



A 3D data visualization featuring a bar chart with a line graph overlaid. The line graph shows values for years 06 through 11. The values are: 4,341 (06), 6,991 (07), 8,055 (08), 11,800 (09), 12,105 (10), 16,911 (11). The bar chart shows a general upward trend. In the foreground, there are several pie charts with segments labeled A, B, C, D, E, and numbers 08, 09, 10, 11.

Auctioning (EU ETS) German Auctioning of Emission Allowances

Fourth Quarter 2022

Editorial information

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German Auctioning of Emission Allowances

The German auctions of the fourth 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 fourth trading period auctions can be downloaded from the [EEX website](#). Reports on the second, third and fourth trading periods auction results are available on the [DEHSt auction website](#). The 2022 and 2023 auction calendars are published on the [EEX website](#).

The following tables summarise the key data of the German auctions on the EEX in 2022 and 2023:

2022		
Auction product	Fourth trading period EUA spot contracts	Fourth trading period EUAA spot contracts
Period	14/01/2022 to 16/12/2022	19/10/2022
Auction volume entire year	84,230,000 EUA ¹	586,500 EUAA
Auction volume per auction	January–July: 1,944,000 EUA August: 972,000 EUA September–December: 1,861,500 EUA	586,500 EUAA on 19/10/2022
Auction frequency	Weekly (Fridays, 09:00 to 11:00 CET)	On 19/10/2022 (09:00 to 11:00 CET)
Bid volume	500 EUA/EUAA	
Auction mode	Single-round, uniform-price procedure with a closed order book	

2023		
Auction product	Fourth trading period EUA spot contracts	Fourth trading period EUAA spot contracts
Period	13/01/2023 to 15/12/2023	18/10/2023
Auction volume entire year	113,094,000 EUA (provisional) ²	907,000 EUAA
Auction volume per auction	January–July: 1,939,500 EUA August: 970,000 EUA September–December: 3,552,500 EUA (provisional) ²	907,000 EUAA on 19/10/2022
Auction frequency	Weekly (Fridays, 09:00 to 11:00 CET)	On 18/10/2023 (09:00 to 11:00 CET)
Bid volume	500 EUA/EUAA	
Auction mode	Single-round, uniform-price procedure with a closed order book	

¹ The MSR reduction for the auction volumes from September 2022 to August 2023 was [published](#) by the European Commission on 12th May 2022.

² The MSR reduction for the auction volumes from September 2023 to August 2024 is expected to be determined by the European Commission in May 2023.

1 Overview

1.1 Fourth Quarter of 2022

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

Overall, about **20 million EUA** with a total value of over **€ 1.57 billion** were auctioned. This results in a volume-weighted average price per allowance of **€ 76.71** (minus 2 percent compared to the previous quarter). The deviations of the clearing prices from the current prices on the secondary market fluctuated between -0.79 and $+0.67$ percent (see also Chapter 3.3).

Overall, valid bids totalling about 49 million allowances were entered into the trading system across the eleven EUA auction dates. Thus, the average cover ratio in the reporting period was 2.39 (see also Chapter 2.2). The average participation number of 18 bidders slightly above the level of the previous quarter (17). The average number of successful bidders was also above the previous quarter's level (13) at 14 (see also Chapter 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 2022

Date	Auction volume	Bid volume	Cover ratio	Bidders	Successful bidders	Price	Revenue
07/10/2022	1,861,500	3,768,500	2.02	19	16	€ 67.52	€ 125,688,480
14/10/2022	1,861,500	5,928,500	3.18	15	13	€ 67.70	€ 126,023,550
21/10/2022	1,861,500	4,923,500	2.64	17	11	€ 67.90	€ 126,395,850
28/10/2022	1,861,500	4,441,000	2.39	18	17	€ 80.76	€ 150,334,740
October	7,446,000	19,061,500	*2.56	*17	*14	*€ 70.97	€ 528,442,620
04/11/2022	1,861,500	4,360,000	2.34	20	8	€ 78.14	€ 145,457,610
11/11/2022	1,861,500	4,295,000	2.31	19	16	€ 73.33	€ 136,503,795
18/11/2022	1,861,500	4,667,000	2.51	18	16	€ 72.22	€ 134,437,530
25/11/2022	1,861,500	3,688,000	1.98	19	15	€ 79.36	€ 147,728,640
November	7,446,000	17,010,000	*2.29	*19	*14	*€ 75.76	€ 564,127,575
02/12/2022	1,861,500	4,229,000	2.27	19	14	€ 85.21	€ 158,618,415
09/12/2022	1,861,500	4,285,000	2.30	17	14	€ 88.26	€ 164,295,990
16/12/2022	1,865,500	4,316,500	2.31	€	16	€ 83.41	€ 155,601,355
December	5,588,500	12,830,500	**2.30	*18	*15	**€ 85.63	€ 478,515,760
Q4 2022	20,480,500	48,902,000	**2.39	*18	*14	**€ 76.71	€ 1,571,085,955

Source: EEX, DEHSt
*average
** volume-weighted average

In addition, 586,500 aviation allowances (EUAA) with a total value of about € 40 million were auctioned for Germany on 19th October. The auction price for the 4 successful bidders was € 68.62. Overall, 6 bidders with valid bids totalling about 1.2 million allowances participated in the auction.

