

Auctions by the *Common Auction Platform*

April, May, June 2023

Auction platform: European Energy Exchange (EEX)

Member States: This report has been prepared on behalf of the following Member States participating in the joint action: Austria, Belgium, Bulgaria, Republic of Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden (participating Member States), and Poland.

Auction dates/reporting period:

General Allowances:

3, 4, 6, 11, 12(PL), 13, 17, 18, 20, 24, 25, 26(PL), 27 April 2023;

2, 4, 8, 9, 10(PL), 11, 15, 16, 22, 23, 24(PL), 25, 30 May 2023;

1, 5, 6, 7(PL), 8, 12, 13, 15, 19, 20, 21(PL), 22, 26, 27, 29 June 2023;

Aviation Allowances:

No auctions in April 2023;

17 May 2023;

No auctions in June 2023;

Cancelled auctions:

No auctions in April 2023;

No auctions in May 2023;

No auctions in June 2023;

Auctioning is the default method of allocating allowances within the EU emissions trading system (EU ETS). Since the start of the *Third trading period* in 2013, over 6 billion allowances allocated under the EU ETS have been auctioned. Auctioning of emission allowances at that scale is unprecedented and delivers valuable experience for auction design in other carbon markets and for other environmental assets.

Auctioning is the most transparent and efficient method of allocating allowances and puts into practice the principle that the polluter should pay.

The auctions are conducted pursuant to the modalities stipulated in the *Auctioning Regulation*. The European Energy Exchange (EEX) in Leipzig is the common platform for the large majority of countries participating in the EU ETS. EEX also acts as Germany's auction platform. Poland may appoint an opt-out auction platform but is using for the time being the common auction platform. Allowances for Northern Ireland are also auctioned on EEX.

The numbers of *General Allowances* to be auctioned by each State on behalf of which they are auctioned are determined on the basis of their historical share of emissions from installations covered by the EU ETS.

At least half of auctioning revenues, or the equivalent in financial value, and all of the revenues from auctioning allowances to the aviation sector, should be used by the Member States to combat climate change in Europe or other countries.

For further information: https://ec.europa.eu/clima/eu-action/eu-emissions-trading-system-eu-ets/auctioning_en

Editor's note:

This report has been prepared by the Commission on behalf of the participating Member States and Poland assembling for publication the information provided by the common auction platform on a monthly basis for those Member States, in accordance with Article 10(4) of the ETS Directive.

Methodology: For reasons of confidentiality and proper enforcement of the applicable rules, the report refers to reporting on the auctions held based on information provided by EEX. EEX is consulted before each publication. Any data not directly related to the auctions is based only on public reports.

The report is in accordance with the template agreed with the participating Member States.

Disclaimer: The authors have made every effort to ensure that the information provided is complete, correct and precise for the reporting period. Nevertheless, the report is based on limited information available to the authors in a market context where much information has to remain confidential. The authors did not actively verify the information and EEX's compliance with the specific rules and provisions applicable under European or national law. Therefore, the authors and the Member States on whose behalf this report was drafted deny any responsibility or liability whatsoever for its contents, regardless of the nature of such contents. Any reliance by any person or entity on the information provided in this report is solely at that person's or entity's own risk. Monthly averages provided are weighted by each auction's auction volume, unless otherwise indicated.

Glossary: terms and expressions written in *italics* are included in the glossary.

Introduction

The reports include data on the auctions performed by the *common auction platforms* on behalf of the *participating Member States* and Poland.

The auctions for the *participating Member States* were conducted by EEX in its capacity as *Common Auction Platform* appointed pursuant to Article 26(2) of the Auctioning Regulation (also referred to as transitional common auction platform or TCAP) until 18 August 2016 and since then by EEX appointed as *Common Auction Platform* pursuant to Article 26(1) of the Auctioning Regulation (also referred to as second common auction platform or CAP2). On 4 November 2020, the European Commission signed a five-year contract with EEX and its clearing system for the services of the third common auction platform (CAP3) under the EU Emissions Trading System (EU ETS).

In accordance with the second subparagraph of Article 30(7) of the Auctioning Regulation, pending the procurement, appointment and listing of its opt-out auction platform, Poland concluded in December 2020 an agreement with EEX to make use of the common auction platform to auction its share of allowances in the absence of listing of its auction platform.

The member states of the European Free Trade Association (EFTA) that are Party to the European Economic Area (EEA)¹ started on 3 June 2019 making use of the *Common Auction Platform* by aggregating their volumes to those auctioned on behalf of the *participating Member States*.

¹ Iceland, Liechtenstein and Norway.

Executive summary

In the reporting period, EEX, in its capacity as the *Common Auction Platform (CAP3)*, conducted auctions of *general allowances* and *aviation allowances* for the *fourth trading period* on behalf of the *participating Member States*. During this period, EEX held auctions for *general allowances* and *aviation allowances* on behalf of Poland.

All auctions were held successfully, in line with the Auctioning Regulation. No irregularities or deviations from the requirements were observed. The table below contains a summary of the information concerning the conducted auctions.

The April, May, June 2023 auctions at a glance:

	General Allowances			Aviation Allowances		
	Apr	May	Jun	Apr	May	Jun
General						
Number of auctions	13	13	15	-	1	-
Total volume auctioned	31,851,000	31,851,000	36,670,000	-	775,500	-
Amount raised from the auctions (€)	2,862,689,280	2,668,676,670	3,118,311,030	-	66,367,290	-
Average Auction Clearing Price (€/allowance)	89.88	83.79	85.04	-	85.58	-
Total bid volume	64,478,500	63,620,000	70,987,000	-	2,362,500	-
Average Cover ratio	2.0	2.0	1.9	-	3.1	-
Monthly HHI	1,031	1,343	1,210	-	2,245	-
Participation						
Number of eligible bidders	94	94	94	94	94	94
Number of participating bidders ⁽¹⁾	32	30	30	-	15	-
Number of successful bidders ⁽¹⁾	30	26	25	-	7	-
Average number of bidders per auction	19.9	20.1	20.3	-	15.0	-

Average number of successful bidders per auction	15.0	14.4	14.4		-	7.0	-
Auction data							
Average total volume bid per bidder per auction	250,996	243,965	234,781		-	157,500	-
Average bid size (volume per bid)	49,791	54,897	56,493		-	40,733	-
Average volume won per bidder per auction	171,999	176,424	175,945		-	110,786	-
Average range of bids (€)	26.26	20.85	41.65		-	78.50	-
Cancelled Auctions	0	0	0		-	0	-

(1): Number of unique individual bidders or unique successful bidders present in a whole month.

1. Results of the auctions

The total revenues from the auctions of general allowances accrued to the participating Member States, Poland and Northern Ireland from the start of the third trading period auctions (November 2012) to June 2023 are EUR 124,002,319,710, and of aviation allowances EUR 1,096,858,960. Looking exclusively at the fourth trading period (January 2021 - June 2023) the total revenues from the auctions of general allowances are EUR 74,918,584,355 and of aviation allowances EUR 616,470,620. Further data is provided in Annex 1.

Information on *general allowances'* auctions is provided in section 1.1, and on *aviation allowances* in section 1.2 hereafter. Detailed information per auction covered by the present report is available in the EEX website².

1.1. General allowances auctions

1.1.1. Clearing prices and participation - general allowances

An overview of the auction results for the *participating Member States* and Poland is provided in Table 1.

Table 1: General allowances - main statistics on the results of the auctions per month

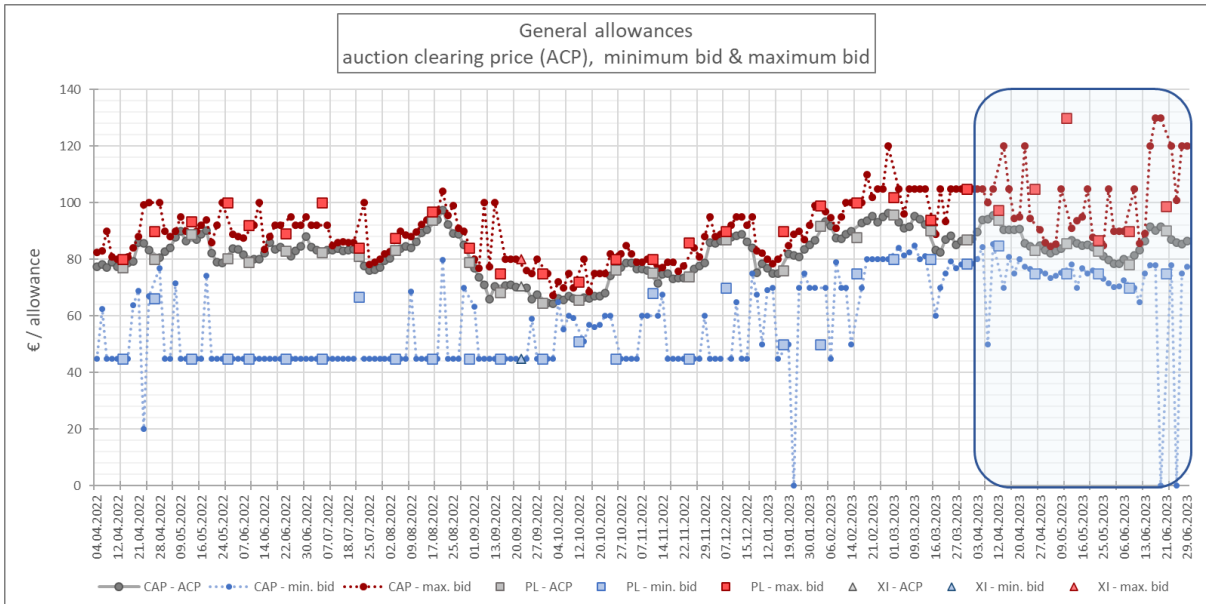
Month	Total auction volume	Total bid volume	Total revenue (€)	Average Cover ratio[1]	Average number of bidders	Average number of successful bidders	Average auction clearing price (€)[2]
Jun 23	36,670,000	70,987,000	3,118,311,030	1.9	20.3	14.4	85.04
May 23	31,851,000	63,620,000	2,668,676,670	2.0	20.1	14.4	83.79
Apr 23	31,851,000	64,478,500	2,862,689,280	2.0	19.9	15.0	89.88
Mar 23	39,346,500	72,309,000	3,521,771,655	1.8	19.3	15.8	89.51
Feb 23	34,260,000	68,040,000	3,144,208,740	2.0	20.2	16.4	91.77
Jan 23	29,175,000	60,749,500	2,325,458,580	2.1	23.2	18.1	79.71
Dec 22	23,244,500	42,657,500	2,016,605,305	1.8	18.9	15.3	86.76
Nov 22	38,839,500	78,824,500	2,931,027,595	2.0	19.4	13.8	75.47
Oct 22	38,839,500	86,400,000	2,687,470,070	2.2	18.0	12.5	69.19
Sep 22	37,259,000	71,870,500	2,583,969,930	1.9	18.6	13.8	69.35

