



Auctioning

German Auctioning of Emission Allowances Periodical Report: Fourth Quarter 2017

Editorial information

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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 2017 and 2018 auction calendars are published on the [EEX website](#).

The following tables summarise the key data of the German auctions on the EEX in 2017 and 2018:

2017		
Auction product	Third trading period EUA spot contracts	Third trading period EUAA spot contracts
Period	13/01/2017 to 15/12/2017	08/11/2017
Auction volume entire year	196,820,000 EUA	675,500 EUAA
Auction volume per auction	4,473,000 EUA (22,236,500 EUA in August)	675,500 EUAA on 08/11/2017
Auction frequency	Weekly (Fridays, 09:00 to 11:00 a.m. CET)	On 08/11/2017 (13:00 to 15:00 a.m. CET)
Bid volume	500 EUA/EUAA	
Auction mode	Single-round, uniform-price procedure with a closed order book	

2018	
Auction product	Third trading period EUA spot contracts ¹
Period	12/01/2018 to 14/12/2018
Auction volume entire year	194,027,000 EUA
Auction volume per auction	4,360,000 EUA (2,180,000 EUA in August)
Auction frequency	Weekly (Fridays, 09:00 to 11:00 a.m. CET)
Bid volume	500 EUA/EUAA
Auction mode	Single-round, uniform-price procedure with a closed order book

1 Overview

1.1 Fourth Quarter of 2017

Between October and December, ten auctions of emission allowances (EUA) of the third trading period were successfully carried out for Germany at the EEX. On 03/11/2017, the planned German auction of emission allowances (EUA) with an auction volume of 4.473 million EUA was terminated without result as the auction clearing price would have been below the reserve price. The volume not auctioned was evenly distributed over the four subsequent German auctions in accordance with the Auctioning Regulation. Therefore, the auction volume in the auctions between 10/11/2017 and 01/12/2017 was effectively raised to 5.591 million allowances.

Overall **49,211,000 EUA** with a total value of **€ 360,871,000** were auctioned in the Fourth Quarter. This results in a volume-weighted average price per allowance of **€ 7.33** (+23 percent compared to the previous Quarter). Thus, this was the highest quarterly average price since the Fourth Quarter of 2015. The deviations of the clearing prices from the current prices on the lead market fluctuated between -0.54 and +0.52 percent (see also Section 3.3).

¹ The 2018 auction calendars for aviation allowances (EUAA) will be determined and published at a later stage. Further information is available on the website of the [European Commission](#).

Overall, valid bids totalling about 105 million allowances were entered into trading system across the ten EUA-auction dates. Thus the average cover ratio in the reporting period was 2.13 (see also Section 2.2). The average participation number of 20 bidders was slightly above the level of the previous Quarter (19). The average number of successful bidders was however below the previous Quarter level at 14 (16), (see also Section 2.1).

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 the Fourth Quarter of 2017

Date	Auction volume	Bid volume	Cover ratio	Bidders	Successful bidders	Price	Revenue
06/10/2017	4,473,000	9,145,000	2.04	20	17	€ 6.77	€ 30,282,210
13/10/2017	4,473,000	9,001,500	2.01	20	19	€ 7.30	€ 32,652,900
20/10/2017	4,473,000	10,363,500	2.32	22	13	€ 7.56	€ 33,815,880
27/10/2017	4,473,000	10,205,000	2.28	21	14	€ 7.25	€ 32,429,250
October	17,892,000	38,715,000	*2.16	*21	*16	*€ 7.22	€ 129,180,240
03/11/2017	Auction terminated without result						
10/11/2017	5,591,500	12,030,500	2.15	19	16	€ 7.35	€ 41,097,525
17/11/2017	5,591,500	11,519,000	2.06	21	15	€ 7.43	€ 41,544,845
24/11/2017	5,591,000	10,453,500	1.87	20	13	€ 7.70	€ 43,050,700
November	16,774,000	34,003,000	*2.03	*20	*15	*€ 7.49	€ 125,693,070
01/12/2017	5,591,000	12,187,000	2.18	19	12	€ 7.50	€ 41,932,500
08/12/2017	4,473,000	7,482,500	1.67	16	13	€ 7.24	€ 32,384,520
15/12/2017	4,481,000	12,646,500	2.82	18	12	€ 7.07	€ 31,680,670
December	14,545,000	32,316,000	**2.22	*18	*12	**€ 7.29	€ 105,997,690
Q4 2017	49,211,000	105,034,000	**2.13	*20	*14	**€ 7.33	€ 360,871,000

Source: EEX, DEHSt
* Average
** Volume-weighted average

In addition, **675,500 aviation allowances (EUAA)** with a total value of € 5,073,005 were auctioned for Germany on 08/11/2017. The auction price for the 6 successful bidders was € 7.51. Overall, 7 bidders with valid bids totaling about 2.5 million allowances participated in the auction.