1.2 Overview of the entire year 2022

In 2022 a total of almost **85 million EUA and EUAA** with a total value of over **€ 6,8 billion** were auctioned at the EEX for Germany. This results in a volume-weighted average price per allowance of **€ 80,32**.

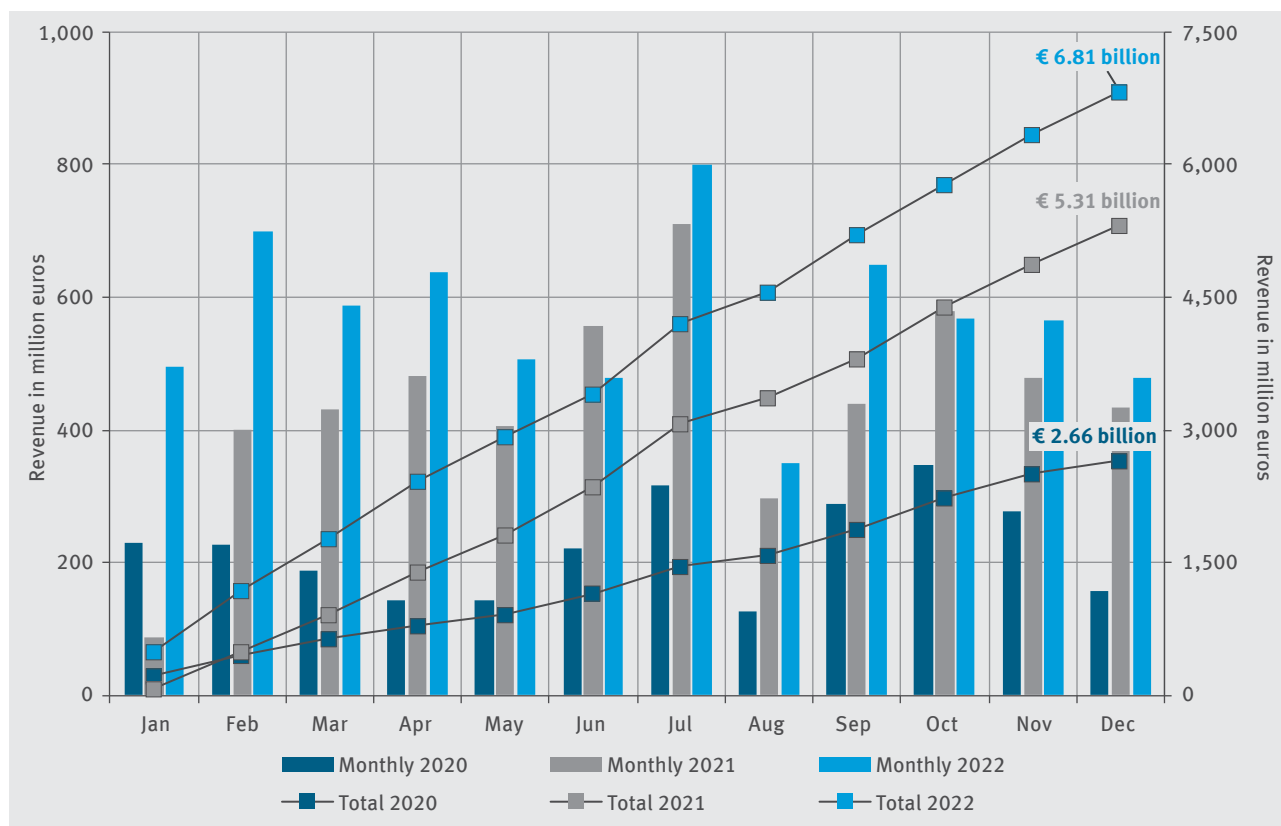
The following table summarises the auction results on a monthly basis.

Table 2: Overview of the entire year 2022

Month	Type	Auction volume	Bid volume	Cover ratio	Bidders	Successful bidders	Price	Revenue
January	EUA	5,832,000	7,951,500	*1.36	*21	*19	*€ 84.93	€ 495,331,200
February	EUA	7,776,000	12,599,000	*1.62	*21	*16	*€ 89.80	€ 698,245,920
March	EUA	7,776,000	20,001,500	*2.57	*21	*13	*€ 75.36	€ 585,979,920
April	EUA	7,776,000	20,026,000	*2.58	*21	*16	*€ 82.12	€ 638,545,680
May	EUA	5,832,000	15,149,000	*2.60	*20	*17	*€ 86.89	€ 506,742,480
June	EUA	5,832,000	13,969,500	*2.40	*19	*14	*€ 82.21	€ 479,448,720
July	EUA	9,720,000	20,459,500	*2.11	*19	*16	*€ 82.12	€ 798,167,520
August	EUA	3,898,000	10,337,000	**2.65	*16	*8	**€ 89.56	€ 349,095,160
September	EUA	9,307,500	16,174,500	*1.74	*16	*13	*€ 69.81	€ 649,756,575
October	EUA	7,446,000	19,061,500	*2.56	*17	*14	*€ 70.97	€ 528,442,620
	EUAA	586,500	1,178,000	2.01	6	4	€ 68.62	€ 40,245,630
November	EUA	7,446,000	17,010,000	*2.29	*19	*14	*€ 75.76	€ 564,127,575
December	EUA	5,588,500	12,830,500	**2.30	*18	*15	**€ 85.63	€ 478,515,760
Total		84,816,500	186,747,500	**2.20	*19	*14	**€ 80.32	€ 6,812,644,760

Source: EEX, DEHSt
* average
** volume-weighted average

The following figure shows the German EUA/EUAA auction revenues in the period since 2020. In addition to the monthly values, the cumulative total revenues of the individual years are also shown in the chart. In 2022, German revenues were above the previous record result from 2021. Since 2012 German auction revenues flow entirely into the so-called Climate and Transformation Fund (KTF)³.