² <https://www.eex.com/en/market-data/environmental-markets/auction-market>

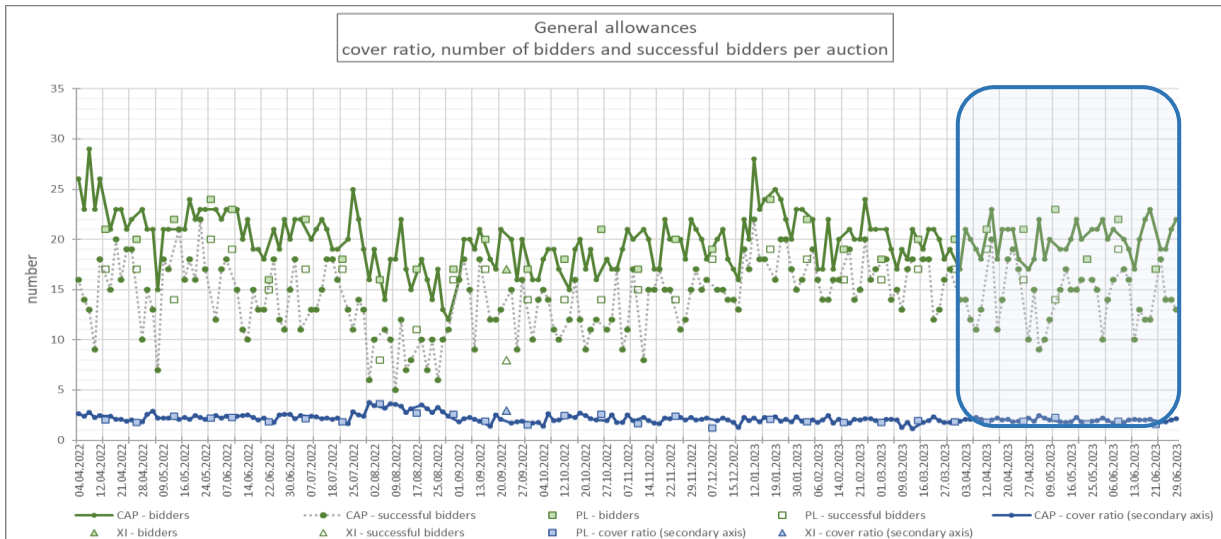
Aug 22	20,192,500	63,544,000	1,759,853,265	3.1	16.4	9.4	87.15
Jul 22	32,862,000	73,215,500	2,674,980,145	2.2	20.8	14.8	81.40
Jun 22	30,567,500	69,774,000	2,530,757,385	2.3	20.4	14.3	82.79
May 22	37,900,500	87,512,000	3,220,253,025	2.3	21.6	16.2	84.97
Apr 22	34,216,500	74,920,000	2,736,312,345	2.2	23.0	15.7	79.97
2022 total	398,159,000	828,646,000	31,696,205,050	2.1	20.4	15.1	79.61
2021 total	482,490,000	775,121,500	25,581,263,350	1.6	23.4	17.9	53.02
2020 total	560,046,500	951,992,500	13,723,091,055	1.7	24.3	18.2	24.50
2019 total	460,978,500	906,546,500	11,357,236,835	2.0	24.1	17.2	24.64
2018 total	642,477,000	1,662,693,000	9,917,590,730	2.6	25.6	18.0	15.44
2017 total	648,415,500	1,761,212,000	3,744,838,845	2.7	21.2	14.6	5.78
2016 total	474,261,000	1,092,400,000	2,496,870,295	2.3	19.0	13.4	5.26
2015 total	413,874,000	1,337,010,500	3,154,940,925	3.2	18.3	13.3	7.62
2014 total	335,052,000	1,796,711,000	1,977,712,120	5.4	17.6	11.9	5.90

During April, May, June 2023, the difference between the Auction Clearing Prices and the mean of the best-ask and best-bid prices on the EEX spot secondary market for general allowances at the closure of the auction bidding window was on average EUR 0.07, -0.12, -0.06 respectively, and this difference had a standard deviation of EUR 0.47, 0.35, 0.43 respectively.

Graph 1: General allowances - auction clearing price (ACP), maximum bid & minimum bid

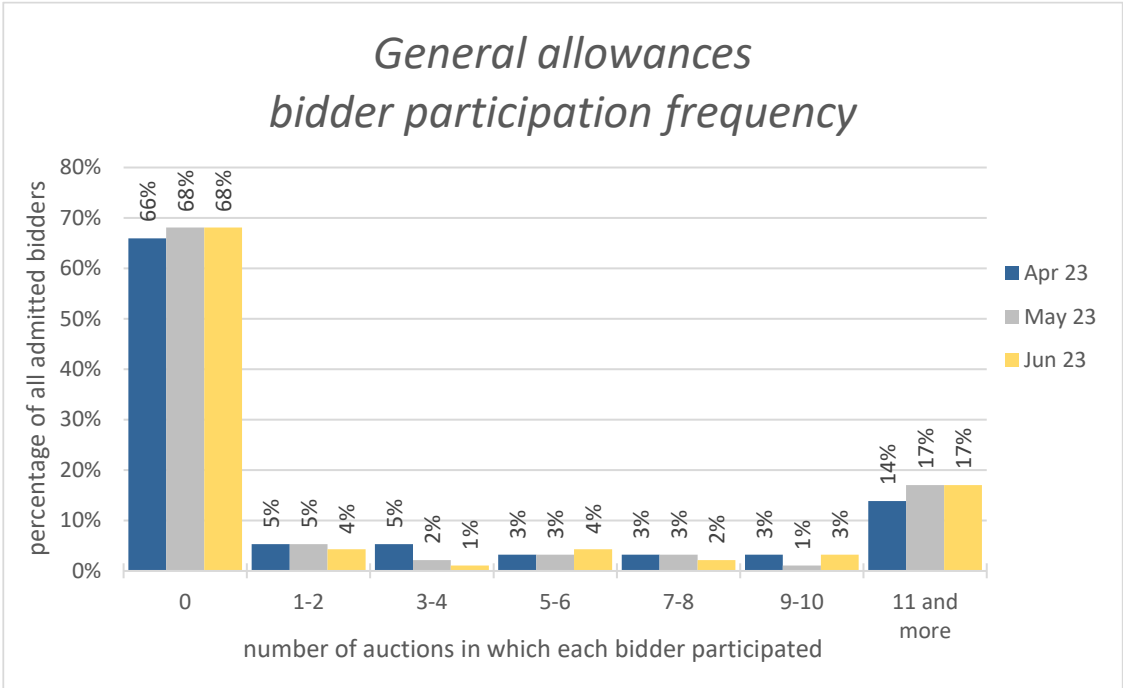


Graph 2: General allowances - cover ratio (left axis), number of bidders and successful bidders (right axis) per auction



The number of eligible bidders is provided in Section 2. Out of these 32, 30 and 30 different bidders participated in the auctions in respectively during the reporting period. Graph 3 indicates the participation frequency over these months.

Graph 3: General allowances -bidder participation frequency



1.1.2. Bidding behaviour - general allowances

Table 2 provides monthly data on the bids submitted over 15 months. See also Graph 4.

Table 2: General Allowances - monthly statistics on the submitted bids

Month	Nr of auctions	Nr of bidders ⁽¹⁾	Total volume of bids	Average total volume bid per bidder per auction[1]	Average total volume bid per bidder per auction over the month[2]	Standard deviation of total volume per bidder per auction over the month[3]	Total monthly nr of bids	Average nr. of bids per bidder per auction[4]	Average bid size[5]
Jun 23	15	30	70,987,000	234,781	233,510	355,596	1,264	4.2	56,493
May 23	13	30	63,620,000	243,965	243,755	376,281	1,174	4.5	54,897
Apr 23	13	32	64,478,500	250,996	248,952	344,835	1,301	5.0	49,791
Mar 23	16	28	72,309,000	236,297	234,769	350,777	1,450	4.7	50,115
Feb 23	14	30	68,040,000	241,622	240,424	364,634	1,300	4.6	52,788
Jan 23	12	33	60,749,500	219,518	218,523	314,965	1,321	4.8	46,263
Dec 22	9	27	42,657,500	249,014	250,926	389,053	693	4.1	62,034
Nov 22	15	33	78,824,500	272,710	270,875	440,787	1,136	3.9	69,821
Oct 22	15	30	86,400,000	323,939	321,190	540,112	1,135	4.2	76,579
Sep 22	15	30	71,870,500	264,361	258,527	403,897	1,150	4.1	63,503
Aug 22	17	29	63,544,000	230,907	227,756	439,575	1,043	3.7	61,754
Jul 22	14	34	73,215,500	251,452	250,738	459,989	1,161	4.0	63,396
Jun 22	13	36	69,774,000	265,331	263,298	465,003	1,091	4.1	64,157
May 22	15	34	87,512,000	273,166	270,099	480,515	1,283	4.0	68,583
Apr 22	13	36	74,920,000	252,763	248,904	448,783	1,154	3.8	65,407

(1): Number of unique individual bidders or unique successful bidders present in a whole month.