1.2 Overview of the entire year 2017

In 2017 a total of **197,495,500 EUA and EUAA** with a total value of **€ 1,146,817,980** were auctioned at the EEX for Germany. This results in a volume-weighted average price per allowance of **€ 5.81**. These overall figures are subdivided into 196,820,000 EUA with a total value of € 1,141,744,975 (average price € 5.80) and 675,500 EUAA with a total value of € 5,073,005 (€ 7.51).

Thus, the total annual auction budget for 2017 has been auctioned successfully.

The following table summarises the auction results on a monthly basis.

Table 2: Overview of the entire year 2017

Month	Type	Auction volume	Bid volume	Cover ratio	Bidders	Successful bidders	Price	Revenue
January	EUA	13,419,000	38,880,000	*2.90	*21	*13	*€ 5.09	€ 68,302,710
February	EUA	17,892,000	48,750,000	*2.72	*20	*15	*€ 5.17	€ 92,501,640
March	EUA	22,365,000	64,004,500	*2.86	*21	*15	*€ 5.10	€ 114,016,770
April	EUA	13,419,000	35,394,000	*2.64	*20	*15	*€ 4.77	€ 64,008,630
May	EUA	13,419,000	27,449,000	*2.04	*19	*12	*€ 4.52	€ 60,609,150
June	EUA	17,892,000	42,903,000	*2.40	*21	*15	*€ 4.99	€ 89,191,620
July	EUA	17,892,000	45,887,000	*2.56	*19	*16	*€ 5.20	€ 93,038,400
August	EUA	8,946,000	26,994,000	*3.02	*18	*14	*€ 5.60	€ 50,119,965
September	EUA	22,365,000	57,877,000	*2.59	*22	*17	*€ 6.67	€ 149,085,090
October	EUA	17,892,000	38,715,000	*2.16	*21	*16	*€ 7.22	€ 129,180,240
November	EUA	16,774,000	34,003,000	*2.03	*20	*15	*€ 7.49	€ 125,693,070
	EUA	675,500	2,525,000	3.74	7	6	€ 7.51	€ 5,073,005
December	EUA	14,545,000	32,316,000	**2.22	*18	*12	**€ 7.29	€ 105,997,690
EUA		196,820,000	493,172,500	**2.51	*20	*15	**€ 5.80	€ 1,141,744,975
EUA		675,500	2,525,000	3.74	7	6	€ 7.51	€ 5,073,005
Total		197,495,500	495,697,500	**2.51	*20	*14	**€ 5.81	€ 1,146,817,980

