

Auctions by the *Common Auction Platform*

October, November, December 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:

2, 3, 4(XI), 5, 9, 10, 11(PL), 12, 16, 17, 19, 23, 24, 25(PL), 26, 30, 31 October 2023;

2, 6, 7, 8(PL), 9, 13, 14, 16, 20, 21, 22(PL), 23, 27, 28, 30 November 2023;

4, 5, 6(PL), 7, 11, 12, 14, 18 December 2023;

Aviation Allowances:

No auctions in October 2023;

15 November 2023;

13(PL) December 2023;

Cancelled auctions:

No auctions in October 2023;

No auctions in November 2023;

No auctions in December 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 8 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 October, November, December 2023 auctions at a glance:

	General Allowances				Aviation Allowances		
	Oct	Nov	Dec		Oct	Nov	Dec
General							
Number of auctions	17	15	8	-	1	1	
Total volume auctioned	50,192,000	46,156,500	24,604,500	-	766,500	169,500	
Amount raised from the auctions (€)	4,048,501,990	3,479,368,685	1,686,160,400	-	60,898,425	11,814,150	
Average Auction Clearing Price (€/allowance)	80.66	75.38	68.53	-	79.45	69.70	
Total bid volume	82,938,500	69,632,000	38,313,500	-	1,973,000	810,000	
Average Cover ratio	1.7	1.5	1.6	-	2.6	4.8	
Monthly HHI	977	952	1,251	-	3,399	2,732	
Participation							
Number of eligible bidders	96	97	100	96	97	100	
Number of participating bidders ⁽¹⁾	32	33	32	-	10	10	
Number of successful bidders ⁽¹⁾	29	31	27	-	8	4	
Average number of bidders per auction	20.7	21.2	21.4	-	10.0	10.0	

Average number of successful bidders per auction		17.0	17.5	18.4		-	8.0	4.0
Auction data								
Average total volume bid per bidder per auction		244,123	220,146	226,194		-	197,300	81,000
Average bid size (volume per bid)		56,338	54,585	53,643		-	32,883	20,250
Average volume won per bidder per auction		183,013	179,458	168,543		-	95,813	42,375
Average range of bids (€)		46.46	44.33	53.61		-	4.46	4.40
Cancelled Auctions		0	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 December 2023 are EUR 141,868,033,015, and of aviation allowances EUR 1,297,622,095. Looking exclusively at the fourth trading period (January 2021 - December 2023) the total revenues from the auctions of general allowances are EUR 92,784,297,660 and of aviation allowances EUR 817,233,755. 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

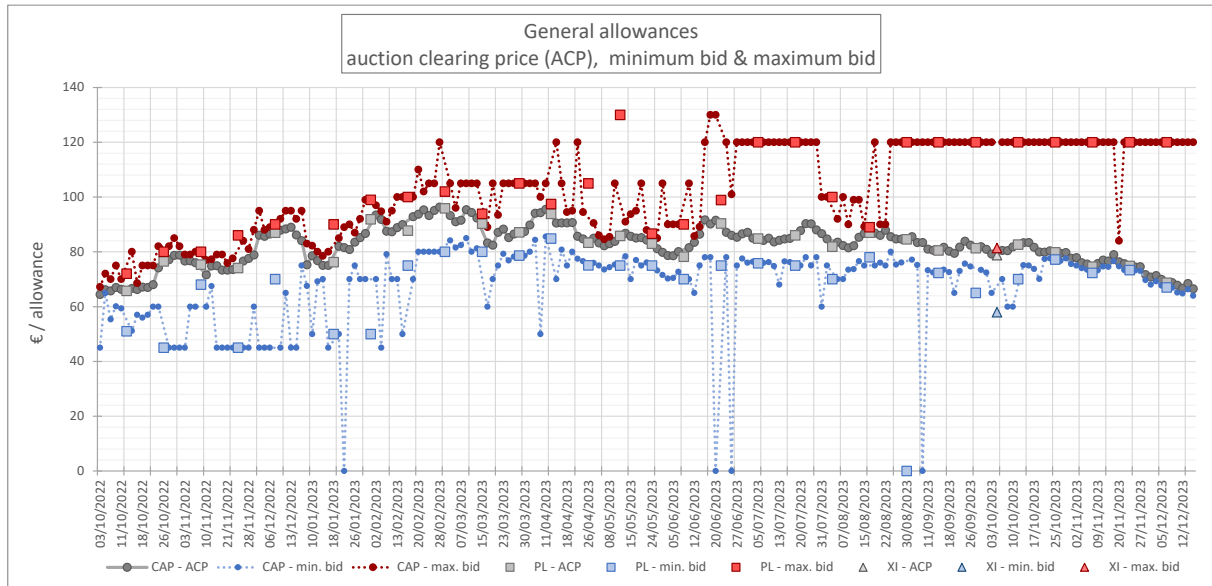
Month	Total auction volume	Total bid volume	Total revenue (€)	Average Cover ratio[1]	Average number of bidders	Average number of successful bidders	Average auction clearing price (€)[2]
Dec 23	24,604,500	38,313,500	1,686,160,400	1.6	21.4	18.4	68.53
Nov 23	46,156,500	69,632,000	3,479,368,685	1.5	21.2	17.5	75.38
Oct 23	50,192,000	82,938,500	4,048,501,990	1.7	20.7	17.0	80.66
Sep 23	40,086,500	73,748,500	3,273,588,055	1.8	20.9	16.4	81.66
Aug 23	22,879,000	63,291,000	1,939,207,975	2.8	18.3	11.5	84.76
Jul 23	39,906,000	75,292,000	3,438,886,200	1.9	21.3	15.3	86.17
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