[1] Monthly weighted average of the average bid volume per bidder in each auction (total bid volume in each auction divided by number of bidders participating in that auction), weighted by volume auctioned in each auction.

[2] Average over the whole month of the volume bid by bidders each time they are present in an auction (computed as total volume bid for the month / sum over whole month of number of bidders present in each auction).

[3] Standard deviation of total volume bid per bidder in each auction over the month

[4] Monthly simple average of the average number of bids per bidder in each auction (total number of bids in each auction divided by number of bidders participating in that auction).

[5] Monthly weighted average of the average bid size per bidder in each auction (total bid volume in each auction divided by number of bids in that auction), weighted by volume auctioned in each auction

Table 3 provides monthly data on successful bids over 15 months. See also Graph 4.

Table 3: General Allowances - monthly statistics on successful bids

Month	Nr of auctions	Nr of successful bidders ⁽¹⁾	Total auction volume	Average volume won per bidder per auction ^[1]	Average volume won per bidder per auction over the month ^[2]	Standard deviation of volume won per bidder per auction over the month ^[3]	Total monthly nr of successful bids
Jun 23	15	25	36,670,000	175,945	170,558	242,356	472
May 23	13	26	31,851,000	176,424	170,326	268,674	465
Apr 23	13	30	31,851,000	171,999	164,180	210,176	560
Mar 23	16	24	39,346,500	158,032	155,520	231,259	777
Feb 23	14	27	34,260,000	150,878	148,957	239,198	600
Jan 23	12	29	29,175,000	135,948	134,447	195,200	583
Dec 22	9	25	23,244,500	170,697	169,668	257,923	363
Nov 22	15	28	38,839,500	198,271	188,541	285,020	469
Oct 22	15	23	38,839,500	212,128	207,698	303,925	423
Sep 22	15	24	37,259,000	194,737	184,450	261,447	485
Aug 22	17	25	20,192,500	137,299	127,801	149,570	351
Jul 22	14	31	32,862,000	162,674	158,754	241,835	478
Jun 22	13	29	30,567,500	170,683	165,230	259,834	399
May 22	15	32	37,900,500	167,751	155,969	270,326	591
Apr 22	13	33	34,216,500	177,858	168,554	266,019	448

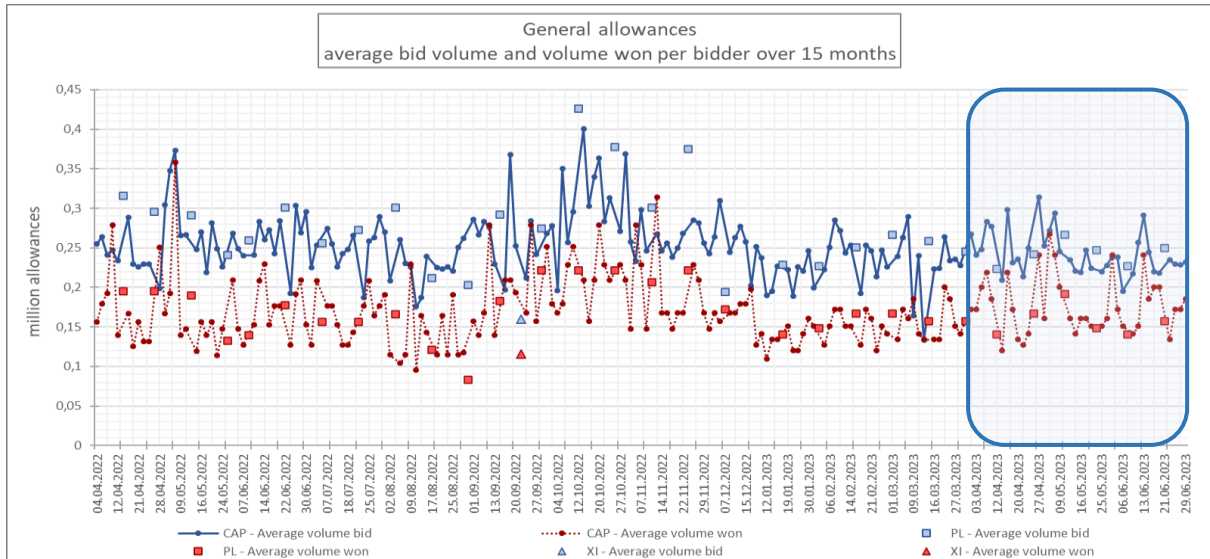
(1): Number of unique individual bidders or unique successful bidders present in a whole month.

[1] Monthly weighted average of the average volume won per bidder in each auction (total volume won in each auction divided by the number of successful bidders in that auction), weighted by volume auctioned in each auction.

[2] Average over the whole month of the volume won per bidder each time they are successful in an auction (computed as total volume auctioned for the month / sum over whole month of number of bidders successful in each auction).

[3] Standard deviation of volume won per bidder in each auction over the month

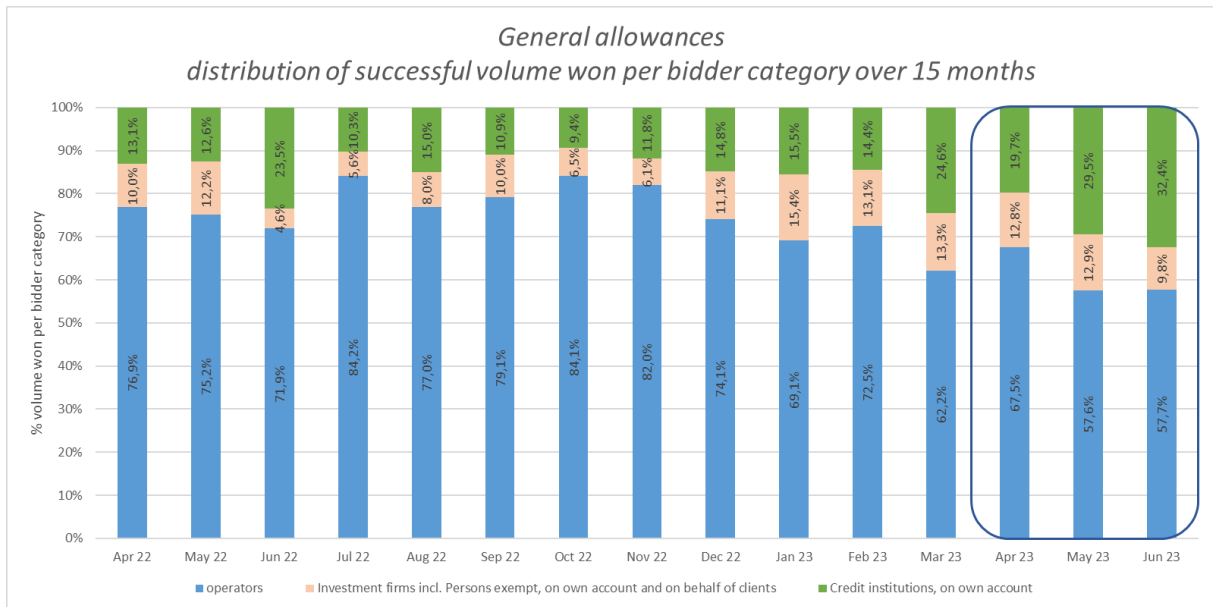
Graph 4: General allowances - average bid volume and volume won per bidder over 15 months



1.1.3. Type of bidders - general allowances

The volume of successful bids submitted by intermediaries on behalf of a client³ during the reporting period was respectively 2 %, 0% and 0 %, the remaining successful bids were done on own account. The shares in the total successful bid volume per bidder category are indicated in Graph 5 and in Table 4.

Graph 5: General allowances - distribution of successful won volume per bidder category over 15 months



³ The data related to bidding on behalf of clients reflects the self-assessment of the respective trader.

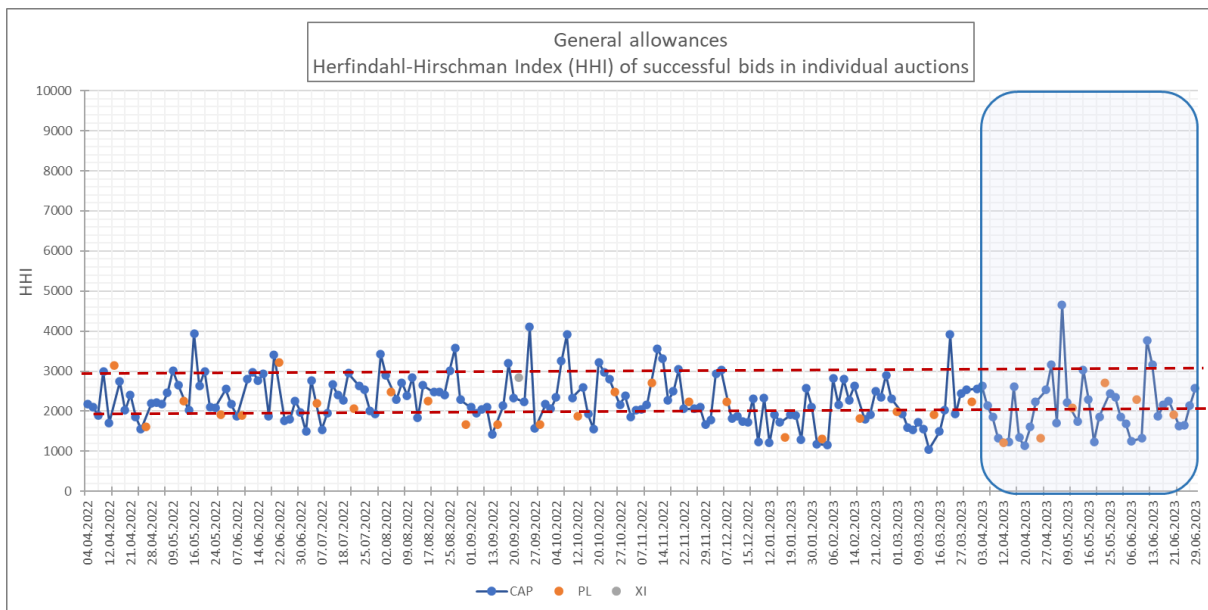
Table 4: General allowances – distribution of volume won per bidder category and their standard deviations

