



# Auctioning (EU ETS) German Auctioning of Emission Allowances

First Quarter 2023



**Umwelt  
Bundesamt**



**DEHSt**  
Deutsche  
Emissionshandelsstelle

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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 2023 auction calendar is published on the [EEX website](#).

The following table summarises the key data of the German auctions on the EEX in 2023:1

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) <sup>1</sup>	907,000 EUAA
Auction volume per auction	<b>January–July: 1,939,500 EUA</b> August: 970,000 EUA September–December: 3,552,500 EUA (provisional) <sup>1</sup>	907,000 EUAA on 18/10/2023
Auction frequency	Weekly (Fridays, 09:00 to 11:00 CET)	On 18/10/2023 (09:00 to 11:00 CET)
Gebotsgröße	500 EUA/EUAA	
Versteigerungsmodus	Single-round, uniform-price procedure with a closed order book	

## Current Development

### 750<sup>th</sup> German primary market auction successfully carried out at EEX

On 3<sup>rd</sup> of March 2023, the 750<sup>th</sup> German primary market auction was successfully carried out on EEX. Since 5<sup>th</sup> of January 2010, EEX has auctioned a total of around 1.6 billion emission allowances on behalf of the Federal Republic of Germany. Revenues totalling around € 30 billion were generated. These funds have been used almost completely to finance national and international climate protection measures.

Auctions have established themselves as a cornerstone of the European Emissions Trading System. Overall, the auctions have been carried out almost entirely in line with the development of the overall market: Price deviations between primary market auctions and the secondary market were mainly in the tenths of a percent range.

1 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 First Quarter of 2023

Between January and March, twelve auctions of emissions allowances (EUA) of the fourth trading period were successfully carried out for Germany at the EEX.

Overall, about **23 million EUA** with a total value of almost **€ 2.06 billion** were auctioned. This results in a volume-weighted average price per allowance of **€ 88.47** (plus 15 percent compared to the previous quarter). Thus, the **highest quarterly revenue since the start of sales/auctioning in 2008** was achieved in the first Quarter of 2023. The deviations of the clearing prices from the current prices on the secondary market fluctuated between -0.40 and +0.67 percent (see also Chapter 3.3).

Overall, valid bids totalling about 51 million allowances were entered into the trading system across the twelve EUA auction dates. Thus, the average cover ratio in the reporting period was 2.18 (see also Chapter 2.2).

The average participation number of 20 bidders was above the level of the previous quarter (18). The average number of successful bidders was also above the previous quarter's level (14) at 15, (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 first Quarter of 2023**

Date	Auction volume	Bid volume	Cover ratio	Bidders	Successful bidders	Price	Revenue
13/01/2023	1,939,500	4,099,500	2.11	22	19	€ 76.42	€ 148,216,590
20/01/2023	1,939,500	3,200,500	1.65	24	21	€ 81.01	€ 157,118,895
27/01/2023	1,939,500	4,815,000	2.48	20	14	€ 86.71	€ 168,174,045
<b>January</b>	<b>5,818,500</b>	<b>12,115,000</b>	<b>*2.08</b>	<b>*22</b>	<b>*18</b>	<b>*€ 81.38</b>	<b>€ 473,509,530</b>
03/02/2023	1,939,500	4,483,000	2.31	22	15	€ 91.15	€ 176,785,425
10/02/2023	1,939,500	3,960,500	2.04	17	14	€ 89.70	€ 173,973,150
17/02/2023	1,939,500	3,632,000	1.87	17	14	€ 93.69	€ 181,711,755
24/02/2023	1,939,500	4,815,000	2.48	20	11	€ 95.83	€ 185,862,285
<b>February</b>	<b>7,758,000</b>	<b>16,890,500</b>	<b>*2.18</b>	<b>*19</b>	<b>*14</b>	<b>*€ 92.59</b>	<b>€ 718,332,615</b>
03/03/2023	1,939,500	4,221,500	2.18	18	16	€ 88.81	€ 172,246,995
10/03/2023	1,939,500	4,187,000	2.16	19	15	€ 95.16	€ 184,562,820
17/03/2023	1,939,500	4,831,000	2.49	20	13	€ 86.50	€ 167,766,750
24/03/2023	1,939,500	3,889,000	2.01	20	17	€ 88.09	€ 170,850,555
31/03/2023	1,939,500	4,510,000	2.33	19	15	€ 88.61	€ 171,859,095
<b>March</b>	<b>9,697,500</b>	<b>21,638,500</b>	<b>*2.23</b>	<b>*19</b>	<b>*15</b>	<b>*€ 89.43</b>	<b>€ 867,286,215</b>
<b>Q1 2023</b>	<b>23,274,000</b>	<b>50,644,000</b>	<b>*2.18</b>	<b>*20</b>	<b>*15</b>	<b>*€ 88.47</b>	<b>€ 2,059,128,360</b>

Source: EEX, DEHSt  
\*average

## 1.2 Overview of the entire year 2023

In the first Quarter of the current year a total of about **23 million EUA** with a total value of almost **€ 2.06 billion** were auctioned at the EEX for Germany. This results in a volume-weighted average price per allowance of **€ 88,47**.