Source: EEX, DEHSt

Figure 1: Auction revenues (EUA+EUAA) from 2020 to 2022

³ Until July 2022 - Energy and Climate Fund (EKF).

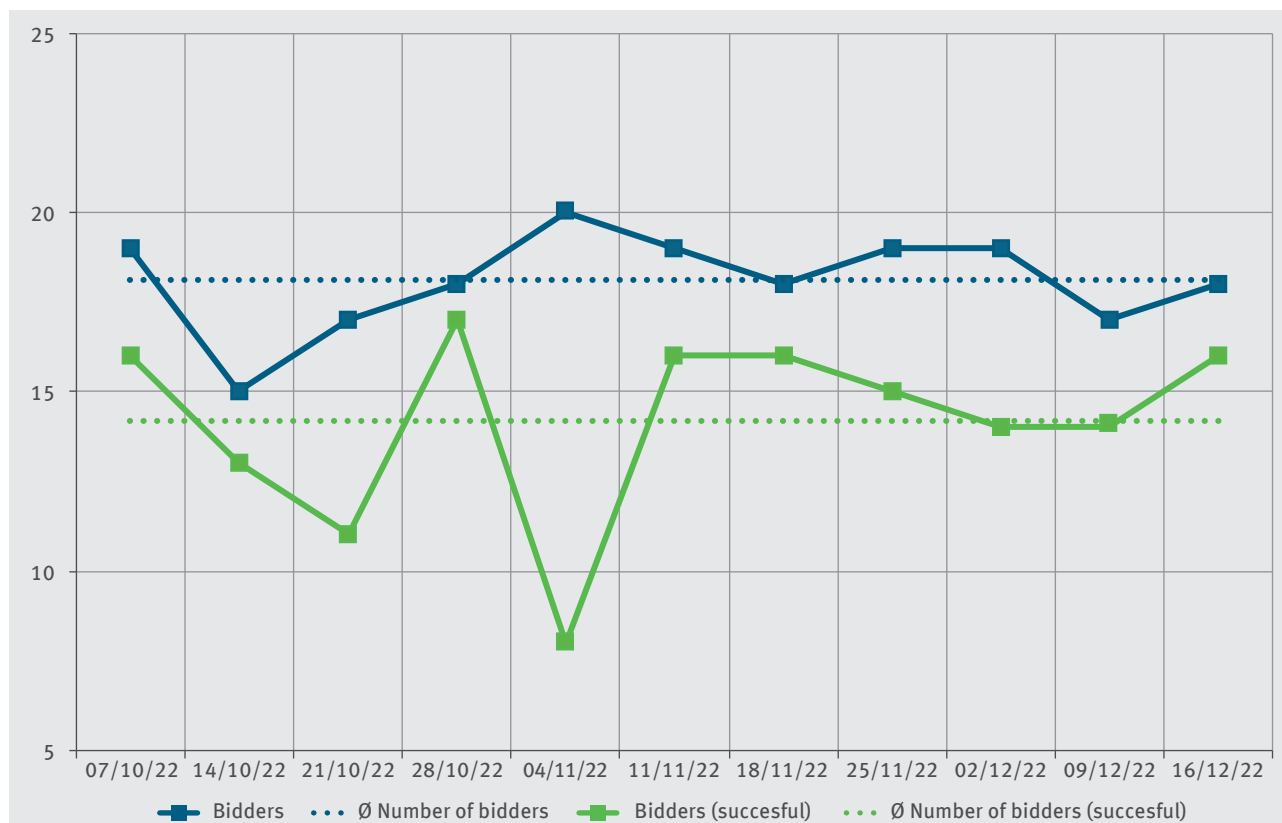
2 Bidder Participation

2.1 Participation

The number of participants in the German EUA auctions in the fourth Quarter averaged across all dates was about 18 bidders. The average number of successful bidders was about 14. Participation in the auctions fluctuated between 15 and 20 bidders during the reporting period. The number of successful participants ranged from 8 to 17. There was no auction in which all participating bidders were successful.

With 6 bidders, the participation in the aviation allowances auction on 19th October was well below the average participation in the EUA auctions.

The following figure illustrates EUA auction participation over time.