Month	% volume won coming from bidding on behalf of a client	Bidder category	% volume won	Standard deviation of % of volume won
Apr 23	1.76%	Operators (including Business groupings)	67.52%	13.9% points
		Investment firms (including persons exempt)	12.75%	5.8% points
		Credit institutions	19.73%	13.6% points
May 23	0.00%	Operators (including Business groupings)	57.59%	17.7% points
		Investment firms (including persons exempt)	12.95%	4.6% points
		Credit institutions	29.46%	19.4% points
Jun 23	0.00%	Operators (including Business groupings)	57.75%	20.5% points
		Investment firms (including persons exempt)	9.82%	6.7% points
		Credit institutions	32.43%	21.7% points

1.1.4. Concentration - general allowances

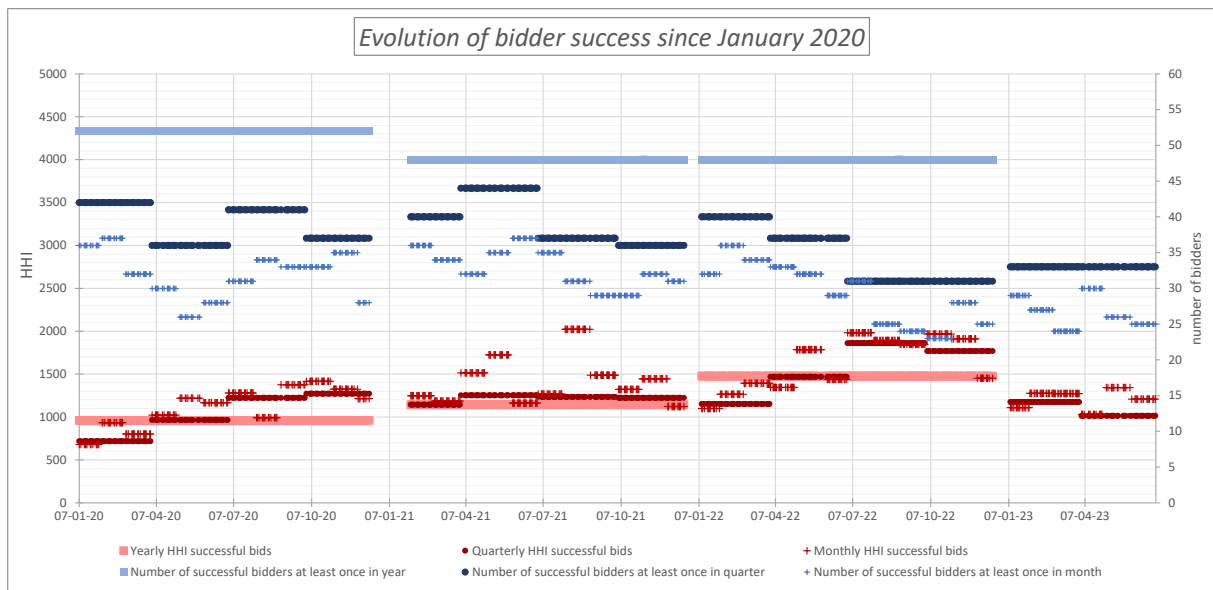
The Herfindahl-Hirschman Index (HHI) of successful bids is used to measure market concentration⁴. The HHI ranges from a value of 0 (perfect competition) to 10 000 (a single buyer). A common interpretation of the HHI is that a score below 1 500 is ‘not-concentrated’, between 1 500 and 2 500 is ‘moderately concentrated,’ and above 2 500 is ‘highly concentrated’ – these thresholds are indicated in Graphs 6 and 7. Graph 6 indicates the HHI of the individual auctions. Graph 7 indicates the monthly and quarterly HHI and successful bidder participation (number of bidders successful at least once in the period of interest) so as to show the variation over different periods, due to the turnover of participants in the auctions.

Graph 6: General allowances - Herfindahl-Hirschman Index of successful bids in individual auctions over 15 months



⁴ The HHI is calculated as the sum of the squares of all successful bidders' shares (in percentage points) of the total auctioned volume over the period of interest.

Graph 7: General allowances - Herfindahl-Hirschman Index of successful bids and successful bidder participation at monthly, quarterly and yearly level



1.2 Aviation allowances auctions

The auctioning of *aviation allowances* restarted as of November 2014⁵. Pursuant to the published *auction calendar*, only *aviation allowances* for the calendar year 2012 were auctioned in 2014⁶; the *aviation allowances* for the calendar years 2013-2015 were auctioned in 2015, in accordance with the published 2015 *auction calendar*. Poland decided to aggregate the *aviation allowances* for the calendar years 2012 to 2015 in a single auction held in May 2015.

1.2.1 Clearing prices and participation – aviation allowances

An overview of the auction results is provided in Table 5.

Table 5: Aviation allowances – main statistics on the results of the auctions per month

Month	Total auction volume	Total bid volume	Total revenue (€)	Average Cover ratio[1]	Average number of bidders	Average number of successful bidders	Average auction clearing price (€)[2]
Jun 23	-	-	-	-	-	-	-
May 23	775,500	2,362,500	66,367,290	3.1	15.0	7.0	85.58
Apr 23	-	-	-	-	-	-	-
Mar 23	775,500	1,894,000	66,801,570	2.4	10.0	8.0	86.14
Feb 23	-	-	-	-	-	-	-
Jan 23	775,500	1,160,000	60,713,895	1.5	10.0	10.0	78.29
Dec 22	-	-	-	-	-	-	-
Nov 22	602,000	954,000	44,698,500	1.6	7.0	5.0	74.25
Oct 22	-	-	-	-	-	-	-
Sep 22	600,000	634,000	41,436,000	1.1	6.0	6.0	69.06
Aug 22	-	-	-	-	-	-	-
Jul 22	-	-	-	-	-	-	-
Jun 22	600,000	1,250,000	50,670,000	2.1	8.0	7.0	84.45
May 22	109,500	488,000	9,553,875	4.5	9.0	4.0	87.25

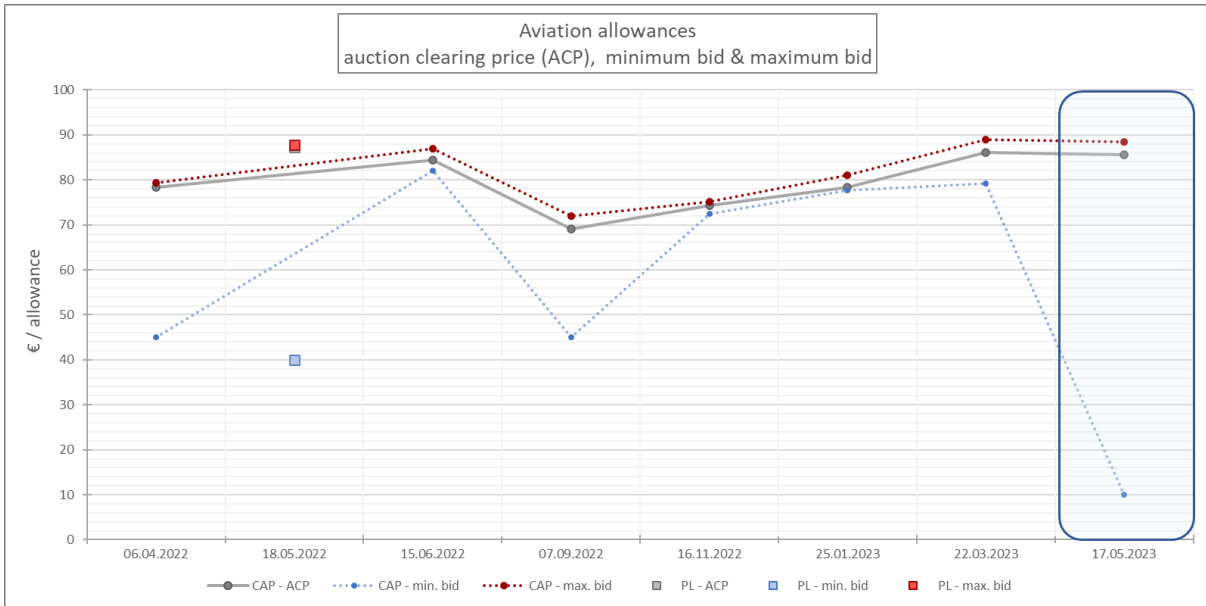
⁵ The auctions were suspended end 2012, see the Regulatory update published by the Commission on 16 November 2012: https://ec.europa.eu/clima/news-your-voice/news/auctions-2012-aviation-allowances-put-hold-2012-11-16_en

⁶ See also the regulatory update published by the Commission on 29 July 2014: https://ec.europa.eu/clima/news-your-voice/news/2014-aviation-auction-calendars-published-2014-07-29_en