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

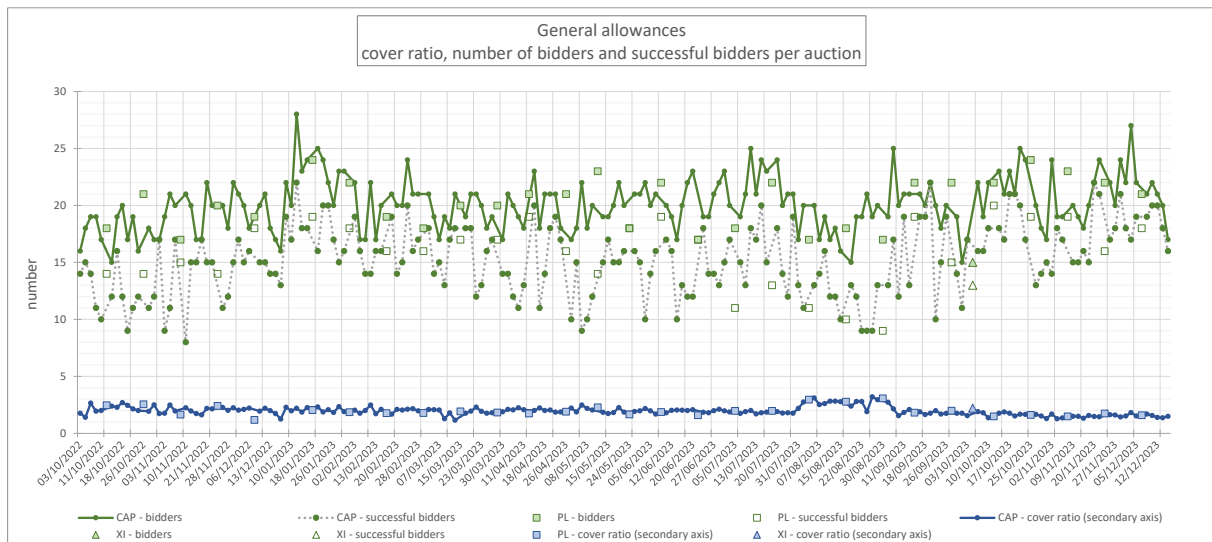
Feb 23	34,260,000	68,040,000	3,144,208,740	2.0	20.2	16.4	91.77
Jan 23	29,175,000	60,749,500	2,325,458,580	2.1	23.2	18.1	79.71
Dec 22	23,244,500	42,657,500	2,016,605,305	1.8	18.9	15.3	86.76
Nov 22	38,839,500	78,824,500	2,931,027,595	2.0	19.4	13.8	75.47
Oct 22	38,839,500	86,400,000	2,687,470,070	2.2	18.0	12.5	69.19
2023 total	426,978,000	803,399,500	35,506,829,260	1.9	20.6	15.9	83.16
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

During October, November, December 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 -0.18, -0.17, -0.20 respectively, and this difference had a standard deviation of EUR 0.40, 0.26, 0.25 respectively.