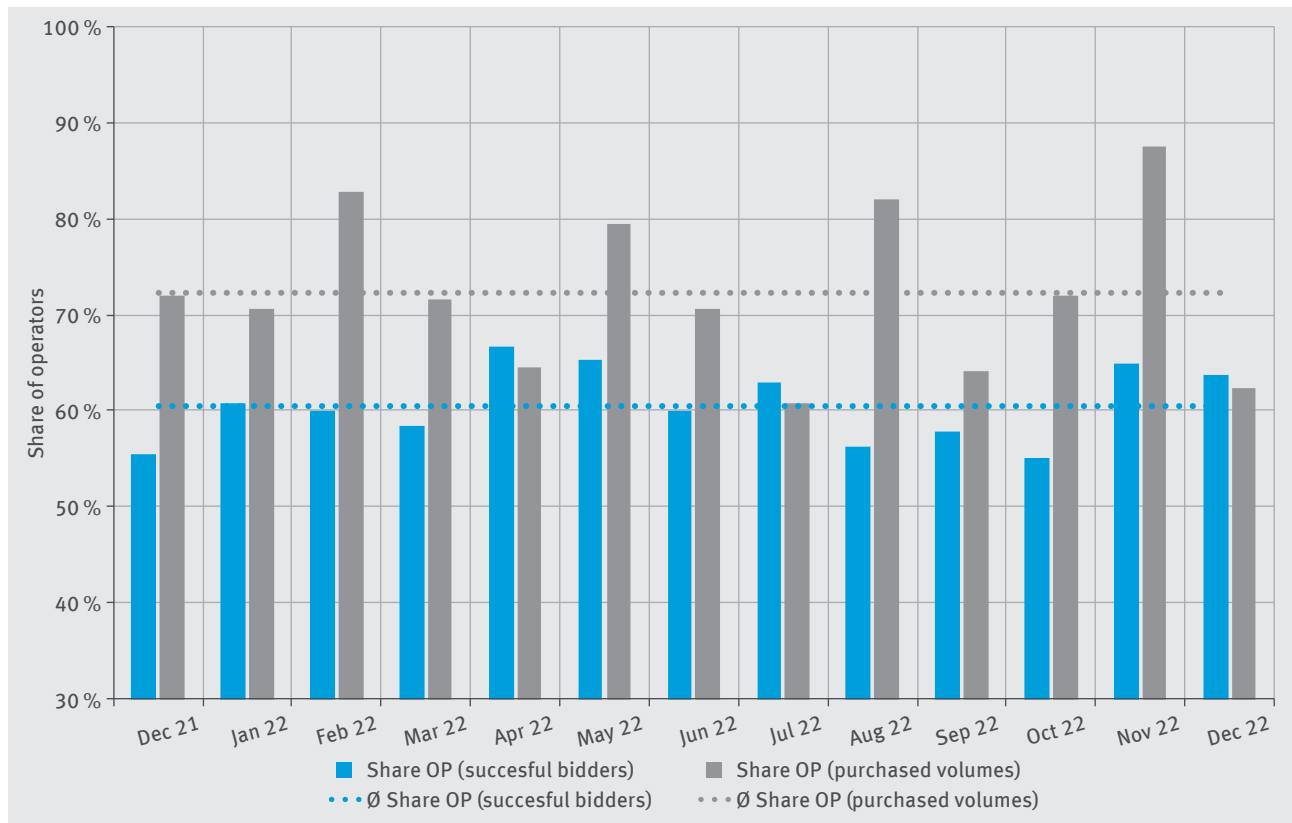
Source: EEX, DEHSt

Figure 2: Number of participating and successful bidders per auction date (EUA)

By the end of December 2022, a total of 93 trading members of EEX (plus 1 compared to the previous month) had been authorized to submit bids in the primary market auctions. In December, a total of 22 different bidders were successful in the German primary market auctions. Out of the 22 of those bidders, 14 were operators (i. e. operators of ETS covered installations or aircraft operators), which accounts for 64 percent of all successful bidders⁴. Overall, operators purchased approximately 62 percent of the auctioned volumes in December 2022. The moving averages of the past 12 months for both parameters are at around 61 and 72 percent respectively.

⁴ Pursuant to Art. 18 of the EU Auctioning Regulation bidding categories eligible to take part in the auctions at EEX are amongst others (installation and aircraft) operators, credit institutions, investment firms and business groupings.

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 period.



Source: EEX, DEHSt
OP = Operators

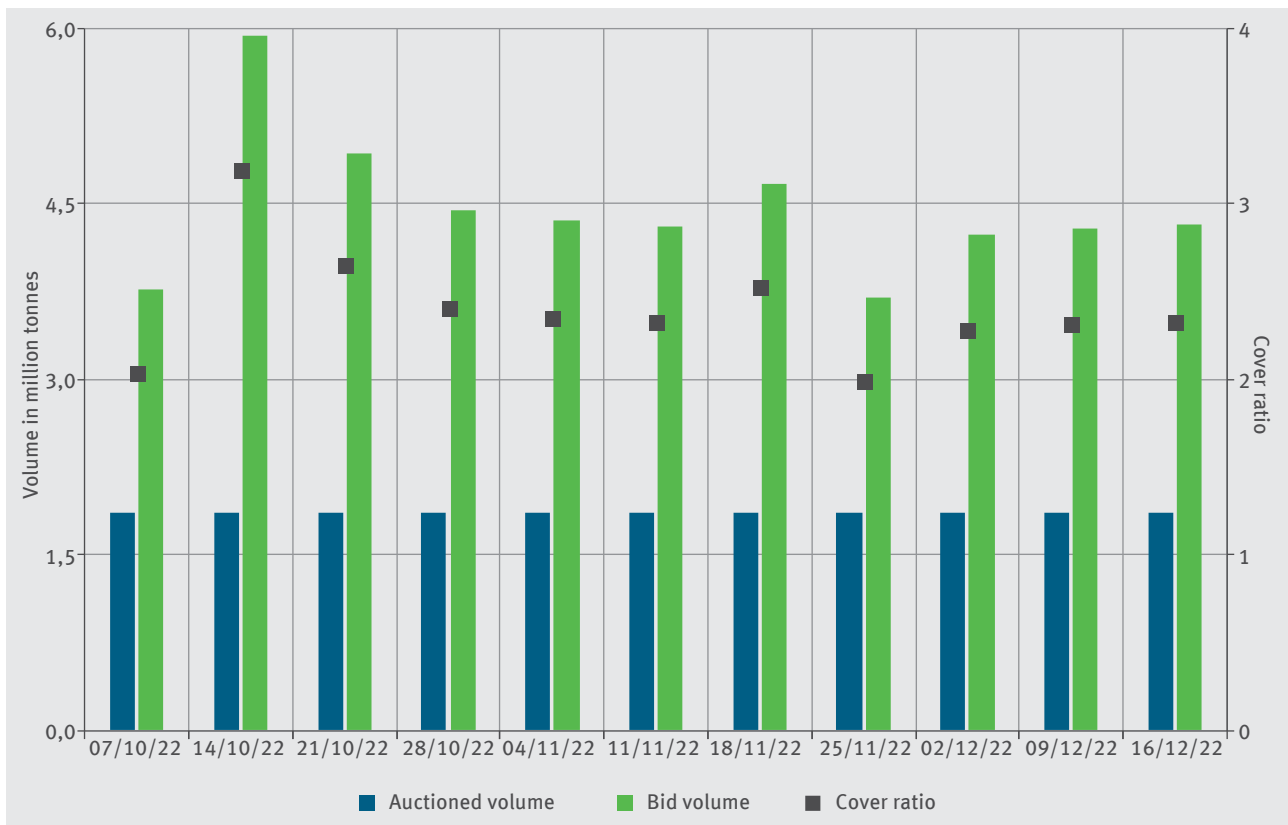
Figure 3: Share of operators among successful bidders and purchased auction volumes over the past 12 months (EUA)