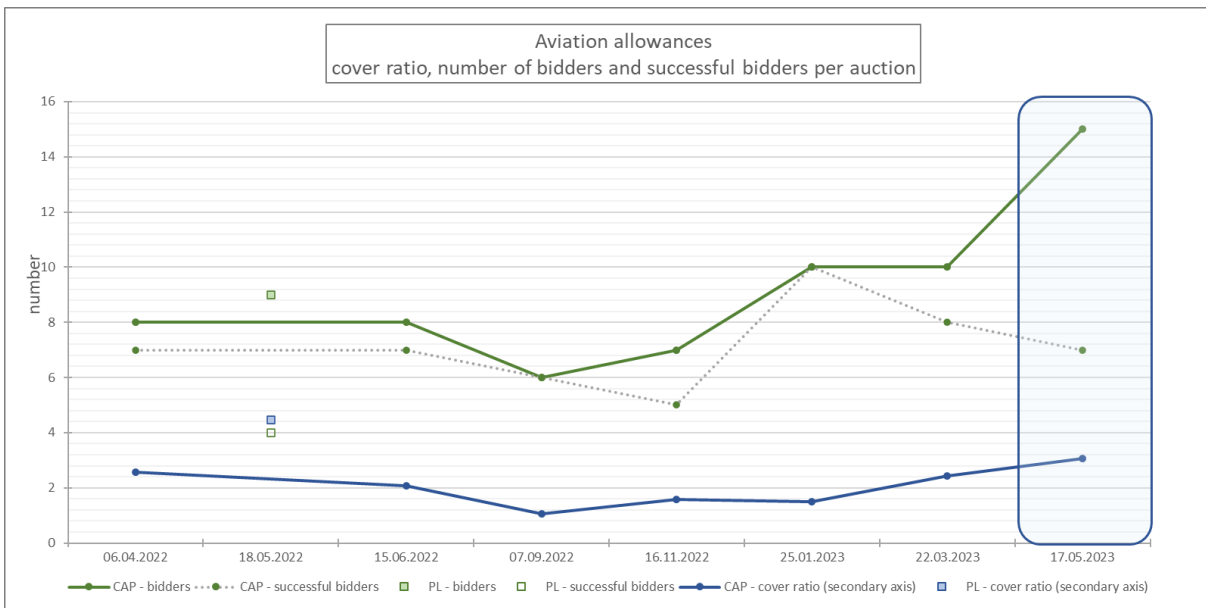
Apr 22	600,000	1,541,500	47,004,000	2.6	8.0	7.0	78.34
2022 total	3,111,500	5,998,000	251,280,375	2.3	7.5	5.8	80.76
2021 total	3,185,500	7,463,000	171,307,490	2.6	6.5	4.5	53.78
2020 total	5,049,500	13,474,500	119,509,185	2.7	8.0	5.0	23.67
2019 total	4,701,000	13,172,500	119,584,255	2.8	8.7	5.9	25.44
2018 total	3,941,000	10,830,000	73,956,020	2.7	8.8	6.1	18.77
2017 total	3,329,500	10,300,000	23,771,460	3.1	7.5	6.5	7.14
2016 total	4,219,000	17,973,500	22,266,205	4.3	10.4	4.6	5.28
2015 total	11,641,000	39,026,000	81,846,705	3.4	11.0	7.5	7.03

[1] The cover ratio is the ratio between the total bid volume and the auction volume.

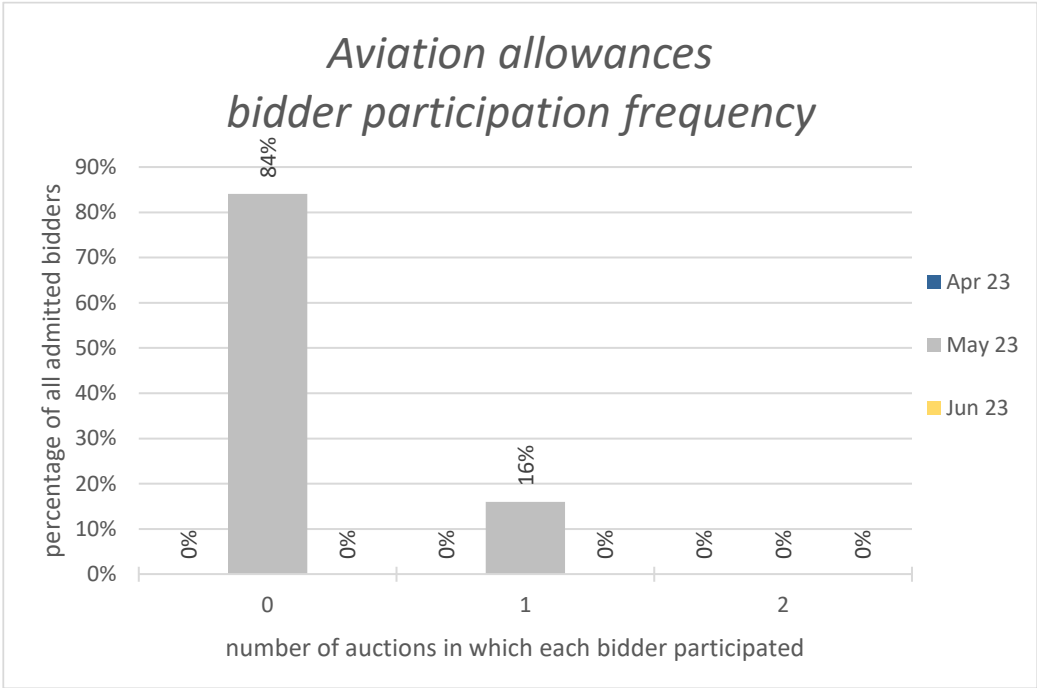
Graph 8: Aviation allowances - auction clearing price (ACP) & maximum prices bid & minimum prices bid



Graph 9: Aviation allowances - cover ratio (left axis), number of bidders and successful bidders (right axis) per auction



Graph 10: Aviation allowances – bidder participation frequency



1.2.2 Bidding behaviour – aviation allowances

Table 6 provides monthly data on the bids submitted over 15 months. See also Graph 11.

Table 6: Aviation allowances – monthly statistics on the submitted bids

Month	Nr of auctions	Nr of bidders ⁽¹⁾	Total volume of bids	Average total volume bid per bidder per auction[1]	Average total volume bid per bidder per auction over the month[2]	standard deviation of total volume bid per bidder per auction over the month[3]	Total monthly nr of bids	Average nr. of bids per bidder per auction[4]	Average bid size[5]
Jun 23	-	-	-	-	-	-	-	-	-
May 23	1	15	2,362,500	157,500	157,500	193,106	58	3.9	40,733
Apr 23	-	-	-	-	-	-	-	-	-
Mar 23	1	10	1,894,000	189,400	189,400	228,597	54	5.4	35,074
Feb 23	-	-	-	-	-	-	-	-	-
Jan 23	1	10	1,160,000	116,000	116,000	108,312	38	3.8	30,526
Dec 22	-	-	-	-	-	-	-	-	-
Nov 22	1	7	954,000	136,286	136,286	195,404	35	5.0	27,257
Oct 22	-	-	-	-	-	-	-	-	-
Sep 22	1	6	634,000	105,667	105,667	96,965	23	3.8	27,565
Aug 22	-	-	-	-	-	-	-	-	-
Jul 22	-	-	-	-	-	-	-	-	-
Jun 22	1	8	1,250,000	156,250	156,250	175,619	34	4.3	36,765
May 22	1	9	488,000	54,222	54,222	39,075	29	3.2	16,828
Apr 22	1	8	1,541,500	192,688	192,688	231,790	37	4.6	41,662

(1): Number of unique individual bidders or unique successful bidders present in a whole month.

[1] Monthly weighted average of the average bid volume per bidder in each auction (total bid volume in each auction divided by number of bidders participating in that auction), weighted by volume auctioned in each auction.

- [2] Average over the whole month of the volume bid by bidders each time they are present in an auction (computed as total volume bid for the month / sum over whole month of number of bidders present in each auction).
- [3] Standard deviation of total volume bid per bidder in each auction over the month
- [4] Monthly simple average of the average number of bids per bidder in each auction (total number of bids in each auction divided by number of bidders participating in that auction).
- [5] Monthly weighted average of the average bid size per bidder in each auction (total bid volume in each auction divided by number of bids in that auction), weighted by volume auctioned in each auction

Table 7 provides monthly data on successful bids over 15 months. See also Graph 11.

Table 7: Aviation Allowances – Monthly statistics on successful bids

Month	Nr of auctions	Nr of successful bidders ⁽¹⁾	Total auction volume	Average volume won per bidder per auction ^[1]	Average volume won per bidder per auction over the month ^[2]	Standard deviation of volume won per bidder per auction over the month ^[3]	Total monthly nr of successful bids
Jun 23	-	-	-	-	-	-	-
May 23	1	7	775,500	110,786	110,786	83,735	14
Apr 23	-	-	-	-	-	-	-
Mar 23	1	8	775,500	96,938	96,938	87,683	20
Feb 23	-	-	-	-	-	-	-
Jan 23	1	10	775,500	77,550	77,550	82,704	30
Dec 22	-	-	-	-	-	-	-
Nov 22	1	5	602,000	120,400	120,400	127,820	21
Oct 22	-	-	-	-	-	-	-
Sep 22	1	6	600,000	100,000	100,000	96,334	22
Aug 22	-	-	-	-	-	-	-
Jul 22	-	-	-	-	-	-	-
Jun 22	1	7	600,000	85,714	85,714	98,321	17
May 22	1	4	109,500	27,375	27,375	13,681	6
Apr 22	1	7	600,000	85,714	85,714	128,544	24

