8 percent compared to the previous month). Thus, this was the highest monthly average price since the start of auctioning in 2010. In addition, the highest auction price was reached on 31/08/2018 at € 21.11 (see also Chapter 2.3). The deviations of the clearing prices from the current prices on the lead market fluctuated between -0.33 and +0.40 percent (see also Chapter 4.3).

Overall, valid bids totalling about 38 million allowances were entered into trading system across the five EUA-auction dates. Thus the average cover ratio in the reporting period was 3.51 (see also Chapter 3.2). The average participation number of 24 bidders was at the level of the previous month (24). The average number of successful bidders was however well below the previous month's level at 16 (20), (see also Chapter 3.1).

The following table gives an overview of the most important auction figures from the EUA-auctions performed during the reporting period.

Table 1: Overview of German EUA-auctions in August 2018

<table>
<thead>
<tr>
<th>Date</th>
<th>Auction volume</th>
<th>Bid volume</th>
<th>Cover ratio</th>
<th>Bidders</th>
<th>Successful bidders</th>
<th>Price</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>03/08/2018</td>
<td>2,180,000</td>
<td>8,981,000</td>
<td>4.12</td>
<td>23</td>
<td>14</td>
<td>€ 17.62</td>
<td>€ 38,411,600</td>
</tr>
<tr>
<td>10/08/2018</td>
<td>2,180,000</td>
<td>10,394,000</td>
<td>4.77</td>
<td>26</td>
<td>11</td>
<td>€ 17.72</td>
<td>€ 38,629,600</td>
</tr>
<tr>
<td>17/08/2018</td>
<td>2,180,000</td>
<td>6,075,000</td>
<td>2.79</td>
<td>24</td>
<td>16</td>
<td>€ 18.10</td>
<td>€ 39,458,000</td>
</tr>
<tr>
<td>24/08/2018</td>
<td>2,180,000</td>
<td>7,013,000</td>
<td>3.22</td>
<td>20</td>
<td>15</td>
<td>€ 20.55</td>
<td>€ 44,799,000</td>
</tr>
<tr>
<td>31/08/2018</td>
<td>2,180,000</td>
<td>5,771,000</td>
<td>2.65</td>
<td>26</td>
<td>24</td>
<td>€ 21.11</td>
<td>€ 46,019,800</td>
</tr>
<tr>
<td>August</td>
<td>10,900,000</td>
<td>38,234,000</td>
<td>3.51</td>
<td>24</td>
<td>16</td>
<td>€ 19.02</td>
<td>€ 207,318,000</td>
</tr>
</tbody>
</table>

Source: EEX, DEHSt

* Average

2.2 Overview of the entire year 2018

In the first eight month of the current year a total of almost 129 million EUA with a total value of over € 1.7 billion were auctioned at the EEX for Germany. This results in a volume-weighted average price per allowance of € 13.26. Thus, the total revenues in 2018 already clearly exceed the record annual revenues of 2017 (€ 1.15 billion).

The amount of emission allowances to be auctioned by Germany in 2018 totals about 172 million EUA. Taking into account the total annual amount, about 75 percent of the EUA-auction budget for 2018 has been auctioned to date.

The following table summarises the auction results on a monthly basis.
## 2.3 Overview 2008 to 2018

Emission allowances were allocated to installation operators in the EU-ETS first trading period (2005-2007) in almost all member states completely free of charge. In the second trading period (2008-2012), free allocation was complemented to a relatively small extent by sales or auctions in some of the EU member states. In this phase, Germany has taken on a pioneering role within the EU with its annual auction volume of more than 40 million allowances. As early as 2008, Germany banked largely on the infrastructure of the, at that time, newly emerging carbon market, which in turn built on the existing infrastructure of other commodities, including the energy and electricity markets. With the start of the third trading period (2013-2020), exchange-based auctioning finally became the standard allocation method in the EU-ETS.

From January 2008 to November 2009, i.e. at the beginning of the second trading period, the sales were initially carried out on behalf of the German federal government through daily trading by the KfW Bankengruppe (KfW) on the emissions trading exchanges in London (ICE) and Leipzig (EEX). These sales provided experience as to how the carbon market can support the government sale of EUA. In order to prevent market manipulation of the relatively new and small carbon market, KfW sold an average of 180,000 EUA on each trading day, on the London ICE and the Leipzig EEX, distributed over smaller transactions between the minimum size of 500, and up to 40,000 EUA. For the period from 2008 to 2009, a total of 10,000 individual transactions for the sale of 82 million EUA were made.