2.2 Volume Demand

During the reporting period, the aggregated bid volumes per auction date fluctuated from 3.7 to 5.9 million allowances. Overall, valid bids totalling about 49 million allowances were entered into trading system in the fourth Quarter. The supply volumes were stable at around 1.9 million allowances per date. The resulting cover ratios during the reporting period ranged between 1.98 and 3.18 (2.39 on average).

The cover ratio in the EUAA auction on 19th October was 2.01 and thus below 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 4: 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 245,000 allowances. The average volume awarded to each successful bidder was about 130,000 allowances.

In the EUAA auction on 19th October the average bid volume per auction participant was about 195,000 allowances. The average volume awarded to each successful bidder was about 145,000 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).

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. 1.9 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 2022, a total of about 20 million EUA were auctioned at EEX for Germany. During the reporting period, the cumulative trading volume in the relevant total market was about 2.38 billion EUA⁵. This comprises the monthly data of the London Energy Brokers' Association (LEBA) on OTC (see also Figure 7).⁶

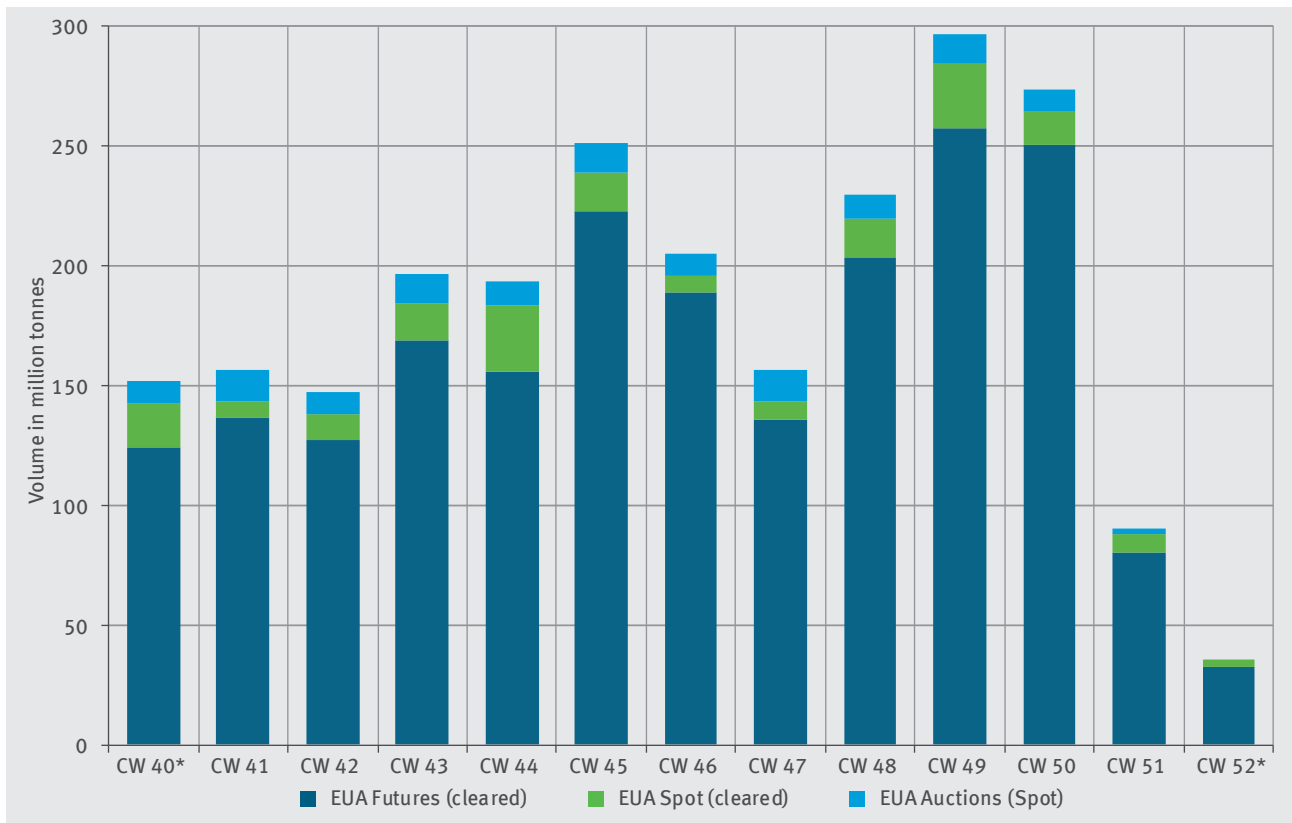
The secondary market trading volume of 2.26 billion EUA was divided into approximately 2.09 billion EUA on the cleared futures market and about 178 million EUA on the cleared spot market.

