



Auctioning

**German Auctioning of Emission Allowances
Periodical Report: Fourth Quarter 2016**

Impressum

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German Emissions Trading Authority (DEHSt)
at the German Environment Agency
Bismarckplatz 1
D-14193 Berlin
Phone: +49 (0) 30 89 03-50 50
Fax: +49 (0) 30 89 03-50 10
emissionshandel@dehst.de
Internet: www.dehst.de

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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 2016 and 2017 auction calendars are published on the [EEX website](#).

The following tables summarise the key data of the German auctions on the EEX in 2016 and 2017:

2016		
Auction product	Third trading period EUA spot contracts	Third trading period EUAA spot contracts
Period	15/01/2016 to 16/12/2016	13/04/2016
Auction volume entire year	160,770,500 EUA	857,500 EUAA
Auction volume per auction	3.495 million EUA (1.7475 million EUA in August)	857,500 EUAA on 13/04/2016
Auction frequency	Weekly (Fridays, 09:00 to 11:00 a.m. CET)	On 13/04/2016 (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	

2017	
Auction product	Third trading period EUA spot contracts
Period	13/01/2017 to 15/12/2017
Auction volume entire year	196,820,000 EUA
Auction volume per auction	4.473 million EUA (2.2375 million 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 2016

Between October and December, eleven auctions of emission allowances (EUA) of the third trading period were carried out for Germany at the EEX.

Overall **38,445,500 EUA** with a total value of **€ 206,591,745** were auctioned. This results in a volume-weighted average price per allowance of **€ 5.37** (+19 percent compared to the previous quarter). The deviations of the clearing prices from the current prices on the lead market fluctuated between -1.37 and +1.36 percent (see also Section 3.3).

Overall, valid bids totalling about 89 million allowances were entered into trading system across the eleven EUA-auction dates. Thus the average cover ratio in the reporting period was 2.32 (see also Section 2.2). The average participation number of 17 bidders was at the level of the previous quarter (17).

The average number of successful bidders was however slightly above the previous quarter level at 12 (11), (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 2016

Date	Auction volume	Bid volume	Cover ratio	Bidders	Successful bidders	Price	Revenue
07/10/2016	3,495,000	10,662,500	3.05	18	10	€ 5.62	€ 19,641,900
14/10/2016	3,495,000	9,072,500	2.60	17	12	€ 5.65	€ 19,746,750
21/10/2016	3,495,000	7,800,000	2.23	20	14	€ 5.58	€ 19,502,100
28/10/2016	3,495,000	6,896,500	1.97	17	12	€ 5.70	€ 19,921,500
October	13,980,000	34,431,500	*2.46	*18	*12	*€ 5.64	€ 78,812,250
04/11/2016	3,495,000	8,666,500	2.48	19	9	€ 6.54	€ 22,857,300
11/11/2016	3,495,000	7,457,000	2.13	17	12	€ 5.85	€ 20,445,750
18/11/2016	3,495,000	7,127,000	2.04	17	15	€ 5.73	€ 20,026,350
25/11/2016	3,495,000	6,768,000	1.94	16	14	€ 5.05	€ 17,649,750
November	13,980,000	30,018,500	*2.15	*17	*13	*€ 5.79	€ 80,979,150
02/12/2016	3,495,000	7,635,000	2.18	16	12	€ 4.32	€ 15,098,400
09/12/2016	3,495,000	8,644,000	2.47	17	9	€ 4.48	€ 15,657,600
16/12/2016	3,495,000	8,358,000	2.39	16	14	€ 4.59	€ 16,044,345
December	10,485,500	24,637,000	**2.35	*16	*12	**€ 4.46	€ 46,800,345
Q4 2016	38,445,500	89,087,000	**2.32	*17	*12	**€ 5.37	€ 206,591,745

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

1.2 Overview of the entire year 2016

In 2016 a total of **161,628,000 EUA and EUAA** (2015: 146,122,500 EUA/EUAA) with a total value of **€ 850,387,520** (2015: € 1,110,180,180) were auctioned at the EEX for Germany. This results in a volume-weighted average price per allowance of **€ 5.26** (2015: € 7.60). These overall figures are subdivided into 160,770,500 EUA with a total value of € 845,739,870 (average price € 5.26) and 857,500 EUAA with a total value of € 4,647,650 (€ 5.42).