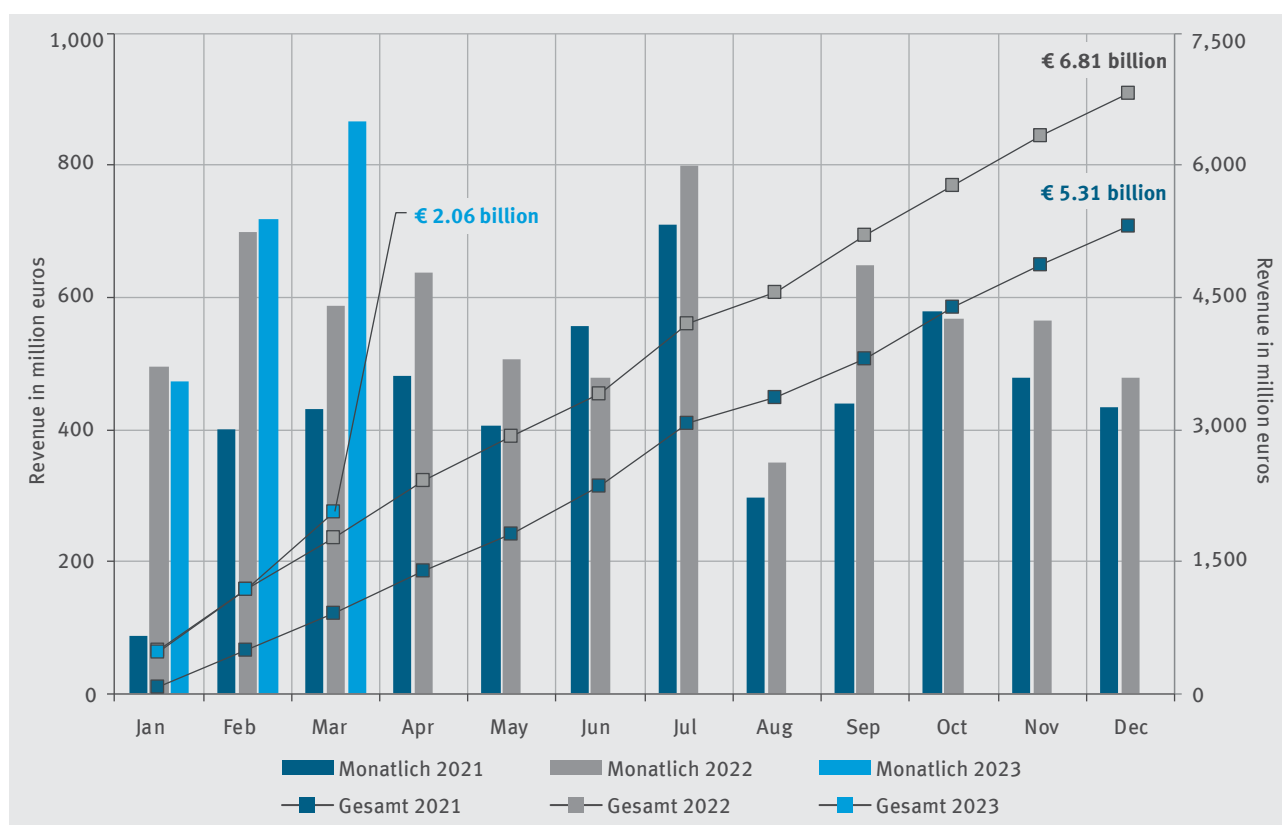
The following table summarises the auction results on a monthly basis.

Table 2: Overview of the entire year 2023

Month	Type	Auction volume	Bid volume	Cover ratio	Bidders	Successful bidders	Price	Revenue
January	EUA	5,818,500	12,115,000	*2.08	*22	*18	*€ 81.38	€ 473,509,530
February	EUA	7,758,000	16,890,500	*2.18	*19	*14	*€ 92.59	€ 718,332,615
March	EUA	9,697,500	21,638,500	*2.23	*19	*15	*€ 89.43	€ 867,286,215
<b>Total</b>		<b>23,274,000</b>	<b>50,644,000</b>	<b>*2.18</b>	<b>*20</b>	<b>*15</b>	<b>*€ 88.47</b>	<b>€ 2,059,128,360</b>

Source: EEX, DEHSt  
\* average

The following figure shows the German EUA/EUAA auction revenues in the period since 2021. In addition to the monthly values, the cumulative total revenues of the individual years are also shown in the chart. German revenues in the first Quarter of 2023 were around 16 percent higher than the previous record result from the first Quarter of 2022 (€ 1.78 billion). Since 2012 German auction revenues flow entirely into the Climate and Transformation Fund (KTF).<sup>2</sup>