In the fourth Quarter of 2022, a total of about 121 million allowances were auctioned by Member States on the primary market as spot contracts. With respect to the relevant total market for EUA, around 5 percent of the traded volume was related to auctions (see also Table 3).

5 All emission allowances (EUA) of the fourth trading period traded on the spot and futures markets on the ICE, EEX 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 2022 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.

6 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 7, but not in Figure 5.

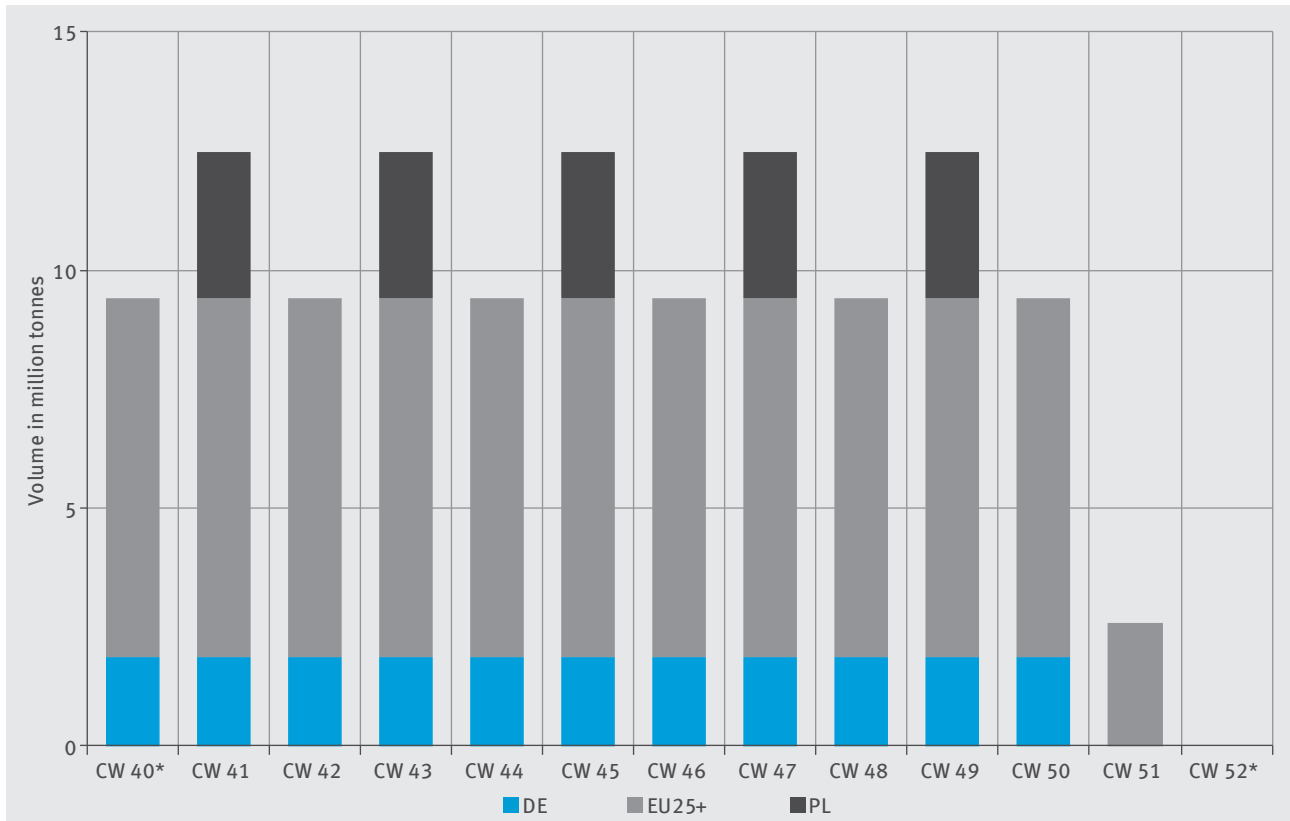
The figure below illustrates the trading volumes separately for different market segments based on calendar weeks (CW).