Thus, the total annual auction budget for 2016 has been auctioned successfully.

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

Table 2: Overview of the entire year 2016

Month	Type	Auction volume	Bid volume	Cover ratio	Bidders	Successful bidders	Price	Revenue
January	EUA	10,485,000	23,660,500	*2.26	*21	*15	*€ 6.37	€ 66,754,500
February	EUA	13,980,000	30,818,500	*2.20	*22	*14	*€ 5.21	€ 72,800,850
March	EUA	10,485,000	25,693,000	*2.45	*22	*13	*€ 4.91	€ 51,481,350
April	EUA	17,475,000	35,332,000	*2.02	*17	*14	*€ 5.60	€ 97,790,100
	EUA	857,500	3,362,500	3.92	10	6	€ 5.42	€ 4,647,650
May	EUA	13,980,000	28,628,000	*2.05	*16	*13	*€ 5.93	€ 82,936,350
June	EUA	13,980,000	30,030,000	*2.15	*18	*15	*€ 5.63	€ 78,742,350
July	EUA	17,475,000	36,267,000	*2.08	*16	*13	*€ 4.49	€ 78,392,850
August	EUA	6,990,000	25,743,500	*3.69	*16	*7	*€ 4.76	€ 33,254,925
September	EUA	17,475,000	32,973,000	*1.89	*18	*11	*€ 4.41	€ 76,994,850
October	EUA	13,980,000	34,431,500	*2.46	*18	*12	*€ 5.64	€ 78,812,250
November	EUA	13,980,000	30,018,500	*2.15	*17	*13	*€ 5.79	€ 80,979,150
December	EUA	10,485,500	24,637,000	**2.35	*16	*12	**€ 4.46	€ 46,800,345
EUA		160,770,500	358,232,500	**2.23	*18	*13	**€ 5.26	€ 845,739,870
EUA		857,500	3,362,500	3.92	10	6	€ 5.42	€ 4,647,650
Total		161,628,000	361,595,000	**2.24	*18	*12	**€ 5.26	€ 850,387,520