Source: EEX, DEHSt

Figure 1: Auction revenues (EUA+EUAA) from 2021 to 2023

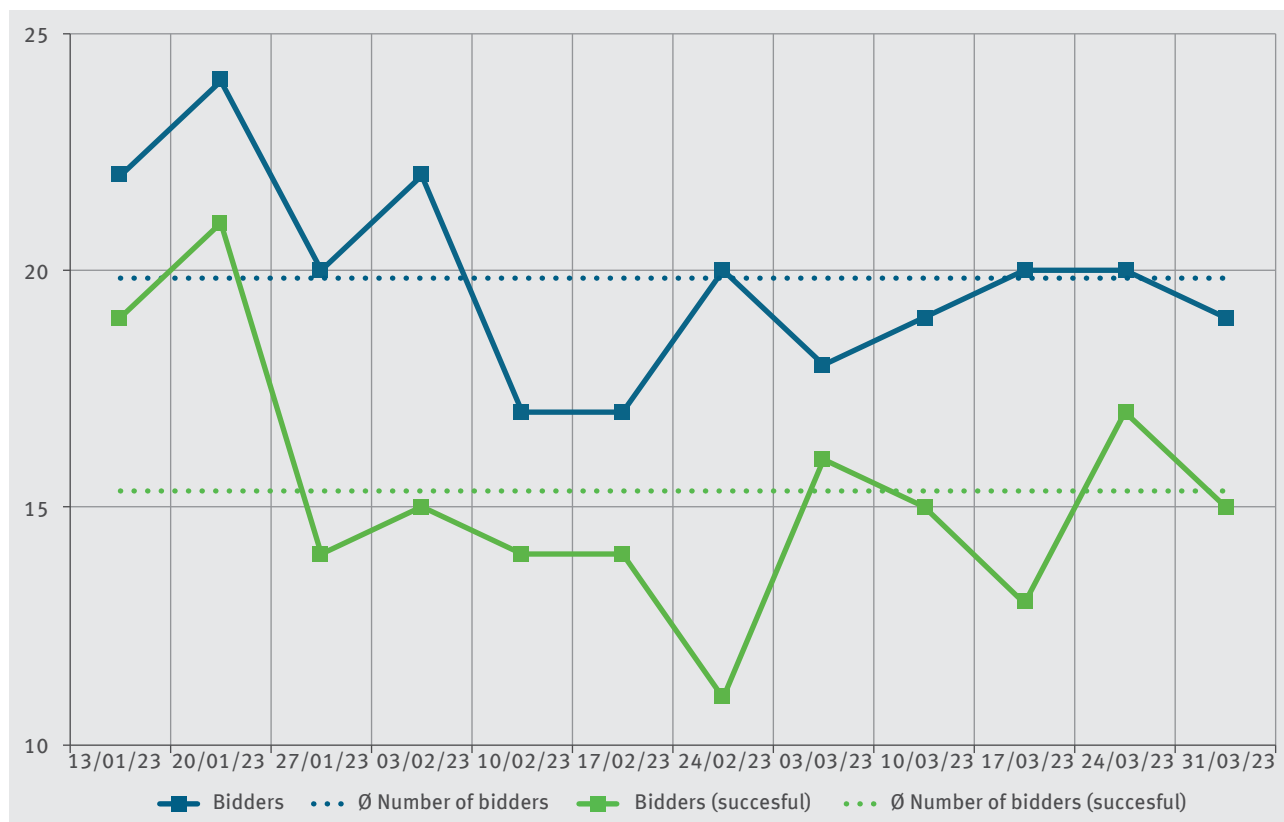
<sup>2</sup> Until July 2022 – Energy and Climate Fund (EKF).

## 2 Bidder Participation

### 2.1 Participation

The number of participants in the German EUA auctions in the first Quarter averaged across all dates was about 20 bidders. The average number of successful bidders was about 15. Participation in the auctions fluctuated between 17 and 24 bidders during the reporting period. The number of successful participants ranged from 11 to 21. There was no auction in which all participating bidders were successful.

The following figure illustrates EUA auction participation over time.