Source: ICE, EEX, Nasdaq OMX, Refinitiv Eikon, DEHSt
 * CW 40: 03/10/2022–07/10/2022; CW 52: 26/12/2022–30/12/2022

Figure 5: Trading volumes on the primary and secondary market in the fourth Quarter of 2022

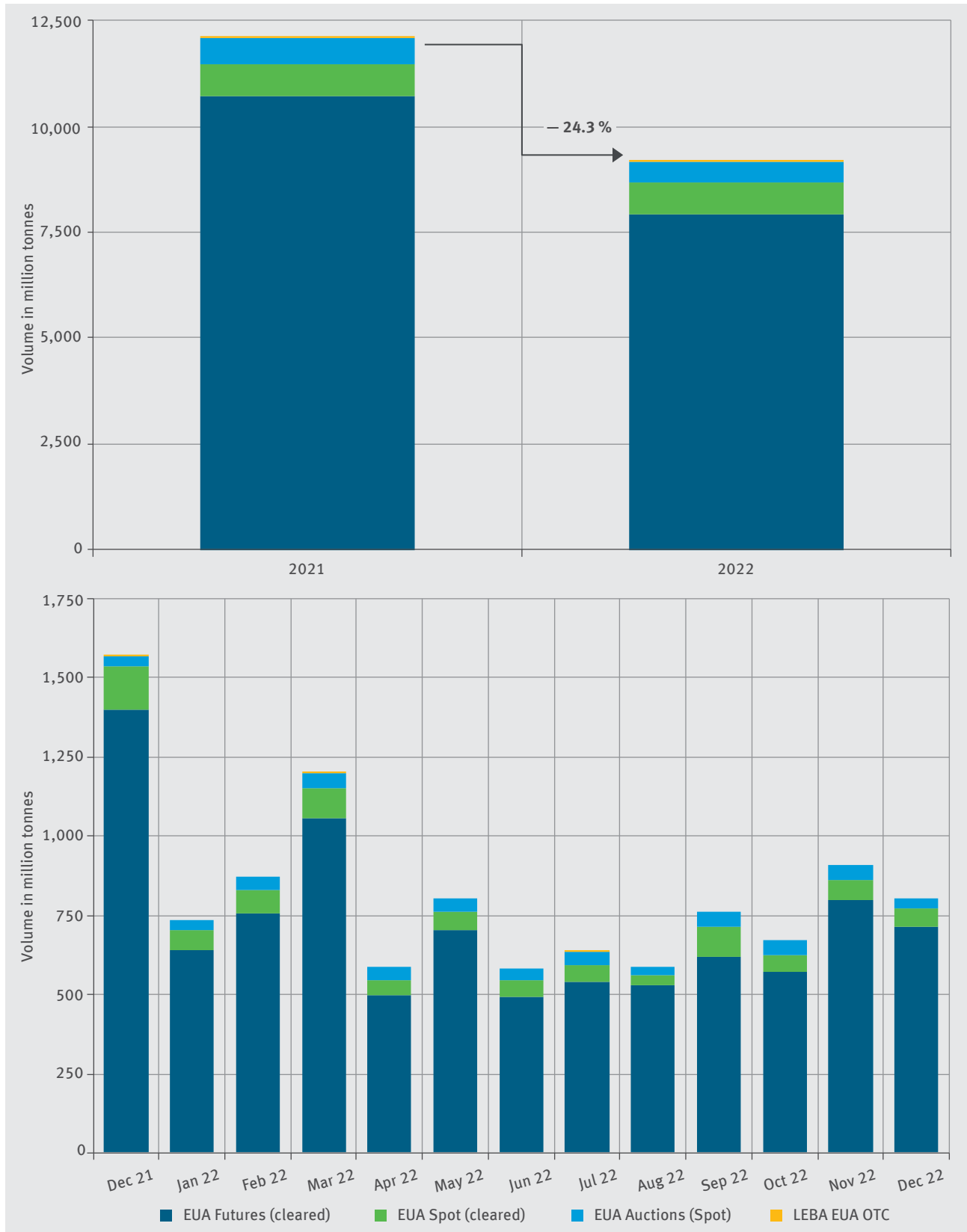
The figure below shows the auction volumes on the primary market per calendar week (CW). In addition to the German auctions, auction volumes of other EU Member States, as well as Norway, Iceland and Liechtenstein, for the EU innovation/modernisation funds are also included in the figure.



Source: EEX, Refinitiv Eikon, DEHSt
 DE = Germany, PL = Poland, EU25+ = EU-Commission on behalf of other member states and Norway, Iceland and Liechtenstein; EU
 * CW 40: 03/10/2022–07/10/2022; CW 52: 26/12/2022–30/12/2022

Figure 6: : Auction volumes on the primary market in the fourth Quarter of 2022 (EUA)

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 2022, the total market volume of about 9.2 billion EUA was about 24 percent below the previous year's level (2021: 12.1 billion EUA).



Source: ICE, EEX, Nasdaq OMX, Refinitiv Eikon, LEBA, DEHSt

Figure 7: 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 2022	Nov 2022	2022	2021
Primary market	EUA Auctions (Spot)	3.6%	5.1%	5.2%	4.8%
Secondary market	EUA Futures (cleared)	88.9%	87.7%	86.6%	88.7%
	EUA Spot (cleared)	7.5%	7.2%	8.2%	6.4%
	LEBA EUA OTC	–	–	< 0.1%	0.1%

Source: ICE, EEX, Nasdaq OMX, Refinitiv Eikon, LEBA, DEHSt

3.2 Trading Volume EUAA

In the fourth Quarter of 2022, about 0.1 million aviation allowances (EUAA) were traded on the secondary market⁷. During the reporting period, about 1.2 million EUAA were auctioned by the countries participating in the EU ETS on the primary market. Further information on the EUAA auction calendars is available on the website of the [European Commission](#).