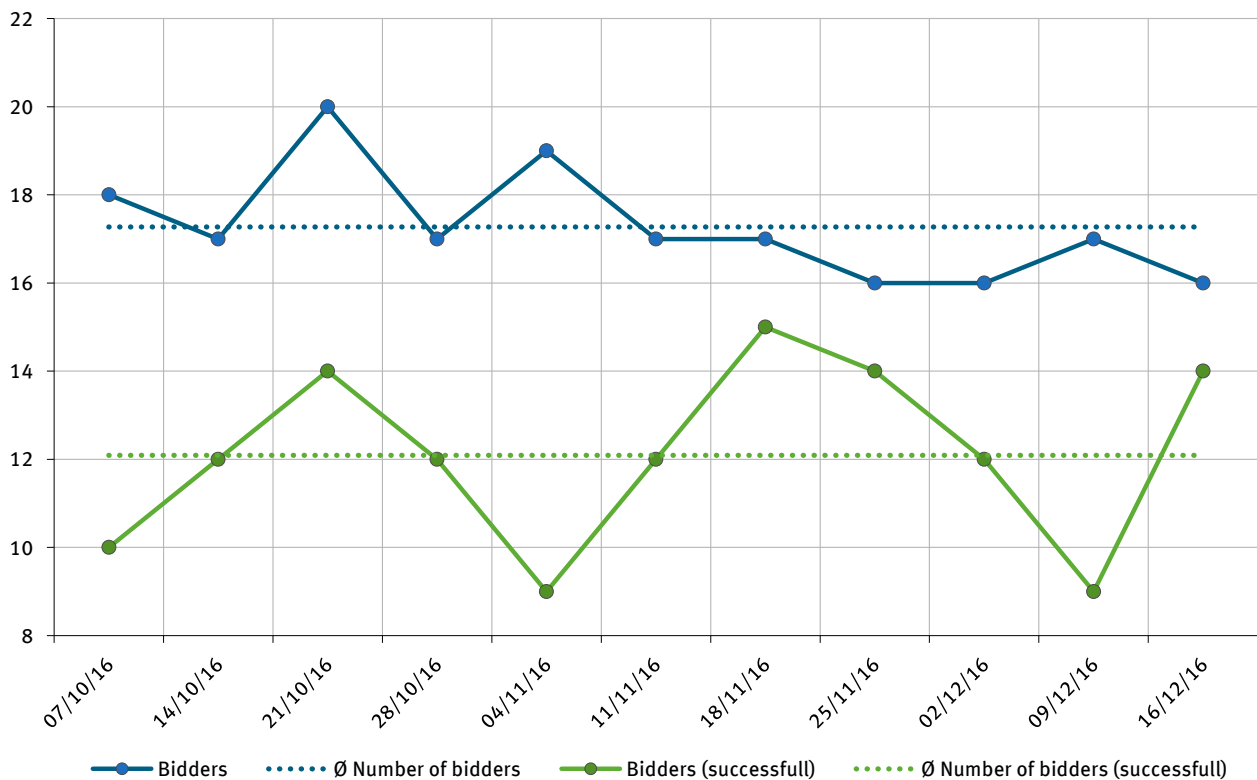
Source: EEX, DEHSt
 * Average
 ** Volume-weighted average

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 17 bidders. The average number of successful bidders was about 12. Participation in the auctions fluctuated between 16 and 20 bidders during the reporting period. The number of successful participants ranged from 9 to 15. There was no such auction where all participating bidders were successful.

The following figure illustrates EUA-auction participation over time.