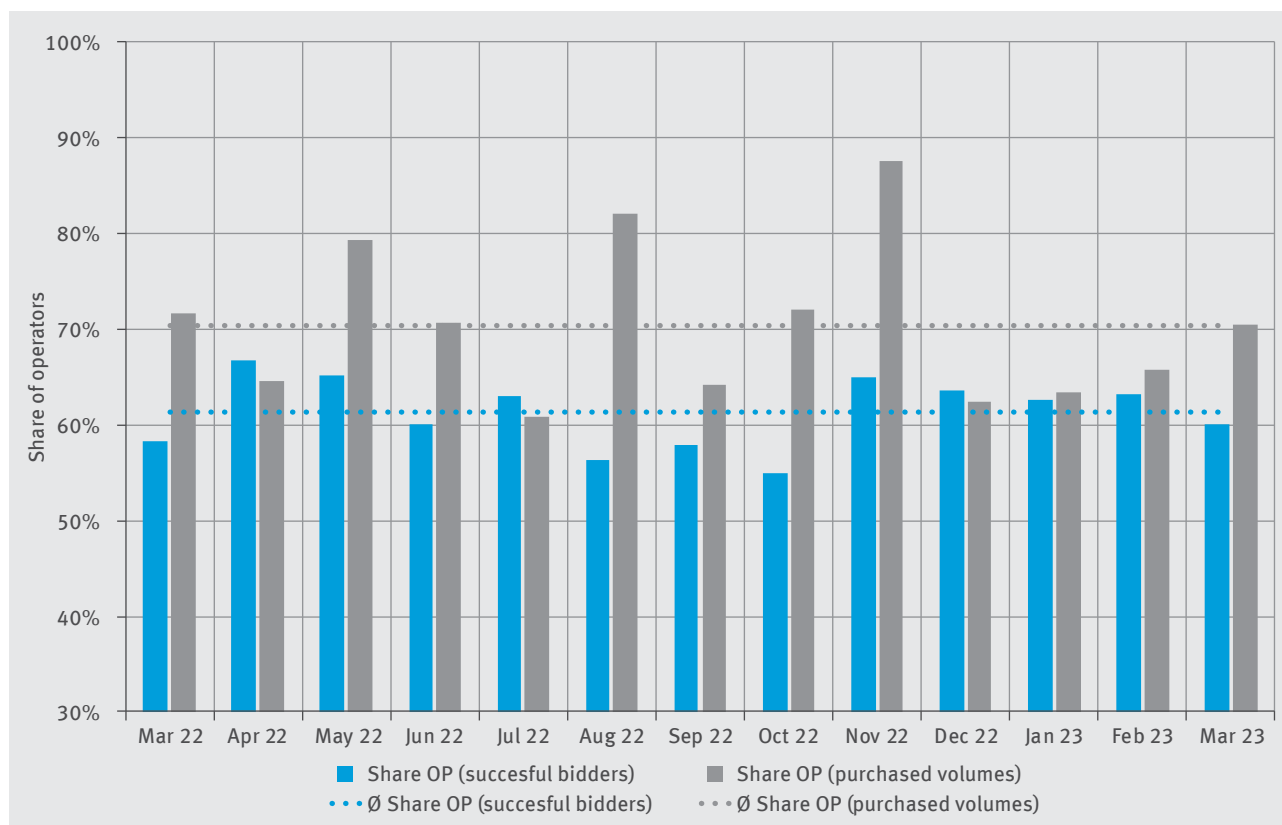
Source: EEX, DEHSt

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

By the end of March 2023, a total of 94 trading members of EEX had been authorized to submit bids in the primary market auctions. In March, a total of 25 different bidders were successful in the German primary market auctions. Out of the 25 of those bidders, 15 were operators (i.e. operators of ETS covered installations or aircraft operators), which accounts for 60 percent of all successful bidders.<sup>3</sup> Overall, operators purchased approximately 70 percent of the auctioned volumes in March 2023. The moving averages of the past 12 months for both parameters are at around 61 and 70 percent respectively.

<sup>3</sup> 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

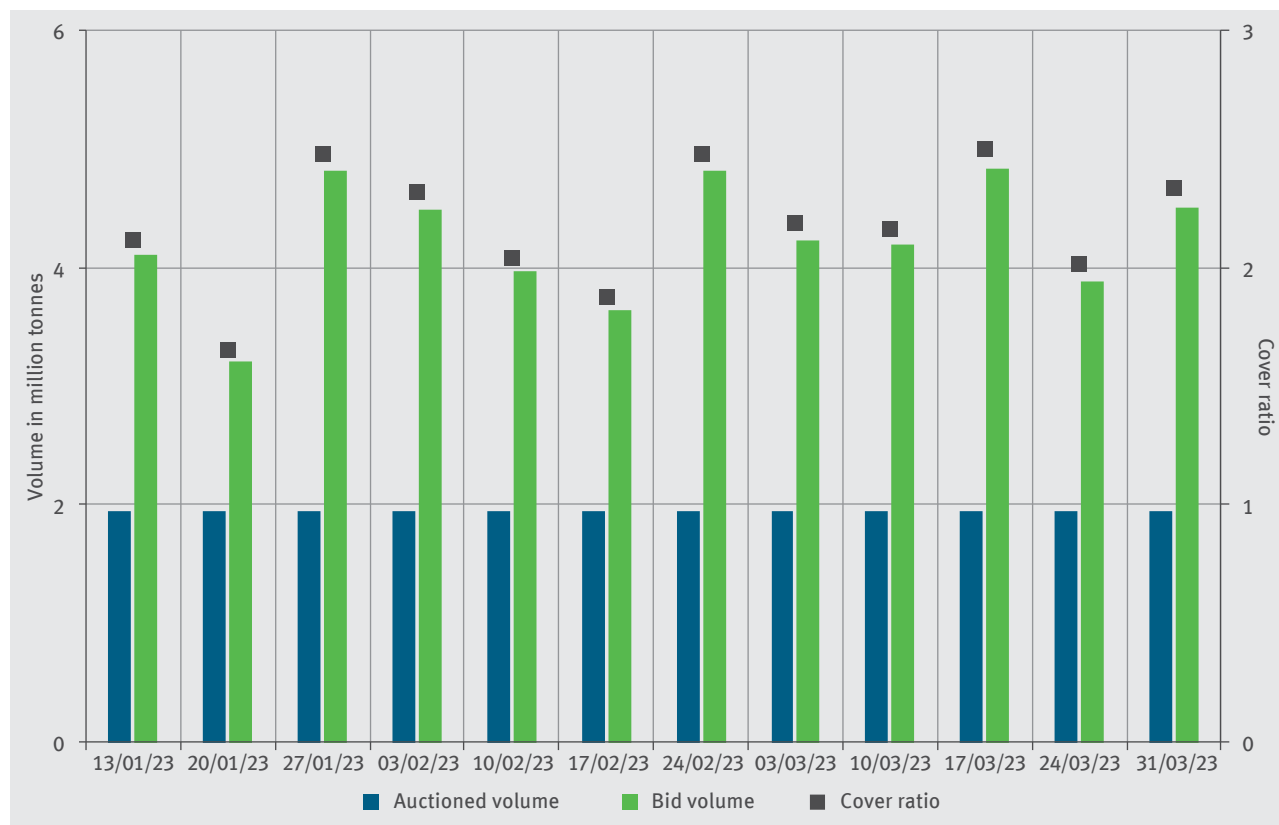
Figure 3: Share of operators among successful bidders and purchased auction volumes over the past 12 months (EUA)