In 2010, the German sales have been replaced by an auction process. The positive experience from the sales on the emissions trading exchanges were also directly integrated into the auction design. Therefore, emissions trading exchanges with their connected clearing and settlement systems, which guarantee a high level of process security, provided the auction platforms which are the key instruments of the auction procedure. In a Europe-wide tender to appoint a platform, the Leipzig based Energy Exchange EEX succeeded. Further information on the sales in the second trading period is available in the DEHSt-KfW evaluation report.

The legal framework for auctioning in the third trading period is provided by the EU Auctioning Regulation, which entered into force in November 2010. Since then, the German Environment Agency has carried out further three Europe-wide tender procedures to commission a German auction platform, in each of which the EEX was successful.

The following chart shows the annual revenues from the sales (2008-2009) and auctioning (since 2010) of emission allowances for Germany and the average prices achieved. In the current year 2018 revenues have reached a new record level. When comparing annual revenues directly, it should be noted that the number of allowances sold or auctioned increased slightly in 2012 and significantly from 2013 onwards compared with previous years.
Between January 2008 and August 2018, the Federal Government raised a total of more than € 9.5 billion from the sale of almost 1.2 billion emission allowances. In Germany, all auction revenues have been paid into the so-called Energy and Climate Fund (EKF) since 2012. Even before 2012, a large proportion of the sales proceeds had already been channeled into national and international projects of the German government’s climate protection initiative.

Since January 2010, almost 550 auctions have been successfully held for Germany on the EEX. The following chart shows the German auction prices over time. At the auction on 31/08/2018, the highest auction price since 2010 was reached at € 21.11.
3 Bidder Participation

3.1 Participation

The number of participants in the German EUA-auctions in August averaged across all dates was about 24 bidders. The average number of successful bidders was 16. Participation in the auctions fluctuated between 20 and 26 bidders during the reporting period. The number of successful participants ranged from 11 to 24. There was no such auction where all participating bidders were successful.

The following figure illustrates EUA-auction participation over time.
By the end of August 2018, a total of 77 trading members of EEX had been authorized to submit bids in the primary market auctions. In August, a total of 33 different bidders were successful in the German primary market auctions. Out of the 33 of those bidders, 21 were operators (i.e. companies of ETS covered installations), which accounts for about 64 percent of all successful bidders. Overall, operators purchased approximately 59 percent of the auctioned volumes in August 2018. In the months of the preceding year, the operators’ share of the purchased auction volumes fluctuated significantly more than the proportion of successful bidders. Nonetheless, average values of both ratios in the past 12 months are relatively close to each other (at around 61 or 54 percent respectively).

The following figure illustrates the development of the proportion of operators among the successful bidders as well as of the purchased auction volumes in the past 12 months before the current reporting month.

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2 Pursuant to Art. 18 of the EU Auctioning Regulation bidding categories eligible to take part in the auctions at EEX are amongst others (stationary and aircraft) operators, credit institutions, investment firms and business groupings.
In the first eight months of the current year, a total of 43 different bidders were successful in the German primary market auctions, their shares of the aggregated purchased volumes are shown in the following figure.

Figure 4: Share of operators among successful bidders and purchased auction volumes over the past 12 months (EUA)

Figure 5: Share of successful bidders in purchased volume in 2018 (January to August)
3.2 Volume Demand

During the reporting period, the aggregated bid volumes per auction date fluctuated from 5.8 to 10.4 million allowances. Overall, valid bids totalling about 38 million allowances were entered into trading system in August. The resulting cover ratios during the reporting period ranged between 2.65 and 4.77 (3.51 on average).

The figure below summarises the results for each EUA-auction date.

![Graph showing volume in million tonnes and cover ratio for each auction date]

**Figure 6: Number of participating and successful bidders per auction date (EUA)**

Thus, the average bid volume per EUA-auction participant in August was about 320,000 allowances. The average volume awarded to each successful bidder was about 140,000 allowances.

Awarding allowances at all auctions is based on the EU-wide applicable uniform price procedure with one prescribed round of bidding (also see Info box below).

**Info Box: Uniform Price Auction at the EEX**

The auctions at the EEX follow the uniform price procedure which is common practice throughout the European Union. It involves one round of bidding and a closed order book. This simple and robust procedure protects against market manipulation and was used already for German auctions during the second trading period. The uniform price procedure means that all successful bidders pay the same price. The auction clearing price is determined by ranking all eligible bids, beginning with the highest bid, according to the bidding price.

In the event of equal bids, the bids are sorted by a random process. The bid volumes are aggregated starting with the highest bid until the volume of emission allowances on offer (e.g. 4.36 million EUA) is reached. The bid price at which the aggregate volume of bids reaches or exceeds the offered volume of auctioned allowances determines the auction clearing price.