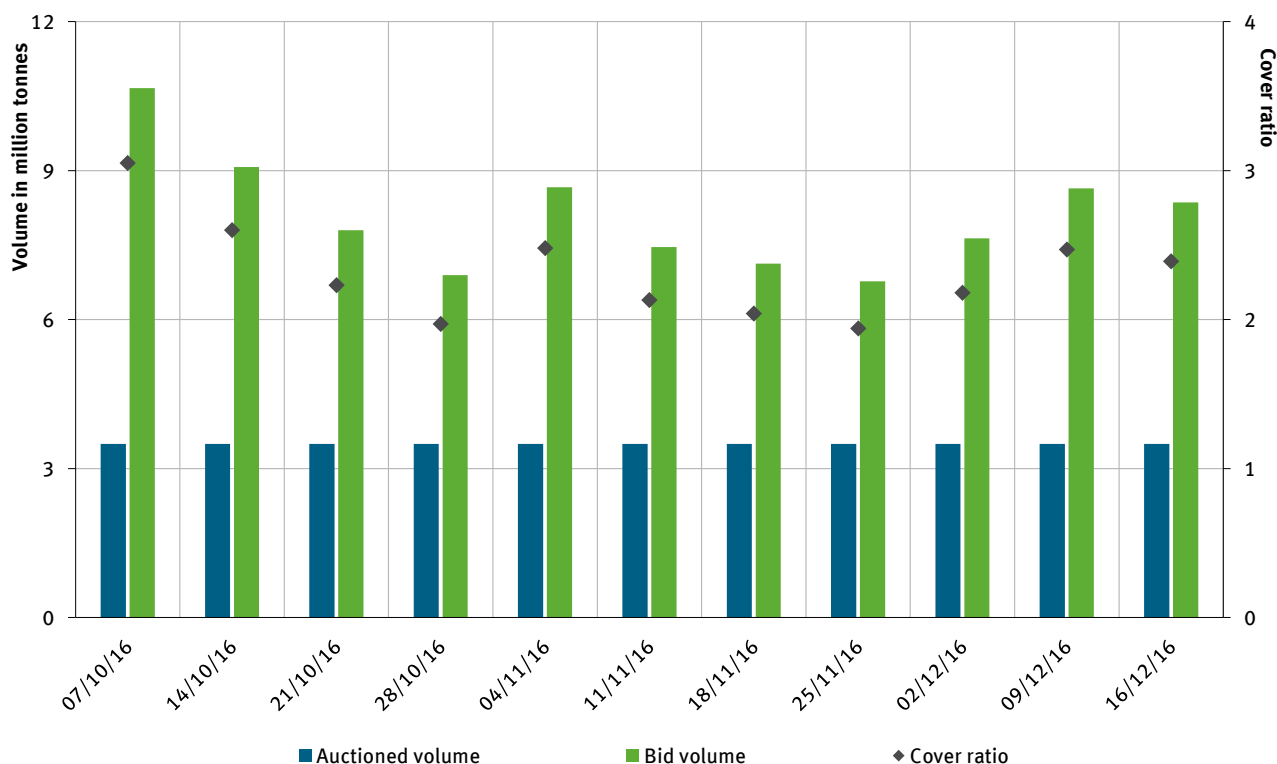
Source: EEX, DEHSt

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

2.2 Volume Demand

During the reporting period, the aggregated bid volumes per auction date fluctuated from 6.8 to 10.7 million allowances. Overall, valid bids totalling about 89 million allowances were entered into trading system in the Fourth Quarter. The resulting cover ratios during the reporting period ranged between 1.94 and 3.05 (2.32 on average).

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



Source: EEX, DEHSt

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

Thus, the average bid volume per EUA-auction participant in the Fourth Quarter was about 470,000 allowances. The average volume awarded to each successful bidder was about 290,000 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.

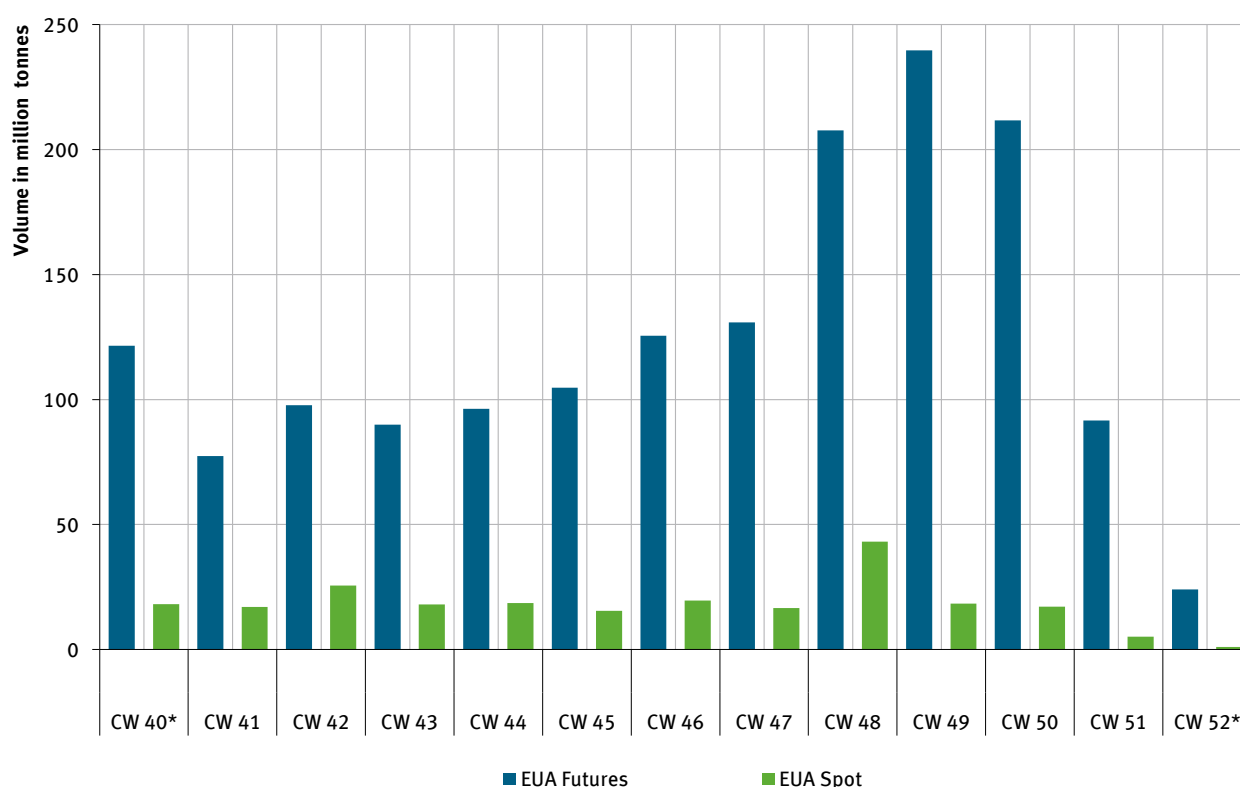
In the event of equal bids, the bids are sorted by a random process. The bid volumes are aggregated starting with the highest bid until the volume of emission allowances on offer (e.g. 3.495 million EUA) is reached. The bid price at which the aggregate volume of bids reaches or exceeds the offered volume 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 2016, a total of about 39 million EUA were auctioned at the EEX for Germany. During the reporting period, the cumulative trading volume in the relevant total market was about 1.89 billion EUA.¹ Thus, the total market trading volume was 52 percent above the level of the previous quarter. This market volume was divided into approximately 237 million allowances which were conducted as contracts for immediate delivery (spot) and about 1.65 billion allowances for delivery in the future (futures), the highest level since the First Quarter of 2014. Thus, about 87 percent of the traded volume was handled on the dominant futures market. The figure below illustrates the trading volumes separately for spot and futures segments based on calendar weeks (CW).