## 2.2 Volume Demand

During the reporting period, the aggregated bid volumes per auction date fluctuated from 3.2 to 4.8 million allowances. Overall, valid bids totalling about 51 million allowances were entered into trading system in the first Quarter. The supply volumes were stable at around 1.9 million allowances per date. The resulting cover ratios during the reporting period ranged between 1.65 and 2.49 (2.18 on average).



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 first Quarter was about 215,000 allowances. The average volume awarded to each successful bidder was about 125,000 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

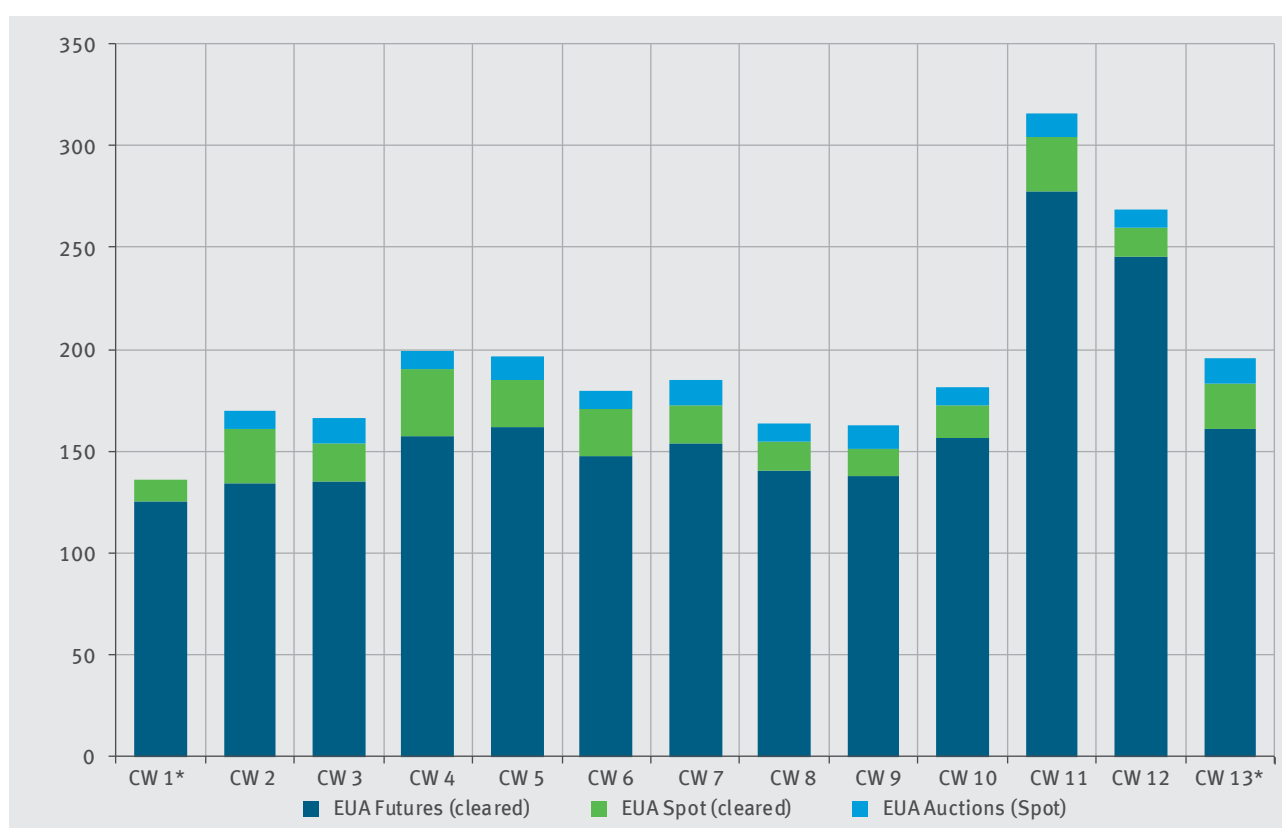
### 3.1 Trading Volume EUA

In the first Quarter of 2023, a total of about 23 million EUA were auctioned at EEX for Germany. During the reporting period, the cumulative trading volume in the relevant total market was about 2.52 billion EUA.<sup>4</sup> This comprises the monthly data of the London Energy Brokers' Association (LEBA) on OTC (see also Figure 7).<sup>5</sup>