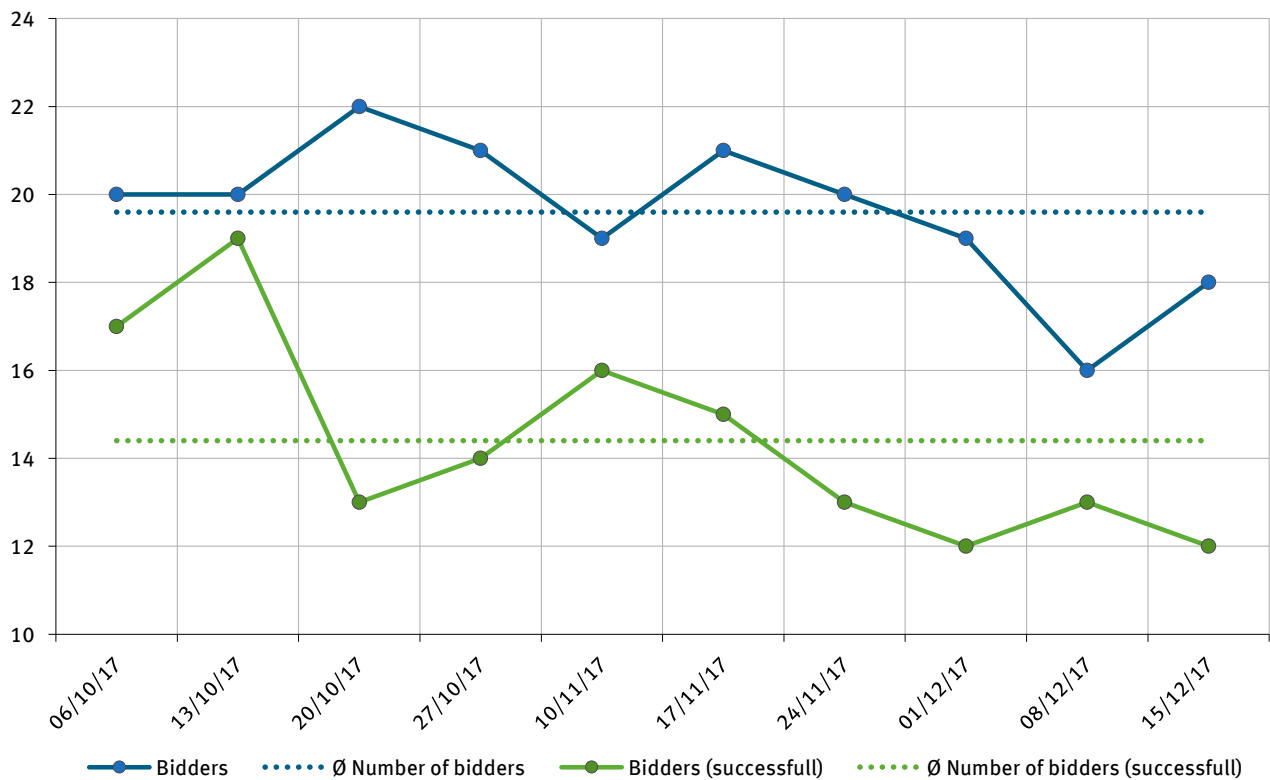
Source: EEX, DEHSt
 * Average
 ** Volume-weighted average

2 Bidder Participation

2.1 Participation

The number of participants in the German EUA-auctions in the Fourth Quarter averaged across all dates was about 20 bidders. The average number of successful bidders was about 14. Participation in the auctions fluctuated between 16 and 22 bidders during the reporting period. The number of successful participants ranged from 12 to 19. There was no such auction where all participating bidders were successful.

The following figure illustrates EUA-auction participation over time.



Source: EEX, DEHSt

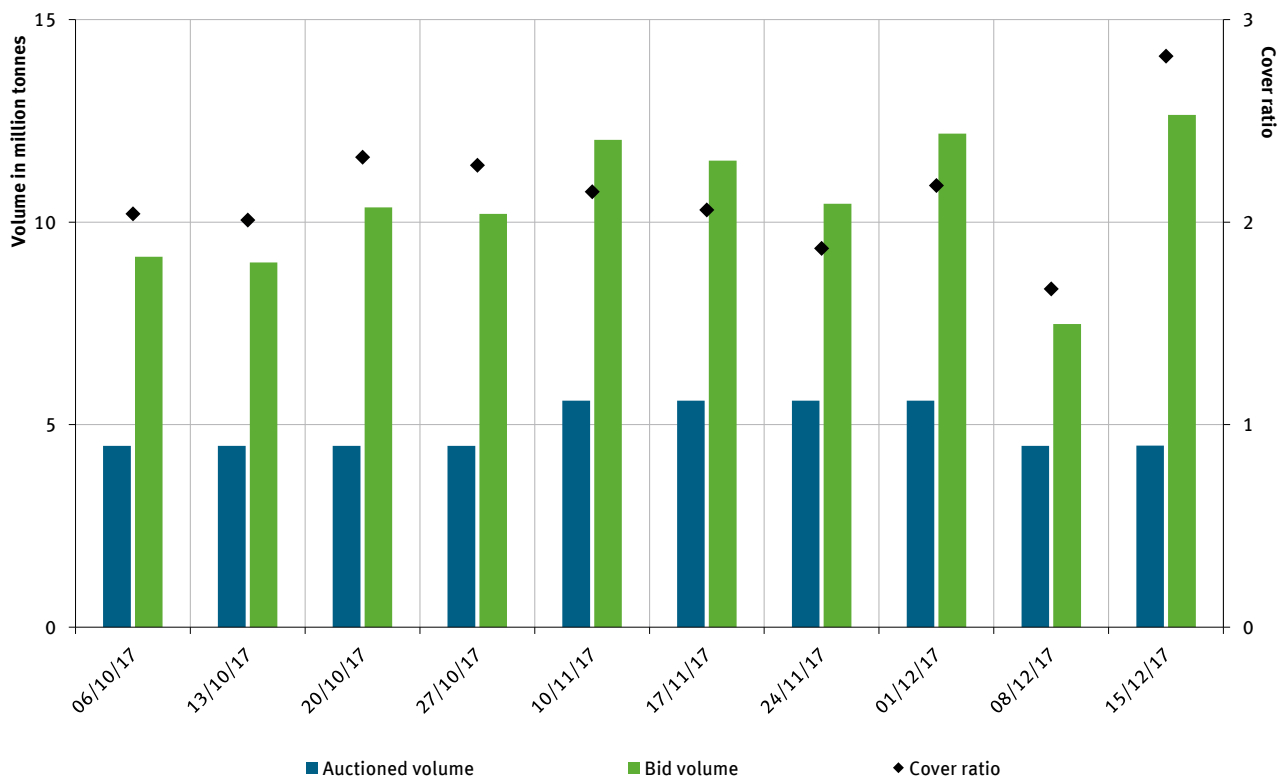
Figure 1: Number of participating and successful bidders per auction date (EUA)