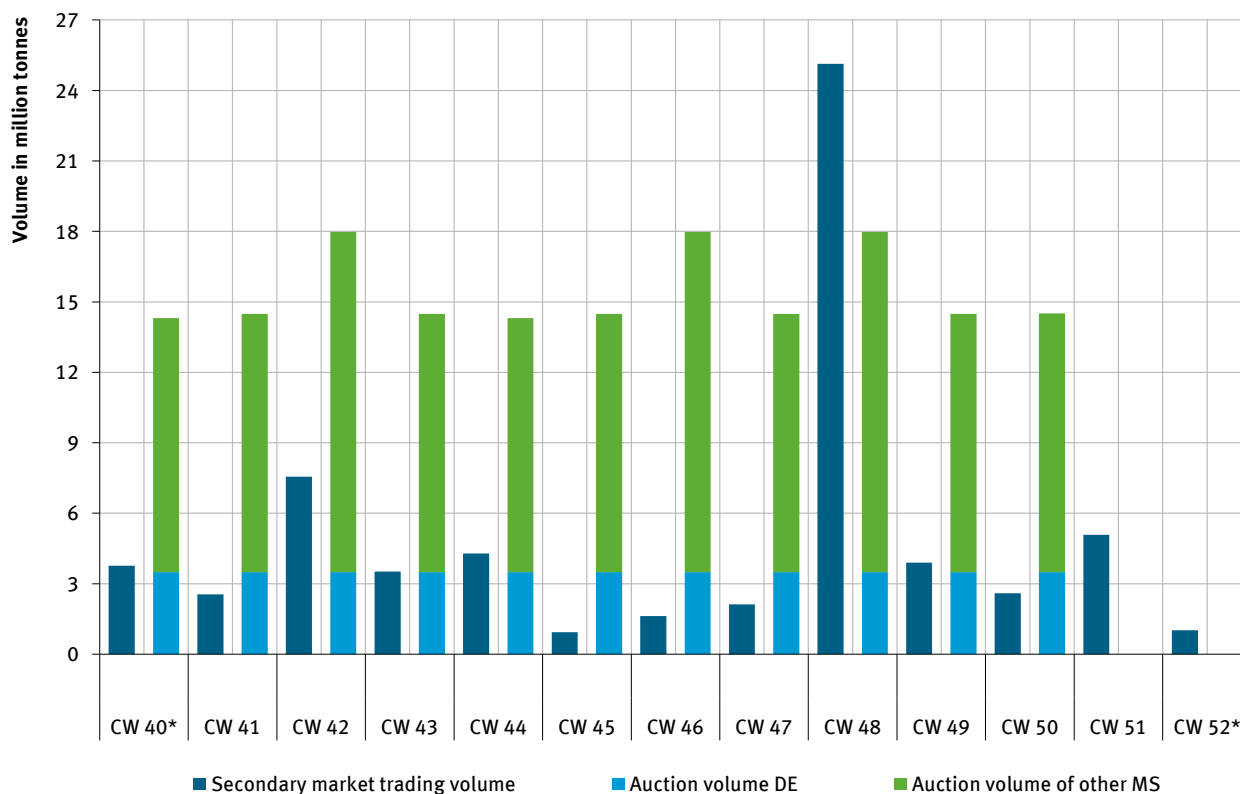
Source: ICE, EEX, CME, Nasdaq OMX, Thomson Reuters Eikon, DEHSt
 * CW 40: 03/10/2016-07/10/2016; CW 52: 26/12/2016-30/12/2016