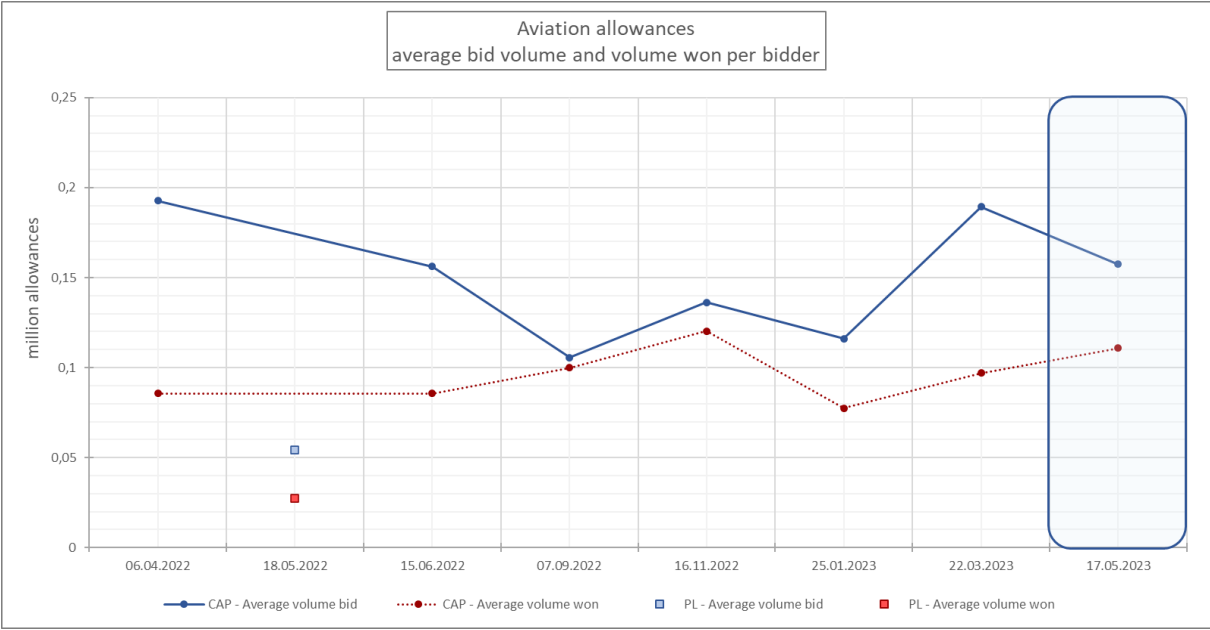
(1): Number of unique individual bidders or unique successful bidders present in a whole month.

[1] Monthly weighted average of the average volume won per bidder in each auction (total volume won in each auction divided by the number of successful bidders in that auction), weighted by volume auctioned in each auction.

[2] Average over the whole month of the volume won per bidder each time they are successful in an auction (computed as total volume auctioned for the month / sum over whole month of number of bidders successful in each auction).

[3] Standard deviation of volume won per bidder in each auction over the month

Graph 11: Aviation allowances - average bid volume and volume won per bidder



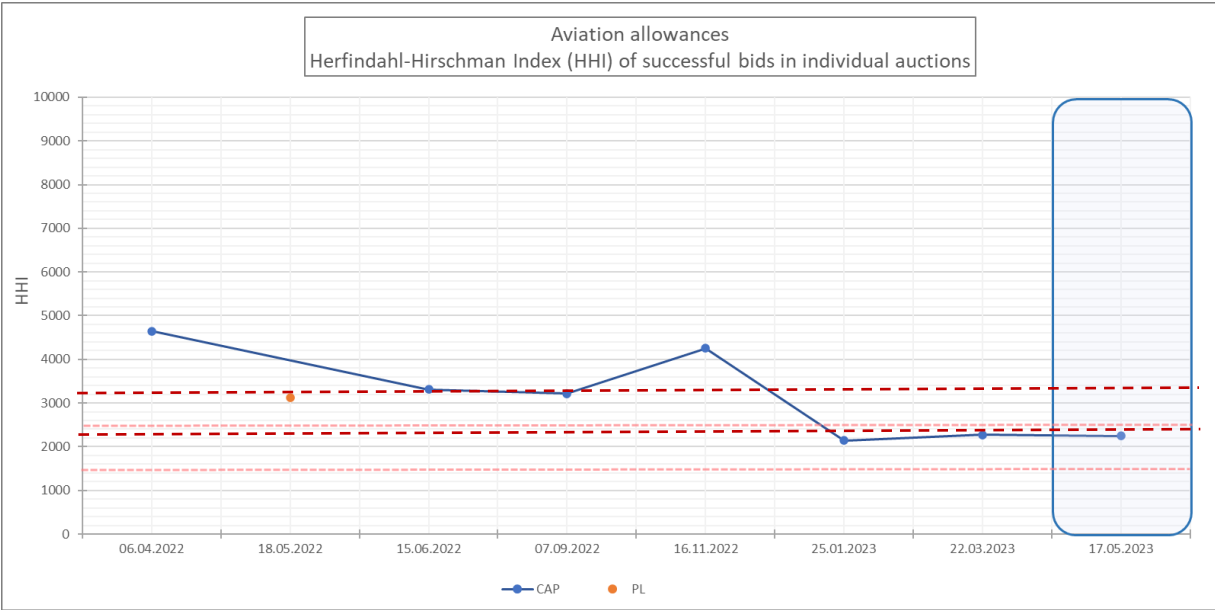
1.2.3 Type of bidders – aviation allowances

No bids for aviation allowances were submitted by intermediaries, the remaining volume bid was done on own account.

1.2.4 Concentration – aviation allowances

The HHI of successful bids is used to measure market concentration⁷. The HHI ranges from a value of 0 (perfect competition) to 10 000 (a single buyer). A common interpretation of the HHI is that a score below 1 500 is ‘not-concentrated’, between 1 500 and 2 500 is ‘moderately concentrated,’ and above 2 500 is ‘highly concentrated’. Graph 12 indicates the HHI of the individual auctions.

Graph 12: Aviation allowances - Herfindahl-Hirschman index of successful bids in individual auctions



⁷ The HHI is calculated as the sum of the squares of all successful bidders' shares (in percentage points) of the total auctioned volume over the period of interest.

Implementation of and compliance with the applicable rules

Fair and open access

EEX verified that each auction participant belonged to one of the categories of eligible bidders set out in Article 18 of the *Auctioning Regulation*. Table 9 presents the number of eligible bidders under each category in the reporting months.

Most of the active participants in the secondary carbon market are assumed to also have been admitted to bid in the auctions⁸.

Table 8: Eligible participants to the auctions by category

Number of participants		Operator		Investment firm	Credit Institution	Business grouping	Person exempt from MiFID requirements	Total
		Stationary	Aircraft					
Participants admitted to EEX's emissions spot secondary market	Apr 23	-	-	-	-	-	-	169
	May 23	-	-	-	-	-	-	170
	Jun 23	-	-	-	-	-	-	170
Participants eligible to bid in the auctions	Apr 23	67	1	11	6	1	8	94
	May 23	68	1	10	6	1	8	94
	Jun 23	68	1	10	6	1	8	94
(Of which:) Participants eligible to bid in the auctions on behalf of clients	Apr 23	-	-	3	2	-	1	6
	May 23	-	-	2	2	-	1	5
	Jun 23	-	-	2	2	-	1	5
(Of which:) Auction-only access	Apr 23	2	-	2	1	-	1	6
	May	2	-	2	1	-	1	6

⁸ This assessment is based on the auction participants' activity in EEX's secondary market and general market knowledge of EEX.

	23							
	Jun 23	2	-	2	1	-	1	6

No irregularities or deviations from the admission and access requirements were found.

Transparency

Information on the auctions was published by EEX in accordance with Chapter XVI of the *Auctioning Regulation*.

No infringements of the confidentiality requirements were identified.

Technical and operational aspects

With regard to the operational performance of the auctions, no irregularities or deviations from the requirements were found.

EEX's Market Surveillance department surveyed all auctions with a view to detecting any *market abuse*, money laundering, terrorist financing or other criminal activities. No such wrongdoing was publicly reported.

Other aspects

No other problems or issues were identified.

2. Overview of, and any updates on breaches of provisions or ongoing proceedings

No breaches or problems of non-conformity were reported. There were no proceedings on such breaches or problems of non-conformity dating from before the reporting period.

Comments of the auction platform on the draft of this report

EEX reviewed the auction data presented in the report.

Date of publication: 31/08/2023

Glossary

Auction calendar	Document setting out the <i>bidding windows</i> , individual volumes and auction dates of the auctions in a given calendar year. See Articles 11, 13 and 32 of the <i>Auctioning Regulation</i> .
Auction Clearing Price	Price determined upon closure of the <i>bidding window</i> .
Auction-only access	Access to the auctions without becoming a member of or participant in other markets organised by the auction platform.
Auctioning Regulation	Commission Regulation (EU) No 1031/2010 — Timing, administration and other aspects of auctioning of greenhouse gas emission allowances pursuant to Directive 2003/87/EC of the European Parliament and of the Council establishing a scheme for greenhouse gas emission allowances trading within the Community, Official Journal L 302, 18.11.2010, p. 1, as subsequently amended. See: http://ec.europa.eu/clima/policies/ets/cap/auctioning/documentation_en.htm .
Auctioneer	Entity appointed by a Member State that offers the allowances to be auctioned to the auction platform and receives the auction proceeds due to the appointing Member State. See Articles 22 and 23 of the <i>Auctioning Regulation</i> .
Best-bid and best-ask prices	The best-bid price is the highest price any buyer is willing to pay and the best-ask price is the lowest price any seller is willing to accept.
Business groupings	Groupings of operators or aircraft operators. See Article 18(1)(d) of the <i>Auctioning Regulation</i> .
Bidding window	Time during which bidders can submit bids. See Article 8(1) of the <i>Auctioning Regulation</i> .
Clearing	Processes preceding the opening of the <i>Bidding window</i> , during the <i>Bidding window</i> and following the closure of the <i>Bidding window</i> until <i>Settlement</i> , involving the management of any risks arising during that interval including margining, netting or novation or any other services carried out possibly by a <i>Clearing</i> or <i>Settlement</i> system. See Article 3(31) of the <i>Auctioning Regulation</i> .
Common auction platform	The auction platform appointed pursuant to Article 26(1) of the <i>Auctioning Regulation</i> . The <i>common auction platform</i> referred to as the third common auction platform, or CAP3, was appointed pursuant to Article 26(1) of the <i>Auctioning Regulation</i> , on 4 November 2020 for a period of 5 years.
Cover ratio	Total bid volume divided by the available volume in the auction.
Credit institution	Credit institution as defined in EU legislation on credit institutions (Article 4(1) of Directive 2006/48/EC).