Bidders will thus be awarded their bid volume if their bidding price at least matches the auction clearing price. If a bid matches the clearing price exactly, the bidder may be awarded the remaining allowances which may be below the volume requested, depending on the bidding situation. If the bid from several participants matches the auction clearing price exactly, the above-mentioned random process applies.
4  Auctions and the Secondary Market

4.1  Trading Volume EUA

In August 2018, a total of about 11 million EUA were auctioned at the EEX for Germany. During the reporting period, the cumulative trading volume in the relevant total market was about 696 million EUA.\(^3\) This comprises the monthly data of the London Energy Brokers’ Association (LEBA) on OTC (see also Figure 9). The inclusion of this data allows for a more complete picture of the entire market volume in EUA trades.\(^4\)

The secondary market trading volume of 650 million EUA was divided into approximately 557 million EUA on the cleared futures market, some 59 million EUA on the cleared spot market and about 34 million EUA bilaterally settled through the LEBA-Brokers (OTC).

In August 2018, a total of about 47 million allowances were auctioned by Member States on the primary market as spot contracts. With respect to the relevant total market for EUA, around 6.7 percent of the traded volume was related to auctions (see also Table 3).

The figure below illustrates the trading volumes separately for different market segments based on calendar weeks (CW). In this weekly view, the LEBA data are not included as they are only published on a monthly basis.

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Figure 7: Trading volumes on the primary and secondary market in August 2018 (EUA)

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\(^3\) All emission allowances (EUA) of the third trading period traded on the spot and futures markets on the ICE/ECX, EEX, CME/NYMEX and Nasdaq OMX exchanges are considered. Transactions completed directly on the stock exchange (screen traded) or those bilateral transactions that at least used the stock exchange clearing mechanism are included. The EUA spot contracts auctioned in August 2018 are also considered. As far as data on OTC volumes from bilateral trading activity (i.e. off-exchange) is available, it is included in the analysis. Option contracts are not involved.

\(^4\) LEBA is an association of large brokerage firms active in the trading of energy commodities (including EUA). Their monthly volume reports also include bilaterally settled contracts that were not registered on clearing platforms. The data are not broken down into futures-/spot-contracts. Moreover, since the volumes are only available as monthly aggregated values, the data were taken into account only in Figure 9, but not in Figure 7.
Figure 8 shows the auction volumes on the primary market per calendar week (CW). In addition to the German auctions, auction volumes of other EU Member States are also included in the figure.

The following chart shows the development of the monthly EUA trading volumes on the primary and secondary market over the past 12 months before the current reporting month. In the first eight months of the current year, the total market volume of about 6.12 billion EUA was almost 48 percent above the previous year’s figure (Jan-Aug 2017: 4.14 billion EUA). For the first time since April, the trading volume has increased compared to the previous month (see also Figure 9).
Figure 9: Trading volumes on the primary and secondary market over the past 12 month (EUA)

Table 3: Market shares of the various trading segments (EUA)

<table>
<thead>
<tr>
<th>Market segments</th>
<th>August 2018</th>
<th>July 2018</th>
<th>Jan-Aug 2018</th>
<th>Jan-Aug 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary market</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EUA-Auctions (Spot)</td>
<td>6.7 %</td>
<td>13.5 %</td>
<td>10.1 %</td>
<td>15.1 %</td>
</tr>
<tr>
<td>EUA-Futures (cleared)</td>
<td>80.0 %</td>
<td>75.4 %</td>
<td>77.2 %</td>
<td>70.5 %</td>
</tr>
<tr>
<td>Secondary market</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EUA-Spot (cleared)</td>
<td>8.5 %</td>
<td>8.4 %</td>
<td>7.6 %</td>
<td>6.0 %</td>
</tr>
<tr>
<td>LEBA EUA OTC</td>
<td>4.9 %</td>
<td>2.8 %</td>
<td>5.1 %</td>
<td>8.4 %</td>
</tr>
</tbody>
</table>

Source: ICE, EEX, CME, Nasdaq OMX, Thomson Reuters Eikon, LEBA, DEHSt
4.2 Trading Volume EUAA

In August 2018, no aviation allowances (EUAA) were traded on the secondary market. During the reporting period, no EUAA were auctioned by the EU Member States on the primary market. The next German aviation auction will take place on 10/10/2018. Further information on the EUAA auction calendars is available on the website of the European Commission.

4.3 Clearing Prices and Price Development on the Secondary Market

Reference prices from the most liquid trading venues served as appropriate benchmarks for evaluating the auction clearing prices achieved on the EUA-spot auctions. The reference contract for the auctions is the daily future traded on the London ICE or the EEX EUA spot contract. The product specifications are comparable with the spot-product of the auctions. The trade price immediately before the end of the bidding period was used as a reference price. If no trades take place immediately before the end of the bidding period, the last best bid was used as a reference price (see also Info box below).