Figure 3: Trading volumes differentiated by spot and futures in the Fourth Quarter of 2016 (EUA)

In the Fourth Quarter of 2016, a total of about 170 million allowances were auctioned by Member States on the primary market as spot contracts. On the spot secondary market about 67 million allowances were traded, the trading volume in the CW 48 reached the highest weekly level since April 2013. Thus around 72 percent of traded spot contracts have been purchased in primary market auctions during the reporting period. With respect to the relevant total market for EUA, around 9 percent of the traded volume was related to auctions.

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

¹ 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 2016 are also considered. Option contracts are not involved.



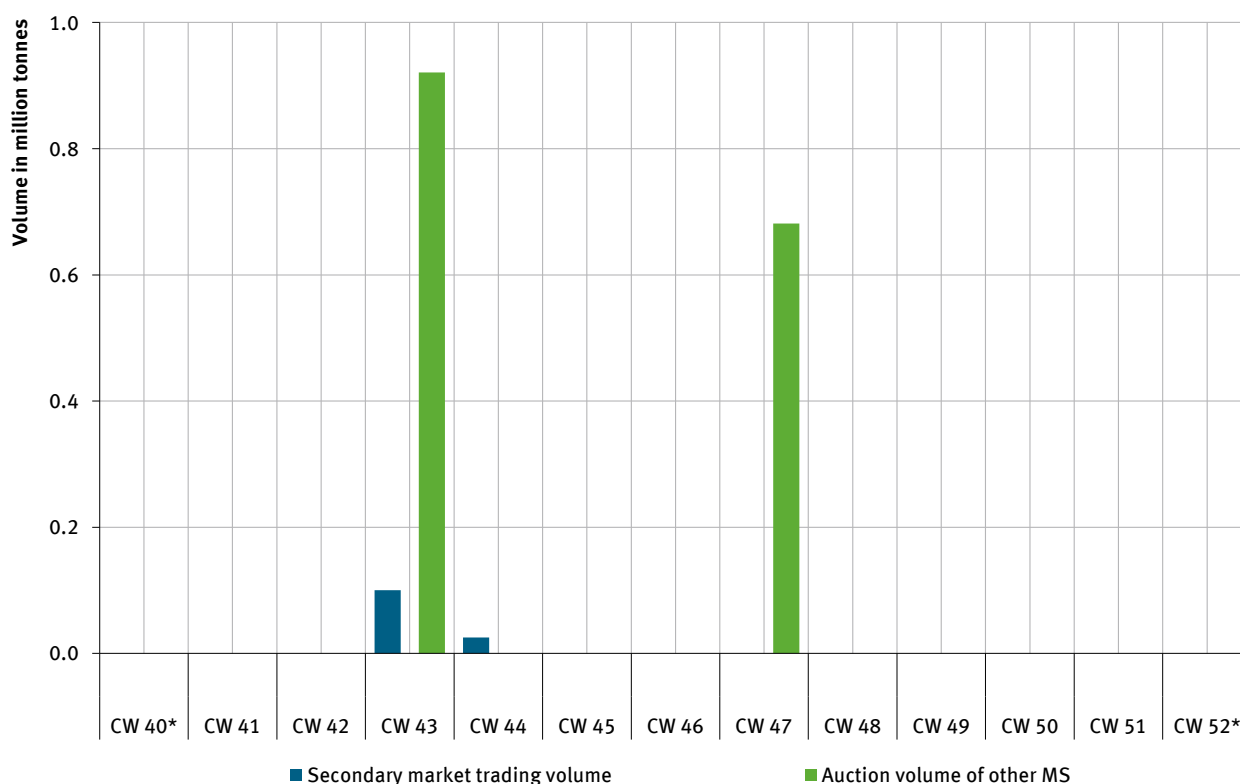
Source: ICE, EEX, CME, Nasdaq OMX, Thomson Reuters Eikon, DEHSt
 DE = Germany, MS = EU Member State
 * CW 40: 03/10/2016-07/10/2016; CW 52: 26/12/2016-30/12/2016