3.3 Auction 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 ICE Endex 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).

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 € –0.66 (–0.79 percent) and € +0.52 (+0.67 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 € 0.28 or 0.36 percent averaged over all dates.

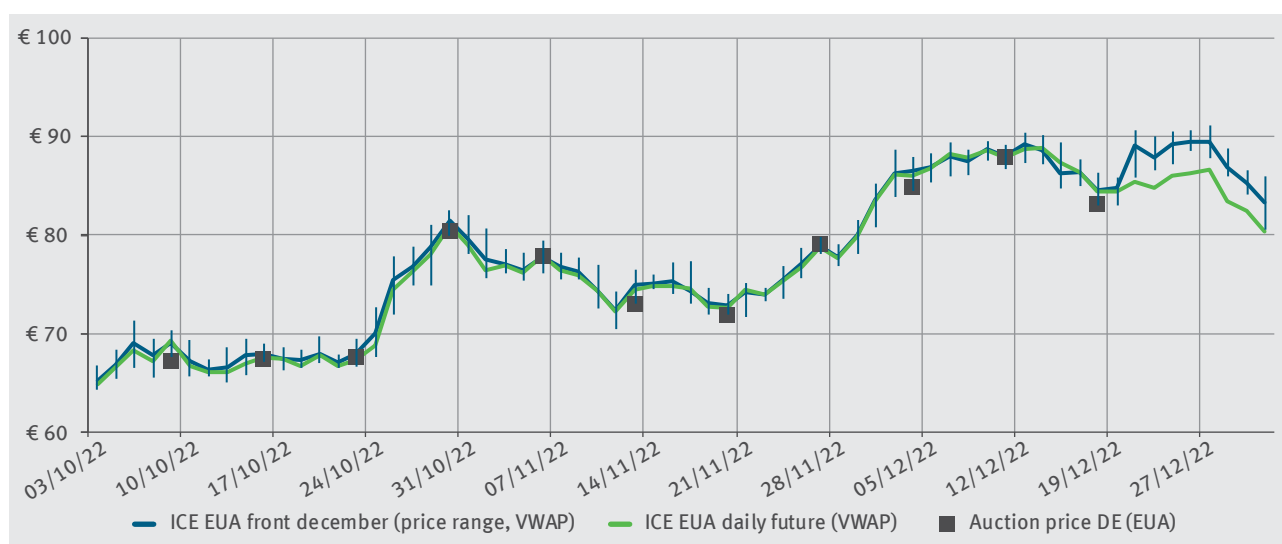
⁷ All aviation allowances (EUAA) traded on the spot and futures markets on the ICE and EEX exchanges are considered. Transactions completed directly on the stock exchange (screen traded) or those bilateral transactions that at least used the stock exchange clearing mechanism are included.

Table 4: Auctions and deviations from secondary market prices in the fourth Quarter of 2022 (EUA)

Date	Contract	Clearing price	Deviation from secondary market	
			Absolute	%
07/10/2022	EUA Spot 4 th TP	€ 67.52	*€ -0.18	*-0.27%
14/10/2022	EUA Spot 4 th TP	€ 67.70	*€ 0.00	*0.00%
21/10/2022	EUA Spot 4 th TP	€ 67.90	*€ 0.36	*0.53%
28/10/2022	EUA Spot 4 th TP	€ 80.76	*€ -0.51	*-0.63%
04/11/2022	EUA Spot 4 th TP	€ 78.14	*€ 0.52	*0.67%
11/11/2022	EUA Spot 4 th TP	€ 73.33	*€ -0.27	*-0.37%
18/11/2022	EUA Spot 4 th TP	€ 72.22	*€ -0.14	*-0.19%
25/11/2022	EUA Spot 4 th TP	€ 79.36	*€ -0.08	*-0.10%
02/12/2022	EUA Spot 4 th TP	€ 85.21	*€ -0.09	*-0.11%
09/12/2022	EUA Spot 4 th TP	€ 88.26	*€ -0.31	*-0.35%
16/12/2022	EUA Spot 4 th TP	€ 83.41	*€ -0.66	*-0.79%
Mean absolute deviation			€ 0.25	0.33%

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

The following figure shows an overview of the price development for emission allowances on the secondary 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”)⁸. Rather than following the common practice of considering only settlement prices, our analysis takes into account all trades completed at the exchanges⁹. The following graphic is based on volume-weighted daily average trading prices (VWAP). In addition, the daily trading range of the front-December contract is also shown in the chart (vertical price line). In the fourth Quarter of 2022 the price fluctuated within an interval between € 64.25 and € 91.18¹⁰. Overall, the price trend in the reporting period was characterized by an upward movement.



Source: ICE, EEX, Refinitiv Eikon, DEHSt
DE = Germany

Figure 8: ICE secondary market prices and EEX auction clearing prices (EUA)

- 8 ICE EUA Dec22 contract expired on 19/12/2022.
- 9 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.
- 10 The volume-weighted average prices (VWAP) for the ICE EUA front-December future and the ICE daily future contract is based on data from Refinitiv Eikon.

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 2022 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 2022 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 \(Access to the auctions\)](#).

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 to 18:00 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 \(Rules and Regulations\)](#).

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