With 7 bidders, the participation in the aviation allowances auction on 08/11/2017 was well below the average participation in the EUA-auctions. However, it has to be noted that the usability of EUAA for ETS compliance is limited to aircraft operators, whereas EUA can be used by all operators subject to emissions trading.

2.2 Volume Demand

During the reporting period, the aggregated bid volumes per auction date fluctuated from 7.5 to 12.5 million allowances. Overall, valid bids totalling about 105 million allowances were entered into trading system in the Fourth Quarter. The resulting cover ratios during the reporting period ranged between 1.67 and 2.82 (2.13 on average). The cover ratio in the EUAA-auction on 08/11/2017 was 3.74, above the fluctuation range of the cover ratios in EUA-auctions.

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



Source: EEX, DEHSt

Figure 2: Auctioned and bid volume and cover ratio for each auction date (EUA)

Thus, the average bid volume per EUA-auction participant in the Fourth Quarter was about 535,000 allowances. The average volume awarded to each successful bidder was about 340,000 allowances. In the EUAA-auction on 08/11/2017 the average bid volume per auction participant was about 360,000 allowances. The average volume awarded to each successful bidder was about 115,000 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. 4.473 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.

3 Auctions and the Secondary Market

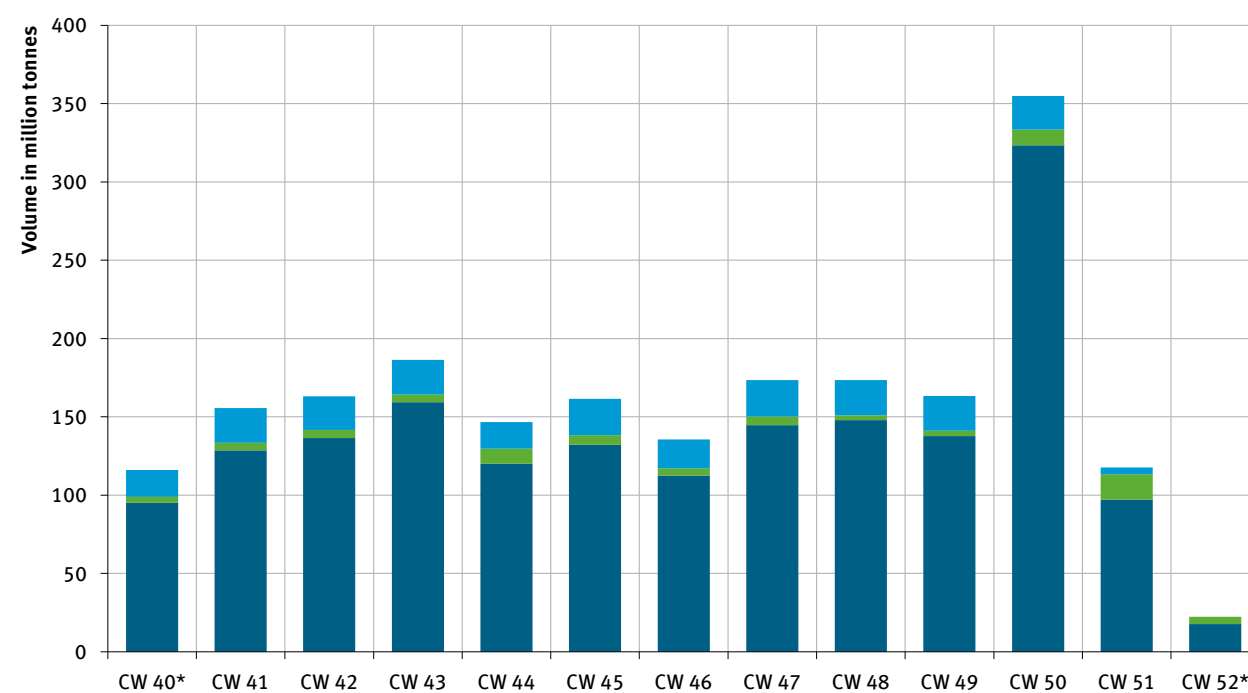
3.1 Trading Volume EUA

In the Fourth Quarter of 2017, a total of about 49 million EUA were auctioned at the EEX for Germany. During the reporting period, the cumulative trading volume in the relevant total market was about 2.17 billion EUA.² This comprises the monthly data of the London Energy Brokers' Association (LEBA) on OTC (see also Figure 5). The inclusion of this data allows for a more complete picture of the entire market volume in EUA trades.³

The secondary market trading volume of 1.93 billion EUA was divided into approximately 1.75 billion EUA on the cleared futures market, some 82 million EUA on the cleared spot market and about 99 million EUA bilaterally settled through the LEBA-Brokers (OTC).

In the Fourth Quarter of 2017, a total of about 235 million allowances were auctioned by Member States on the primary market as spot contracts. With respect to the relevant total market for EUA, around 10.9 percent of the traded volume was related to auctions.

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.



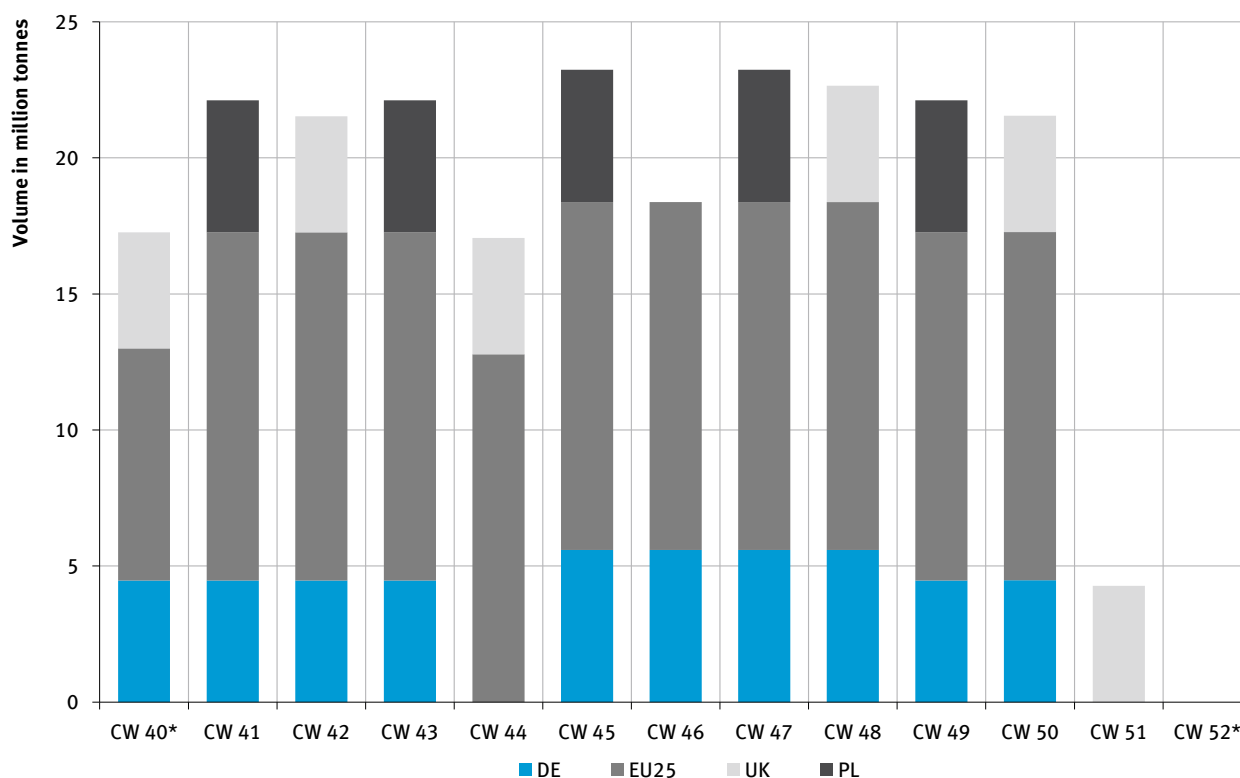
Source: ICE, EEX, CME, Nasdaq OMX, Thomson Reuters Eikon, DEHSt
* CW 40: 03/10/2017-07/10/2017; CW 52: 27/12/2017-29/12/2017