Table 4 shows the relative deviations of the auction clearing price from the secondary market. The deviation on each EUA-auction date just before the end of the bidding period (11 a.m. CET) varied over the reporting period between -€ 0.07 (-0.33 percent) and +€ 0.07 (+0.40 percent).

For a mean value analysis, the arithmetic mean of the absolute values of individual deviations over the reporting period is calculated. The average deviation from the last best bid was € 0.05 or 0.25 percent averaged over all dates.

Table 4: Auctions and deviations from secondary market prices in August 2018 (EUA)

<table>
<thead>
<tr>
<th>Date</th>
<th>Contract</th>
<th>Auction price</th>
<th>Deviation from secondary market</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Absolute</td>
</tr>
<tr>
<td>03/08/2018</td>
<td>EUA Spot 3rd TP</td>
<td>€ 17.62</td>
<td>*€ 0.05</td>
</tr>
<tr>
<td>10/08/2018</td>
<td>EUA Spot 3rd TP</td>
<td>€ 17.72</td>
<td>*€ 0.07</td>
</tr>
<tr>
<td>17/08/2018</td>
<td>EUA Spot 3rd TP</td>
<td>€ 18.10</td>
<td>*€ -0.03</td>
</tr>
<tr>
<td>24/08/2018</td>
<td>EUA Spot 3rd TP</td>
<td>€ 20.55</td>
<td>*€ 0.02</td>
</tr>
<tr>
<td>31/08/2018</td>
<td>EUA Spot 3rd TP</td>
<td>€ 21.11</td>
<td>*€ -0.07</td>
</tr>
</tbody>
</table>

Mean absolute deviation: € 0.05 0.25 %

Source: ICE, EEX, Thomson Reuters Eikon, DEHSt
* best bid ICE Daily Future

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5 All aviation allowances (EUAA) of the third trading period traded on the spot and futures markets on the ICE/ECX and EEX exchanges are considered. Transactions completed directly on the stock exchange (screen traded) or those bilateral transactions that at least used the stock exchange clearing mechanism are included.
The following figure shows an overview of the price development for emission allowances in the London lead market. In addition to the daily futures the development of futures for December delivery of the current and the following year is also shown (so-called „front-december future”). Rather than following the common practice of considering only settlement prices, our analysis takes into account all trades completed at the exchanges during the reporting period. The following graphic is based on volume-weighted average trading prices (VWAP), which fluctuated in an interval between around € 17.50 to € 21.40 in August 2018. On 27/08/2018, the highest value since October 2008 was reached.

Figure 10: ICE secondary market prices and EEX auction clearing prices (EUA)

Source: ICE, EEX, Thomson Reuters Eikon, DEHSt
DE = Germany

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6 ICE EUA Dec18 contract expires on 17/12/2018.
7 Settlement prices are determined by the exchanges at the end of the trading day. Hence, they only reflect trade activity immediately before closure of the exchange and are, thus, not always an adequate reflection of the prevailing intra-day prices in the secondary market.
8 The volume-weighted average prices (VWAP) for the ICE EUA front-december future and the ICE daily future contract is based on data from Thomson Reuters Eikon.
5 Implementation of Valid Regulations

5.1 Surveillance Report by HÜSt

In order to guarantee above-board market activities are free of manipulation on the EEX continuous surveillance is conducted by an independent Market Surveillance Office (Handelsüberwachungsstelle, HÜSt) as required under German law. HÜSt reports to the DEHSt on the results of its surveillance activities through regular internal reports. HÜSt reported on auctions in August 2018 as follows (excerpt):

“Within their surveillance for the auctioning of emission allowances on behalf of the German Environment Agency at the EEX in August 2018 the Market Surveillance Office of the EEX could not detect any irregularities and especially no behaviour of bidders that was targeted at manipulating the auction price.”

5.2 Fair and Open Access

The implementation of the provisions of the EU Auctioning Regulation guarantees a fair and open access for all auction participants at EEX. Current access options can be found at EEX Website (Access).

More information about the auction process is also available on the EEX auction hotline. EEX can be reached by phone from Mondays to Fridays from 8:00 a.m. to 6:00 p.m. CET at +49 341 2156-331 or by e-mail at auctions@eex.com.

5.3 Auction Result Publication

All auction results and accompanying data were made publicly available during the reporting period within a 15-minute time window directly linked to the respective auction at EEX Website.

5.4 Other Events

There are no matters relating to the implementation of the existing rules to be reported during the reporting period. The current regulations can be downloaded from EEX Website (Regulations).