The secondary market trading volume of 2.39 billion EUA was divided into approximately 2.13 billion EUA on the cleared futures market and about 260 million EUA on the cleared spot market. Overall, secondary market trading volumes in March 2023 reached the highest level since March 2022, exceeding the one billion EUA mark.

In the first Quarter of 2023, a total of about 127 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).

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



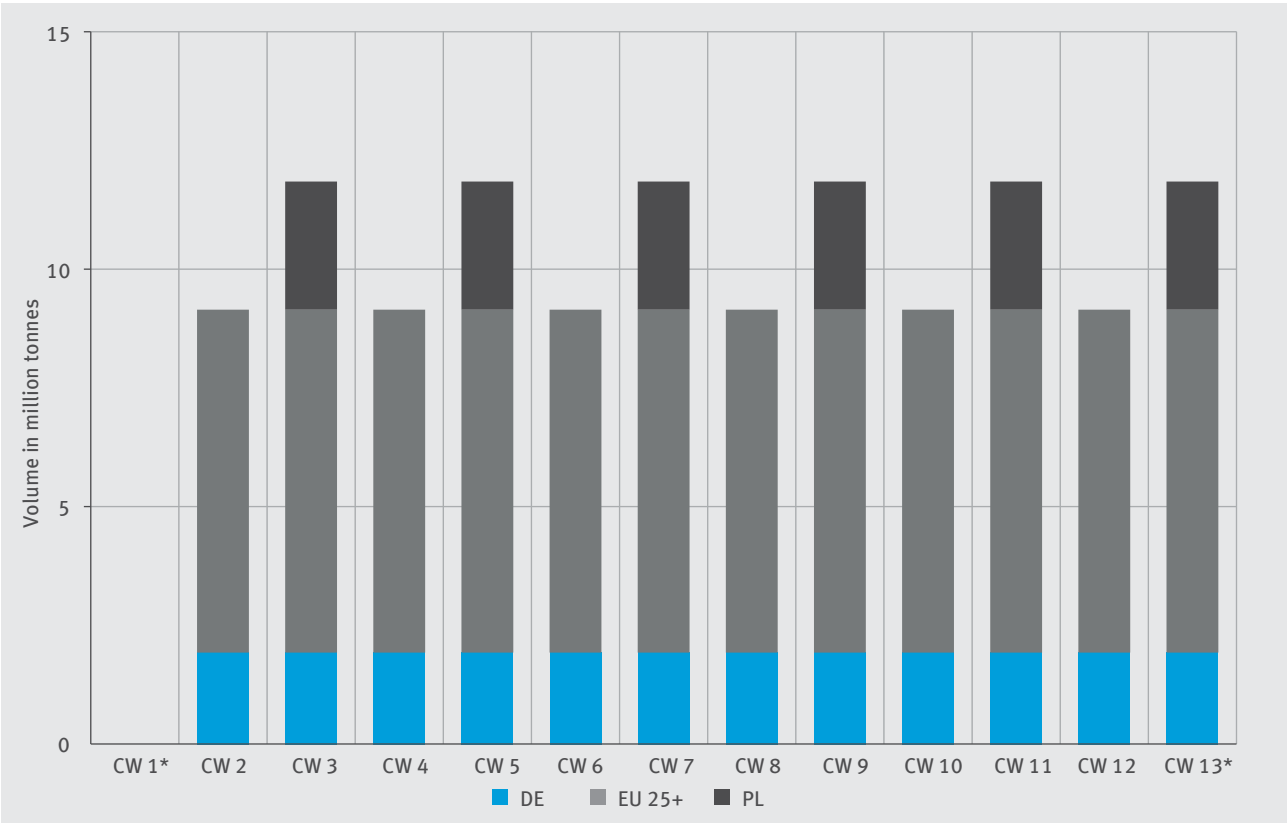
Source: : ICE, EEX, Nasdaq OMX, Refinitiv Eikon, DEHSt  
 \* CW 1: 02/01/2023–06/01/2023; CW 13: 27/03/2023–31/03/2023

Figure 5: Trading volumes on the primary and secondary market in the first Quarter of 2023 (EUA)

4 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 first Quarter of 2023 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.

5 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.