Figure 3: Trading volumes on the primary and secondary market in the Fourth Quarter of 2017 (EUA)

² 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 the Fourth Quarter of 2017 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.

³ 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 5, but not in Figure 3.

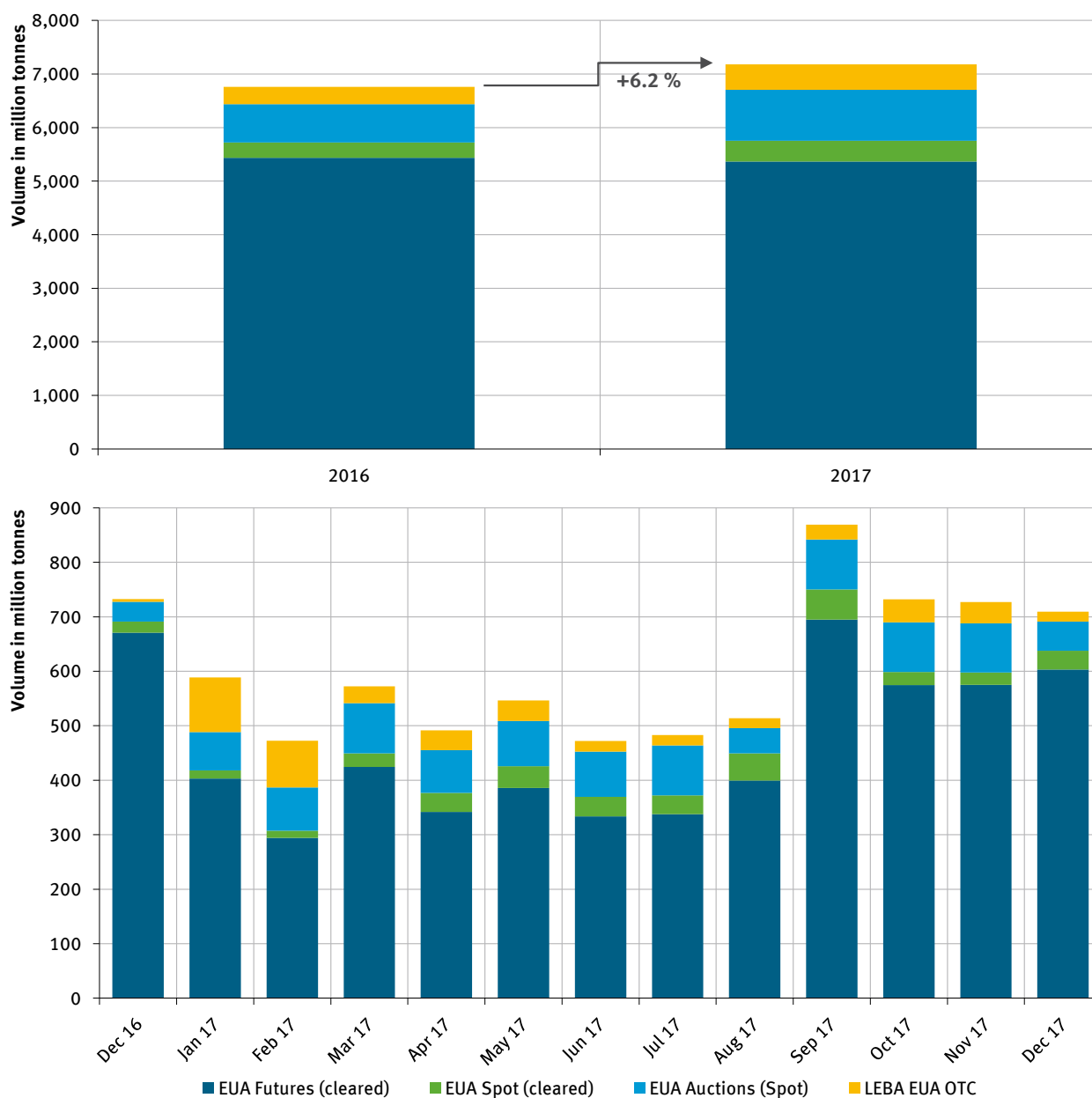
Figure 4 shows the auction volumes on the primary market per calendar week (CW). In addition to the German auctions, auction volumes of other EU Member States are also included in the figure.