ETS Directive	Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC, OJ L 275, 25.10.2003, p. 32, as subsequently amended. See: http://ec.europa.eu/clima/policies/ets/documentation_en.htm .
Fourth trading period	The period 2021-2030.
General Allowance	Allowance to emit one tonne of CO ₂ -equivalent, see Article 3(a) of the <i>ETS Directive</i> , also referred to as <i>EUA</i> .
Aviation Allowance	Allowance to emit one tonne of CO ₂ -equivalent that can be used by aircraft operators, also referred to as <i>EUA</i> . See Article 12(2a) and (3) of the <i>ETS Directive</i> .
Investment firms	Investment firms as defined in EU financial markets legislation (point (1) of Article 4(1) of Directive 2004/39/EC).
Market abuse	Insider dealing and market manipulation. See Article 36 of the <i>Auctioning Regulation</i> and Article 1 of Directive 2003/6/EC ('Market Abuse Directive').
Participating Member States	All EU Member States except Germany and Poland, which decided to opt out from the joint procurement of a common auction platform pursuant to Article 30 of the <i>Auctioning Regulation</i> .
Persons exempt from MiFID	Natural or legal persons exempt from the authorisation requirements in EU financial law because their trading and investment services activities are only ancillary to their main business (Article 2(1)(i) of Directive 2004/39/EC) and that have been authorised under national legislation implementing the rules laid down in the <i>Auctioning Regulation</i> to bid for allowances in the auctions. See Article 18(2) of the <i>Auctioning Regulation</i> .
Secondary market	Market in which persons buy or sell allowances either before or after they are allocated, either free of charge or through auctioning. To be distinguished from the 'primary market', consisting of the auctions of allowances.
Settlement	Payment on delivery of the allowances. See Article 3(34) of the <i>Auctioning Regulation</i> .
Spot secondary market	<i>Secondary market</i> for allowances with delivery within 5 days from the transaction.
Third trading period	The period 2013-2020, including the allowances referred to in Article 10(1) of the <i>Auctioning Regulation</i> auctioned in 2012. Allowances are valid during a given period without distinction as regards the year within that period. See Article 13 of the <i>ETS Directive</i> .

**Annex 1a Auction revenues per Member State and for Poland from 12 November 2012 to the end of Quarter Q2 2023
(reported in euros)**

(The data used in this annex can also be obtained directly from the EEX website.)

Cumulated Revenues since November 2012 (start of Phase III)	General allowances	Aviation allowances	General and aviation allowances
Austria	1,798,121,210	28,325,950	1,826,447,160
Belgium	3,231,394,640	36,369,255	3,267,763,895
Bulgaria	4,233,592,940	11,674,390	4,245,267,330
Croatia	676,703,920	8,514,430	685,218,350
Cyprus	329,329,600	12,272,065	341,601,665
Czech Republic	4,135,912,550	13,839,940	4,149,752,490
Denmark	1,652,475,115	33,360,875	1,685,835,990
Estonia	1,300,496,970	2,755,470	1,303,252,440
Finland	2,281,135,295	26,946,870	2,308,082,165
France	7,876,046,855	152,238,015	8,028,284,870
Greece	5,406,812,900	63,872,485	5,470,685,385
Hungary	1,968,956,935	12,298,815	1,981,255,750
Iceland	73,947,340	11,422,475	85,369,815
Innovation Fund	8,501,105,600	-	8,501,105,600
Ireland	1,027,465,460	25,541,980	1,053,007,440
Italy	13,748,817,835	165,835,190	13,914,653,025
Latvia			

	378,387,485	6,674,010	385,061,495
Liechtenstein	2,042,605	-	2,042,605
Lithuania	614,107,225	4,674,520	618,781,745
Luxembourg	117,334,170	4,366,740	121,700,910
Malta	159,240,875	7,339,260	166,580,135
Modernisation Fund	12,239,722,085	-	12,239,722,085
The Netherlands	4,820,280,385	54,987,305	4,875,267,690
Northern Ireland	168,261,110	-	168,261,110
Norway	1,705,766,075	76,751,270	1,782,517,345
Poland	21,352,745,120	25,427,790	21,378,172,910
Portugal	2,728,948,135	43,977,270	2,772,925,405
Romania	4,408,033,700	21,883,360	4,429,917,060
Slovak Republic	1,893,151,540	2,171,000	1,895,322,540
Slovenia	697,879,060	1,717,170	6995,962,30
Spain	13,239,524,470	195,517,800	13,435,042,270
Sweden	1,234,580,505	46,103,260	1,280,683,765
TOTAL	124,002,319,710	1,096,858,960	125,099,178,670

Annex 1b Auction revenues per Member State and for Poland from January 2021 to the end of Quarter Q2 2023

(reported in euros)

(The data used in this annex can also be obtained directly from the EEX website.)

Cumulated Revenues since January 2021 (start of Phase IV)	General allowances	Aviation allowances	General and aviation allowances
Austria	894,598,090	15,803,785	910,401,875
Belgium	1,546,216,340	21,353,640	1,567,569,980
Bulgaria	2,532,416,065	7,075,095	2,539,491,160
Croatia	328,787,860	5,727,060	334,514,920
Cyprus	233,257,975	5,140,335	238,398,310
Czech Republic	1,642,250,210	7,624,695	1,649,874,905
Denmark	842,360,715	19,160,830	861,521,545
Estonia	766,212,065	1,965,525	768,177,590
Finland	1,195,883,585	15,887,365	1,211,770,950
France	4,322,234,325	83,587,550	4,405,821,875
Greece	3,057,492,735	38,735,480	3,096,228,215
Hungary	967,021,550	7,237,225	974,258,775
Iceland	13,755,195	6,734,080	20,489,275
Innovation Fund	7,167,282,595	-	7,167,282,595
Ireland	422,984,725	14,346,435	437,331,160
Italy	7,458,411,690	91,199,905	7,549,611,595

Latvia	190,189,830	3,974,535	194,164,365
Liechtenstein	730,340	-	730,340
Lithuania	243,144,145	3,252,030	246,396,175
Luxembourg	36,973,125	2,657,265	39,630,390
Malta	89,459,960	4,493,370	93,953,330
Modernisation Fund	12,239,722,085	-	12,239,722,085
The Netherlands	2,646,190,105	31,808,505	2,677,998,610
Northern Ireland	168,261,110	-	168,261,110
Norway	508,411,140	31,316,020	539,727,160
Poland	13,348,636,350	14,516,295	13,363,152,645
Portugal	1,540,426,840	28,810,225	1,569,237,065
Romania	1,233,697,425	13,884,715	1,247,582,140
Slovak Republic	809,281,465	1,184,225	810,465,690
Slovenia	395,798,525	1,011,320	396,809,845
Spain	7,435,804,425	110,391,500	7,546,195,925
Sweden	640,691,765	27,591,610	668,283,375
TOTAL	74,884,263,635	616,470,620	75,535,054,975

Annex 2 Results of individual auctions on behalf of participating Member States and Poland in April, May, June 2023

(The data used in the highlighted subsection of the tables presented in this annex can also be obtained directly from the EEX website.)

General Allowances - April 2023																			
Date	Auction Clearing Price	Minimum Bid price	Maximum Bid price	Mean Bid price	Median Bid price	Total Auction Volume	Total Bid Volume	Cover ratio	Nr of Bidders	Nr of Successful Bidders	Total Revenue	Nr of Bids	Nr of Successful Bids	Avg nr of bids per bidder	Average bid size	Avg total volume bid per bidder	standard deviation of total volume bid per bidder	Average volume won per bidder	Standard deviation of volume won per bidder
03-04-23	89.82	80.00	105.00	89.57	89.26	2,409,000	5,066,000	2.10	21	14	216,376,380	87	31	4.14	58,230	241,238	372,959	172,071	281,330
04-04-23	94.12	84.36	105.00	93.19	93.25	2,409,000	4,963,500	2.06	20	12	226,735,080	96	29	4.80	51,703	248,175	355,402	200,750	250,952
06-04-23	94.30	50.00	100.00	93.15	93.56	2,409,000	5,388,000	2.24	19	11	227,168,700	103	28	5.42	52,311	283,579	340,006	219,000	222,477
11-04-23	95.52	85.55	105.00	95.18	94.87	2,409,000	4,981,000	2.07	18	13	230,107,680	95	34	5.28	52,432	276,722	328,895	185,308	157,906
12-04-23	93.90	84.87	97.50	94.10	94.05	2,676,000	4,696,000	1.75	21	19	251,276,400	99	61	4.71	47,434	223,619	326,761	140,842	161,648
13-04-23	90.51	70.00	120.00	90.90	90.52	2,409,000	4,811,000	2.00	23	20	218,038,590	103	54	4.48	46,709	209,174	300,478	120,450	145,804
17-04-23	90.55	80.81	105.00	90.54	89.70	2,409,000	5,372,000	2.23	18	11	218,134,950	95	28	5.28	56,547	298,444	393,585	219,000	299,675
18-04-23	90.55	75.00	94.52	90.30	90.24	2,409,000	4,847,000	2.01	21	14	218,134,950	104	42	4.95	46,606	230,810	318,469	172,071	161,627
20-04-23	90.68	80.00	95.00	90.28	90.55	2,409,000	4,945,000	2.05	21	18	218,448,120	105	46	5.00	47,095	235,476	313,406	133,833	136,120
24-04-23	85.70	77.45	120.00	86.38	85.80	2,409,000	4,492,500	1.86	21	19	206,451,300	108	65	5.14	41,597	213,929	330,326	126,789	181,848
25-04-23	84.73	76.57	94.52	85.29	84.89	2,409,000	4,496,000	1.87	18	17	204,114,570	107	65	5.94	42,019	249,778	374,485	141,706	236,585
26-04-23	83.31	75.06	105.00	83.73	83.16	2,676,000	5,081,000	1.90	21	16	222,937,560	100	43	4.76	50,810	241,952	338,963	167,250	178,263
27-04-23	85.00	75.93	90.50	84.71	84.38	2,409,000	5,339,500	2.22	17	10	204,765,000	99	34	5.82	53,934	314,088	378,644	240,900	298,540