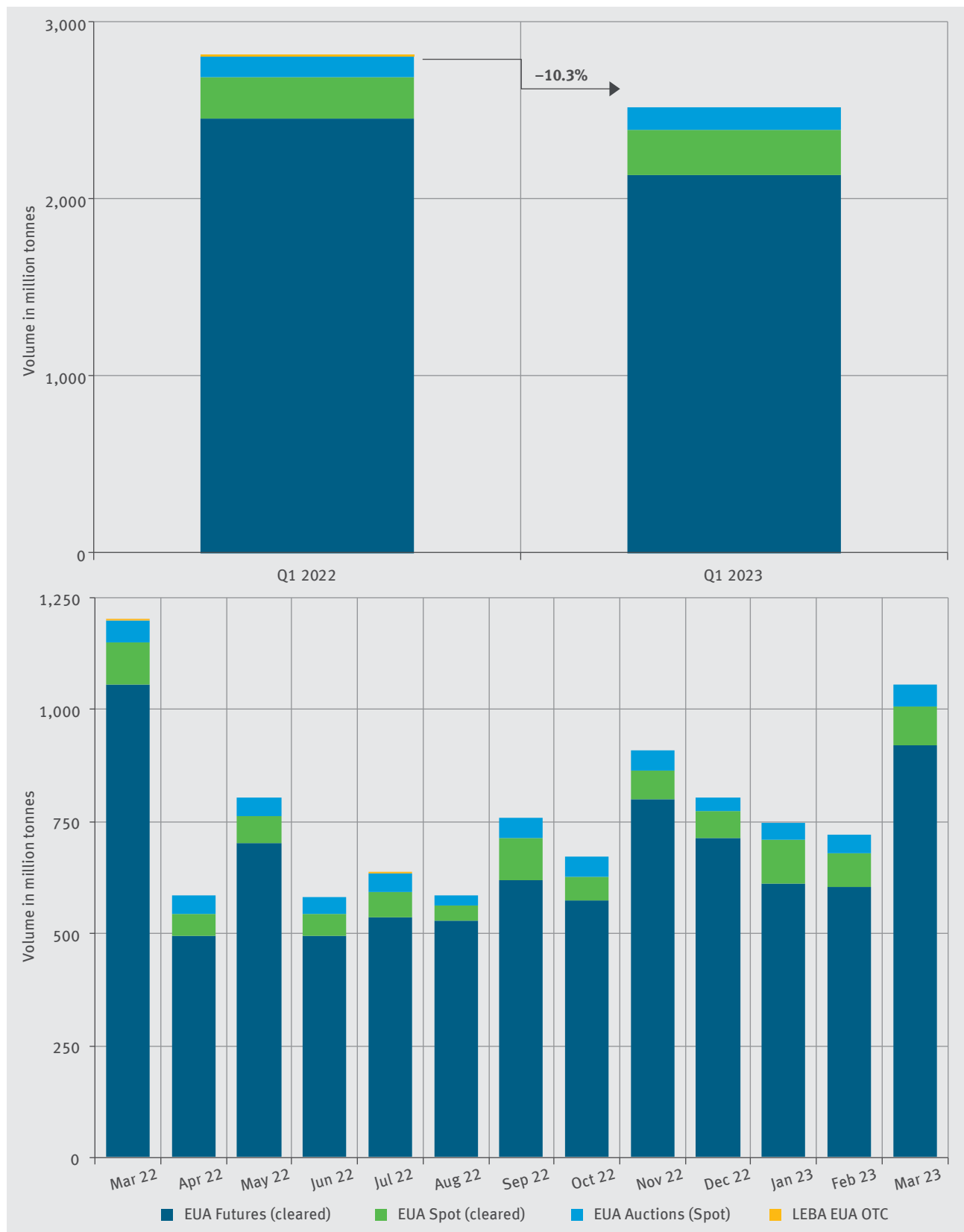
The following figure shows the auction volumes on the primary market per calendar week (CW). In addition to the German auctions, auction volumes of other EU Member States, as well as Norway, Iceland and Liechtenstein, for the EU innovation/modernisation funds are also included in the figure.



Source: EEX, Refinitiv Eikon, DEHSt  
Germany, PL = Poland, EU25+ = EU-Commission on behalf of other member states and Norway, Iceland and Liechtenstein; EU Innovation/Modernisation funds  
\* CW 1: 02/01/2023–06/01/2023; CW 13: 27/03/2023–31/03/2023

Figure 6: Auction volumes on the primary market in the first Quarter of 2023 (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 the first Quarter of 2023, the total market volume of about 2.52 billion EUA was about 10 percent below the previous years level (Q1 2022: 2.81 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		Mar 2023	Feb 2023	Q1 2023	Q1 2022
Primary market	EUA Auctions (Spot)	4.7%	5.8%	5.0%	4.5%
Secondary market	EUA Futures (cleared)	87.3%	83.5%	84.7%	87.4%
	EUA Spot (cleared)	8.1%	10.7%	10.3%	8.2%
	LEBA EUA OTC	–	–	–	< 0.1%

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

## 3.2 Trading Volume EUAA

In the first Quarter of 2023, no aviation allowances (EUAA) were traded on the secondary market<sup>6</sup>. During the same period, about 1.6 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 € –0.38 (–0.40 percent) and € +0.64 (+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 0.32 percent averaged over all dates.