Source: ICE, EEX, CME, Nasdaq OMX, Thomson Reuters Eikon, DEHSt
 DE = Germany, UK = United Kingdom, PL = Poland, EU25 = EU-Commission on behalf of other member states
 * CW 40: 03/10/2017-07/10/2017; CW 52: 27/12/2017-29/12/2017

Figure 4: Auction volumes on the primary market in the Fourth Quarter of 2017 (EUA)

The following chart shows the development of the monthly EUA trading volumes on the primary and secondary market over the past 12 month before the current reporting month. In 2017, the total market volume of 7.2 billion EUA was about 6 percent above the previous year's figure (2016: 6.8 billion EUA). While the share of futures trading of the total market volume decreased, the shares of other market segments increased respectively (see also Table 3).



Source: ICE, EEX, CME, Nasdaq OMX, Thomson Reuters Eikon, LEBA, DEHSt

Figure 5: Trading volumes on the primary and secondary market over the past 12 month (EUA)

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

Market segments		Dec 2017	Nov 2017	2017	2016
Primary market	EUA-Auctions (Spot)	7.5 %	12.4 %	13.3 %	10.6 %
	EUA-Futures (cleared)	85.0 %	79.1 %	74.8 %	80.4 %
Secondary market	EUA-Spot (cleared)	4.9 %	3.1 %	5.4 %	4.2 %
	LEBA EUA OTC	2.5 %	5.3 %	6.6 %	4.8 %

Source: ICE, EEX, CME, Nasdaq OMX, Thomson Reuters Eikon, LEBA, DEHSt

3.2 Trading Volume EUAA

In the Fourth Quarter of 2017 no aviation allowances (EUAA) were traded on the secondary market⁴. During the reporting period, a total of about 3.7 million EUAA were auctioned by the EU Member States on the primary market. Further information on the EUAA auction calendars is available on the website of the [European Commission](#).

3.3 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).

Info Box: Reference Prices

In regular exchange trading (secondary trading), participants enter their buying and selling requests (bids and asks) into an order book which is constantly updated. As in auctions, such buying bids in secondary trading include quantity and price limits. The price limit is the highest price a buyer is prepared to pay for the purchase of an allowance. Sellers can also put a price limit on their bid, i.e. a minimum price per allowance sold.

The order book is open to inspection by any participant. It shows the current highest purchase offer (best bid) and the lowest sales offer (best ask) with the relevant quantities. Trading occurs where best bid and best ask overlap. Trading price records finally show the price limits where supply equals demand.

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 -€ 0.04 (-0.54 percent) and +€ 0.04 (+0.52 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 € 0.03 or 0.34 percent averaged over all dates.