Figure 4: Trading volume on the secondary market (spot) and volume of auctions conducted in the Fourth Quarter of 2016 (EUA)

3.2 Trading Volume EUAA

In the Fourth Quarter of 2016 125,000 aviation allowances (EUAA) were traded on the secondary market². During the reporting period, a total of about 1.6 million EUAA were auctioned by the EU Member States on the primary market as spot contracts. Further information on the EUAA auction calendars is available on the website of the [European Commission](http://ec.europa.eu/eu-aa/).

² 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.



Source: ICE, EEX, Thomson Reuters Eikon, DEHSt
MS = EU Member State

* CW 40: 03/10/2016-07/10/2016; CW 52: 26/12/2016-30/12/2016

Figure 5: Trading volume on the secondary market and volume of auctions conducted in the Fourth Quarter of 2016 (EUAA)

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 3 shows the relative deviations of the clearing price from the lead 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 (-1.37 percent) and +€ 0.06 (+1.36 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 0.63 percent averaged over all dates.

Table 3: Auctions and deviations from secondary market prices in the Fourth Quarter of 2016 (EUA)

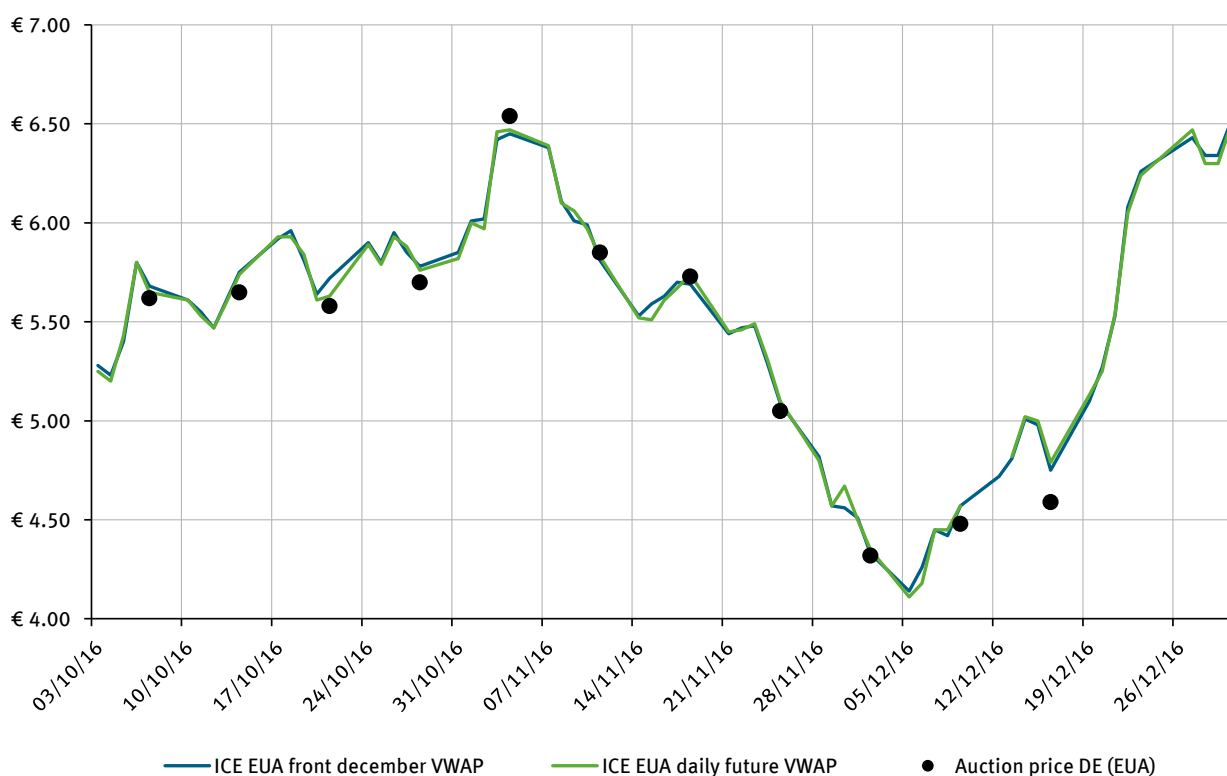
Date	Contract	Clearing price	Deviation from ICE Daily Future	
			Absolute*	%
07/10/2016	EUA Spot 3 rd TP	€ 5.62	*€ 0.02	*0.36 %
14/10/2016	EUA Spot 3 rd TP	€ 5.65	*€ 0.01	*0.18 %
21/10/2016	EUA Spot 3 rd TP	€ 5.58	*€ -0.01	*-0.18 %
28/10/2016	EUA Spot 3 rd TP	€ 5.70	*€ -0.02	*-0.35 %
04/11/2016	EUA Spot 3 rd TP	€ 6.54	*€ 0.05	*0.77 %
11/11/2016	EUA Spot 3 rd TP	€ 5.85	*€ 0.00	*0.00 %
18/11/2016	EUA Spot 3 rd TP	€ 5.73	*€ -0.02	*-0.35 %
25/11/2016	EUA Spot 3 rd TP	€ 5.05	*€ -0.07	*-1.37 %
02/12/2016	EUA Spot 3 rd TP	€ 4.32	**€ -0.05	** -1.14 %
09/12/2016	EUA Spot 3 rd TP	€ 4.48	*€ 0.06	*1.36 %
16/12/2016	EUA Spot 3 rd TP	€ 4.59	*€ -0.04	*-0.86 %
Mean absolute deviation			€ 0.03	0.63 %

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

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 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.³ The following graphic is based on volume-weighted average trading prices (VWAP), which fluctuated in an interval between around € 4.10 to € 6.50⁴ in the Fourth Quarter of 2016.

³ 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.

⁴ The volume-weighted average price (VWAP) for the ICE EUA front-december futures is [published](#) on a daily basis by the ICE. The VWAP for the ICE daily future contract is based on data from Thomson Reuters Eikon.



Source: ICE, EEX, Thomson Reuters Eikon, DEHSt

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 2016 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 2016 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.”

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 \(2016 auction results\)](#).

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 \(Regulations\)](#).

German Emissions Trading Authority (DEHSt) at the German Environment Agency
Bismarckplatz 1
D-14193 Berlin

www.dehst.de/EN | emissionstrading@dehst.de