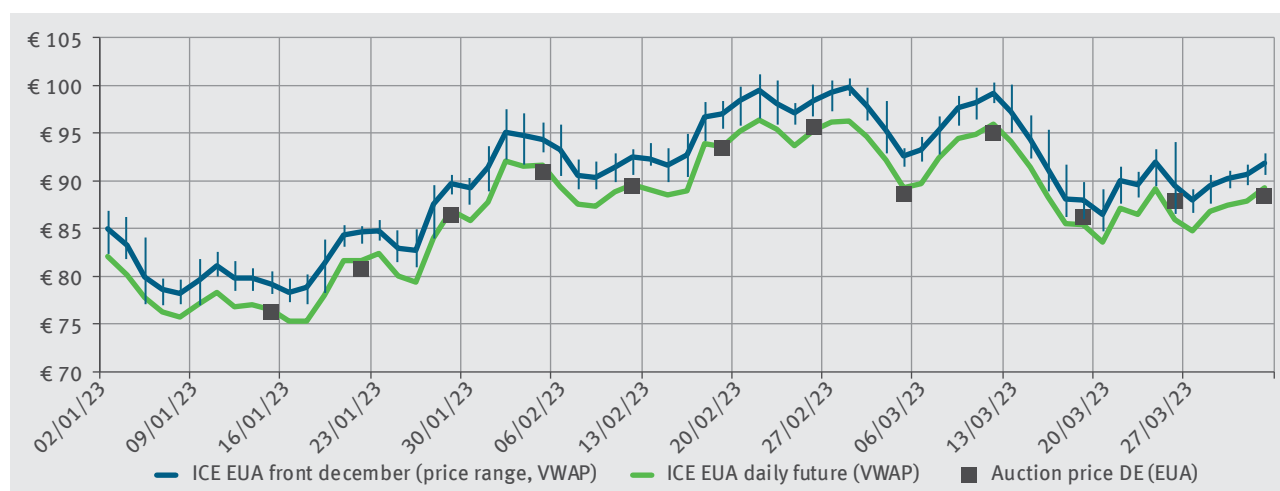
<sup>6</sup> All aviation allowances (EUAA) traded on the spot and futures market on EEX are considered. Transactions completed directly on the stock exchange (screen traded) or those bilateral transactions that at least used the stock exchange clearing mechanism are included. By the end of 2022, ICE has ceased trading EUAA contracts.

Table 4: Auctions and deviations from secondary market prices in the first Quarter of 2023 (EUA)

Date	Contract	Clearing price	Deviation from secondary market	
			Absolute	%
13/01/2023	EUA Spot 4 <sup>th</sup> TP	€ 76.42	*€ -0.27	*-0.35%
20/01/2023	EUA Spot 4 <sup>th</sup> TP	€ 81.01	*€ -0.19	*-0.23%
27/01/2023	EUA Spot 4 <sup>th</sup> TP	€ 86.71	*€ 0.42	*0.49%
03/02/2023	EUA Spot 4 <sup>th</sup> TP	€ 91.15	*€ 0.36	*0.40%
10/02/2023	EUA Spot 4 <sup>th</sup> TP	€ 89.70	*€ -0.14	*-0.16%
17/02/2023	EUA Spot 4 <sup>th</sup> TP	€ 93.69	*€ -0.38	*-0.40%
24/02/2023	EUA Spot 4 <sup>th</sup> TP	€ 95.83	*€ 0.64	*0.67%
03/03/2023	EUA Spot 4 <sup>th</sup> TP	€ 88.81	*€ -0.26	*-0.29%
10/03/2023	EUA Spot 4 <sup>th</sup> TP	€ 95.16	*€ -0.18	*-0.19%
17/03/2023	EUA Spot 4 <sup>th</sup> TP	€ 86.50	*€ 0.10	*0.12%
24/03/2023	EUA Spot 4 <sup>th</sup> TP	€ 88.09	*€ -0.25	*-0.28%
31/03/2023	EUA Spot 4 <sup>th</sup> TP	€ 88.61	*€ 0.22	*0.25%
Mean absolute deviation			€ 0.28	0.32%

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”).<sup>7</sup> Rather than following the common practice of considering only settlement prices, our analysis takes into account all trades completed at the exchanges.<sup>8</sup> The 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 first Quarter of 2023 the price of the front-December contract fluctuated within an interval between € 77 and **€ 101.25**, the **highest level since the start of the EU ETS in 2005**.<sup>9</sup> Thus, **the € 100 mark was surpassed for the first time** in February 2023. 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)

<sup>7</sup> ICE EUA Dec23 contract expires on 18/12/2023.

<sup>8</sup> 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.

<sup>9</sup> 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 first Quarter of 2023 as follows (excerpt):

*“Within their surveillance for the auctioning of emission allowances on behalf of the German Environment Agency at the EEX in the first Quarter of 2023 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](mailto: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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