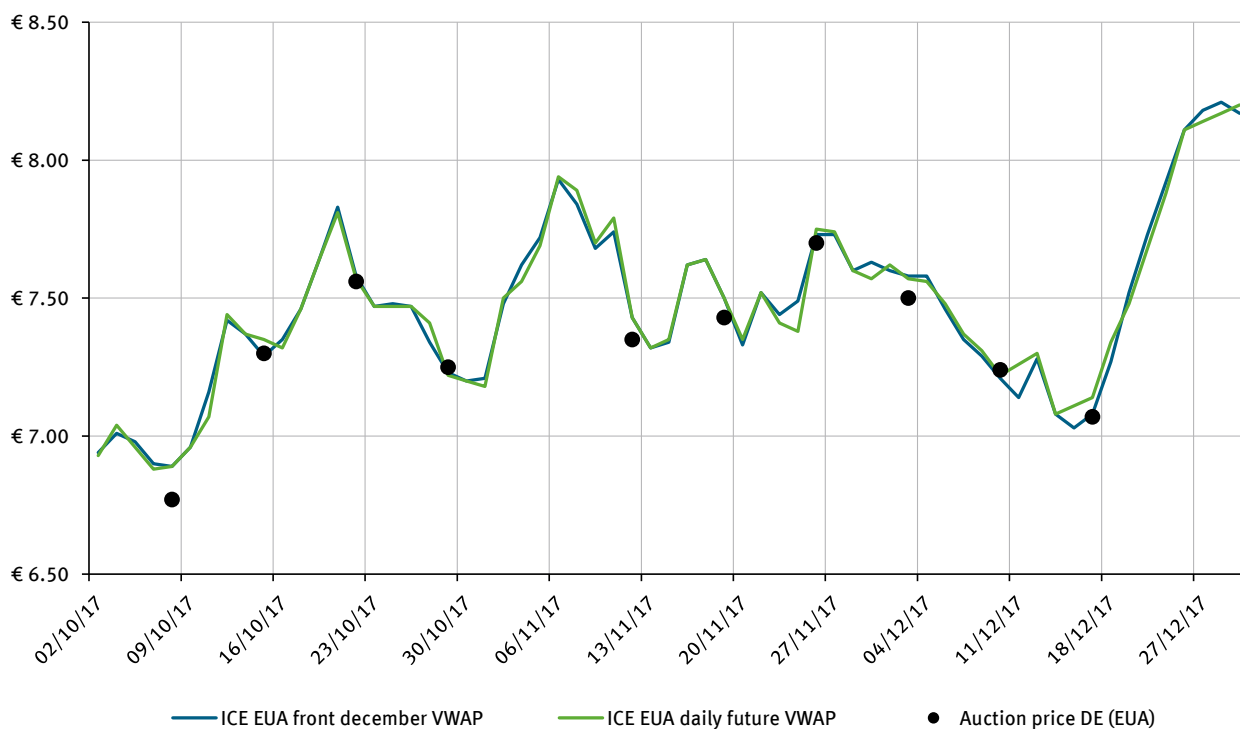
Table 4: Auctions and deviations from secondary market prices in the Fourth Quarter of 2017 (EUA)

Date	Contract	Auction price	Deviation from secondary market	
			Absolute	%
06/10/2017	EUA Spot 3 rd TP	€ 6.77	*€ -0.02	*-0.29 %
13/10/2017	EUA Spot 3 rd TP	€ 7.30	*€ -0.03	*-0.41 %
20/10/2017	EUA Spot 3 rd TP	€ 7.56	*€ 0.02	*0.27 %
27/10/2017	EUA Spot 3 rd TP	€ 7.25	*€ 0.01	*0.14 %
03/11/2017	Auction terminated without result			
10/11/2017	EUA Spot 3 rd TP	€ 7.35	*€ -0.04	*-0.54 %
17/11/2017	EUA Spot 3 rd TP	€ 7.43	*€ -0.01	*-0.13 %
24/11/2017	EUA Spot 3 rd TP	€ 7.70	*€ 0.04	*0.52 %
01/12/2017	EUA Spot 3 rd TP	€ 7.50	**€ 0.02	**0.27 %
08/12/2017	EUA Spot 3 rd TP	€ 7.24	*€ -0.03	*-0.41 %
15/12/2017	EUA Spot 3 rd TP	€ 7.07	*€ 0.03	*0.43 %
Mean absolute deviation			€ 0.03	0.34 %

Source: ICE, EEX, Thomson Reuters Eikon, DEHST
 * best bid ICE Daily Future
 ** last trade ICE Daily Future

⁴ 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“).⁵ 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.⁶ The following graphic is based on volume-weighted average trading prices (VWAP), which fluctuated in an interval between around € 6.90 to € 8.20⁷ in the Fourth Quarter of 2017.



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

Figure 6: ICE secondary market prices and EEX auction clearing prices (EUA)

4 Implementation of Valid Regulations

4.1 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 the Fourth Quarter of 2017 as follows (excerpt):

“Within their surveillance for the auctioning of emission allowances on behalf of the German Environment Agency at the EEX in the Fourth Quarter of 2017 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 ICE EUA Dec17 contract expired on 18/12/2017.

⁶ 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.

⁷ 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.

4.2 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.

4.3 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](#).

4.4 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 \(Regulations\)](#).

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