General Allowances - May 2023																			
Date	Auction Clearing Price	Minimum Bid price	Maximum Bid price	Mean Bid price	Median Bid price	Total Auction Volume	Total Bid Volume	Cover ratio	Nr of Bidders	Nr of Successful Bidders	Total Revenue	Nr of Bids	Nr of Successful Bids	Avg nr of bids per bidder	Average bid size	Avg total volume bid per bidder	standard deviation of total volume bid per bidder	Average volume won per bidder	Standard deviation of volume won per bidder
02-05-23	83.24	75.00	86.02	83.05	83.15	2,409,000	4,539,000	1.88	18	15	200,525,160	68	32	3.78	66,750	252,167	420,125	160,600	310,989
04-05-23	82.23	73.53	84.58	81.20	81.31	2,409,000	5,974,500	2.48	22	9	198,092,070	104	17	4.73	57,447	271,568	326,119	267,667	196,450
08-05-23	82.99	74.37	85.50	82.27	82.34	2,409,000	5,284,500	2.19	18	10	199,922,910	87	20	4.83	60,741	293,583	483,458	240,900	460,829
09-05-23	83.84	75.32	105.00	83.26	83.14	2,409,000	4,904,500	2.04	20	12	201,970,560	102	24	5.10	48,083	245,225	377,121	200,750	258,231
10-05-23	85.85	75.00	130.00	85.70	85.34	2,676,000	6,129,500	2.29	23	14	229,734,600	88	22	3.83	69,653	266,500	353,369	191,143	264,778
11-05-23	86.75	78.38	91.00	86.70	86.75	2,409,000	4,453,000	1.85	19	15	208,980,750	81	40	4.26	54,975	234,368	345,190	160,600	203,319
15-05-23	85.70	70.00	93.75	86.15	86.00	2,409,000	4,187,000	1.74	19	17	206,451,300	91	56	4.79	46,011	220,368	398,772	141,706	288,898
16-05-23	85.05	76.99	95.00	85.21	84.94	2,409,000	4,385,000	1.82	20	15	204,885,450	96	40	4.80	45,677	219,250	371,398	160,600	250,327
22-05-23	85.20	75.00	105.00	84.92	84.75	2,409,000	5,437,500	2.26	22	15	205,246,800	79	25	3.59	68,829	247,159	313,868	160,600	148,723
23-05-23	84.32	76.10	87.93	84.62	84.44	2,409,000	4,486,000	1.86	20	16	203,126,880	83	46	4.15	54,048	224,300	344,409	150,563	212,010
24-05-23	83.00	74.99	86.66	83.42	83.22	2,676,000	4,439,500	1.66	18	18	222,108,000	102	63	5.67	43,525	246,639	409,754	148,667	292,323
25-05-23	81.12	73.18	85.01	81.52	81.23	2,409,000	4,618,500	1.92	21	16	195,418,080	92	51	4.38	50,201	219,929	367,524	150,563	256,743
30-05-23	79.79	71.52	105.00	79.64	79.27	2,409,000	4,781,500	1.98	21	15	192,214,110	101	29	4.81	47,342	227,690	374,612	160,600	255,409
General Allowances - June 2023																			

Date	Auction Clearing Price	Minimum Bid price	Maximum Bid price	Mean Bid price	Median Bid price	Total Auction Volume	Total Bid Volume	Cover ratio	Nr of Bidders	Nr of Successful Bidders	Total Revenue	Nr of Bids	Nr of Successful Bids	Avg nr of bids per bidder	Average bid size	Avg total volume bid per bidder	standard deviation of total volume bid per bidder	Average volume won per bidder	Standard deviation of volume won per bidder
01-06-23	78.62	70.21	90.00	77.81	77.77	2,409,000	5,249,500	2.18	22	10	189,395,580	105	15	4.77	49,995	238,614	332,563	240,900	223,228
05-06-23	78.55	70.43	90.00	77.97	77.95	2,409,000	4,760,000	1.98	20	14	189,226,950	90	22	4.50	52,889	238,000	353,221	172,071	201,467
06-06-23	80.07	72.74	90.00	80.21	80.25	2,409,000	4,098,000	1.70	21	16	192,888,630	84	48	4.00	48,786	195,143	312,358	150,563	150,974
07-06-23	78.25	70.00	90.00	78.42	78.44	2,676,000	4,992,500	1.87	22	19	209,397,000	90	56	4.09	55,472	226,932	366,751	140,842	257,920
08-06-23	81.54	70.00	105.00	81.85	81.66	2,409,000	4,342,500	1.80	20	17	196,429,860	79	42	3.95	54,968	217,125	319,095	141,706	157,898
12-06-23	83.45	65.00	85.75	82.40	83.05	2,409,000	4,874,500	2.02	19	16	201,031,050	78	23	4.11	62,494	256,553	432,557	150,563	337,627
13-06-23	86.44	75.00	89.12	85.37	85.64	2,409,000	4,947,000	2.05	17	10	208,233,960	73	15	4.29	67,767	291,000	433,085	240,900	354,348
15-06-23	91.67	78.00	120.00	91.00	91.01	2,409,000	4,894,000	2.03	20	13	220,833,030	85	21	4.25	57,576	244,700	346,863	185,308	223,106
19-06-23	90.16	78.00	130.00	90.40	89.58	2,409,000	4,839,000	2.01	22	12	217,195,440	96	35	4.36	50,406	219,955	336,675	200,750	252,756
20-06-23	91.55	0.01	130.00	89.76	90.71	2,409,000	5,021,500	2.08	23	12	220,543,950	86	20	3.74	58,390	218,326	339,036	200,750	262,333
21-06-23	90.35	75.00	98.90	90.99	90.89	2,676,000	4,250,000	1.59	17	17	241,776,600	76	58	4.47	55,921	250,000	373,535	157,412	236,311
22-06-23	87.11	78.00	120.00	87.42	87.05	2,409,000	4,468,000	1.85	19	18	209,847,990	81	37	4.26	55,160	235,158	336,263	133,833	185,444
26-06-23	86.01	0.01	101.00	85.09	86.04	2,409,000	4,358,500	1.81	19	14	207,198,090	71	37	3.74	61,387	229,395	342,876	172,071	197,752
27-06-23	85.35	75.00	120.00	85.10	84.53	2,410,000	4,791,500	1.99	21	14	205,693,500	83	23	3.95	57,729	228,167	346,661	172,143	243,438
29-06-23	86.60	77.57	120.00	86.08	85.81	2,409,000	5,100,500	2.12	22	13	208,619,400	87	20	3.95	58,626	231,841	355,501	185,308	283,829

Aviation Allowances - April 2023

Date	Auction Clearing Price	Minimum Bid price	Maximum Bid price	Mean Bid price	Median Bid price	Total Auction Volume	Total Bid Volume	Cover ratio	Nr of Bidders	Nr of Successful Bidders	Total Revenue	Nr of Bids	Nr of Successful Bids	Avg nr of bids per bidder	Average bid size	Avg total volume bid per bidder	standard deviation of total volume bid per bidder	Average volume won per bidder	Standard deviation of volume won per bidder
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Aviation Allowances - May 2023

Date	Auction Clearing Price	Minimum Bid price	Maximum Bid price	Mean Bid price	Median Bid price	Total Auction Volume	Total Bid Volume	Cover ratio	Nr of Bidders	Nr of Successful Bidders	Total Revenue	Nr of Bids	Nr of Successful Bids	Avg nr of bids per bidder	Average bid size	Avg total volume bid per bidder	standard deviation of total volume bid per bidder	Average volume won per bidder	Standard deviation of volume won per bidder
17-05-23	85.58	10.00	88.50	83.83	85.16	775,500	2,362,500	3.05	15	7	66,367,290	58	14	3.87	40,733	157,500	193,106	110,786	83,735

Aviation Allowances - June 2023

Date	Auction Clearing Price	Minimum Bid price	Maximum Bid price	Mean Bid price	Median Bid price	Total Auction Volume	Total Bid Volume	Cover ratio	Nr of Bidders	Nr of Successful Bidders	Total Revenue	Nr of Bids	Nr of Successful Bids	Avg nr of bids per bidder	Average bid size	Avg total volume bid per bidder	standard deviation of total volume bid per bidder	Average volume won per bidder	Standard deviation of volume won per bidder
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: volume variables reported in tCO2, monetary variables reported in €

(1): Number of unique individual bidders or unique successful bidders present in a whole month. (2): Average number of bids submitted over the whole month by each bidder in each auction. Computed as total number of bids for the month / sum over whole month of number of bidders present in each auction. (3): Average size of all bids submitted in all auctions over the month. Computed as total bid volume for the month / number of bids for the month. (4): Average over the whole month of the volume bid by bidders each time they are present in an auction. Computed as total volume bid for the month / sum over whole month of number of bidders present in each auction. (5): Standard

deviation of the total volume bid, by each bidder in each auction, over the whole month. (6): Average over the whole month of the volume won by bidders each time they are successful in an auction. Computed as total auction volume for the month / sum over whole month of number of bidders successful in each auction. (7): Standard deviation of the total volume won by each bidder in each auction, over the whole month, (8): HHI Monthly value is computed considering successful bidder's market share over whole month.