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

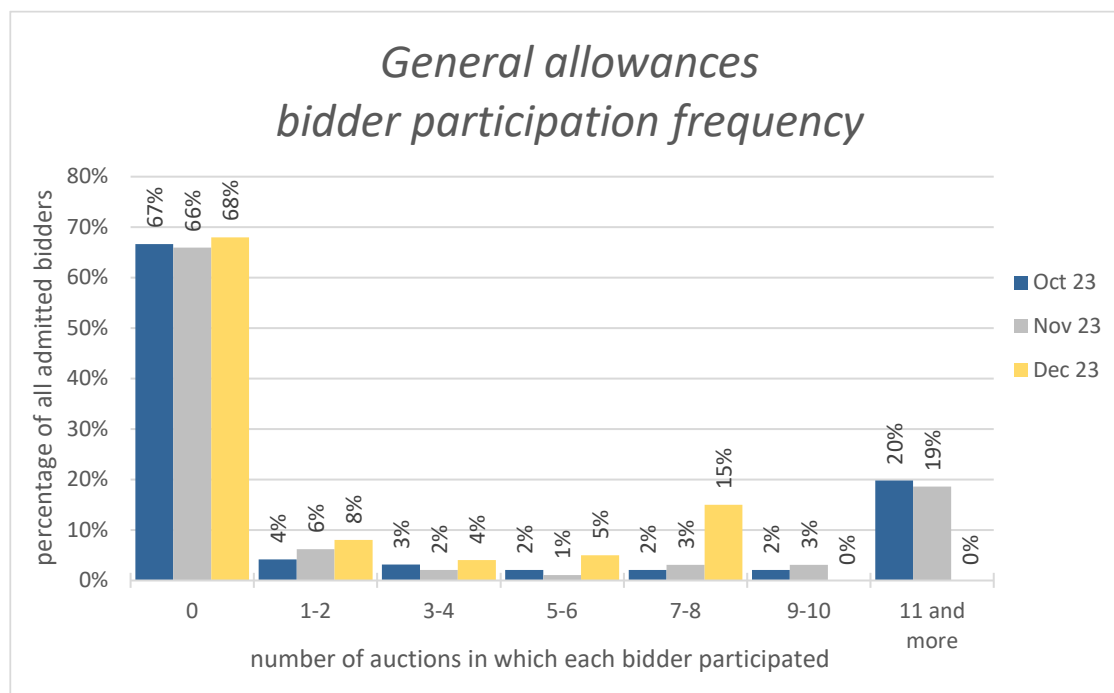


Graph 2: General allowances - cover ratio, number of bidders and successful bidders per auction



The number of eligible bidders is provided in Section 2. Out of these 32, 33 and 32 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]
Dec 23	8	32	38,313,500	226,194	224,056	303,570	717	4.2	53,643
Nov 23	15	33	69,632,000	220,146	218,969	245,568	1,282	4.0	54,585
Oct 23	17	32	82,938,500	244,123	238,329	311,320	1,506	4.3	56,338
Sep 23	13	28	73,748,500	272,633	272,135	391,170	1,183	4.4	62,413
Aug 23	17	31	63,291,000	205,254	203,508	335,640	1,258	4.0	50,436
Jul 23	15	33	75,292,000	239,078	236,025	350,571	1,250	3.9	60,517
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

(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
Dec 23	8	27	24,604,500	168,543	167,378	285,837	261
Nov 23	15	31	46,156,500	179,458	176,170	229,769	518
Oct 23	17	29	50,192,000	183,013	175,497	224,251	616
Sep 23	13	27	40,086,500	197,289	188,200	297,163	449
Aug 23	17	26	22,879,000	120,052	116,730	177,980	327
Jul 23	15	29	39,906,000	178,830	173,504	212,177	437
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

(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

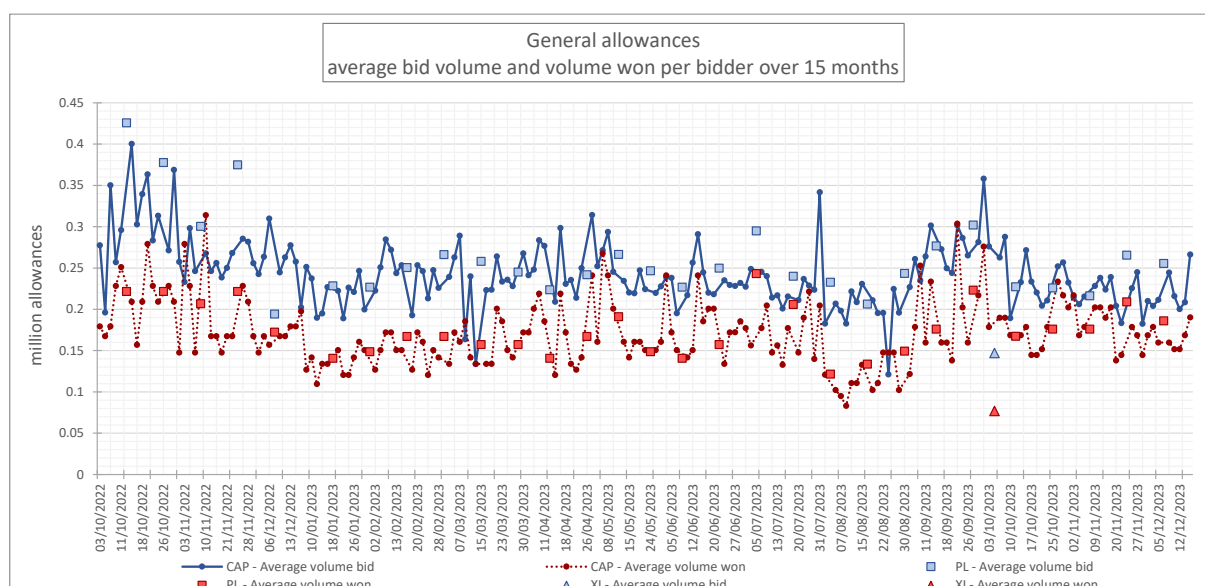


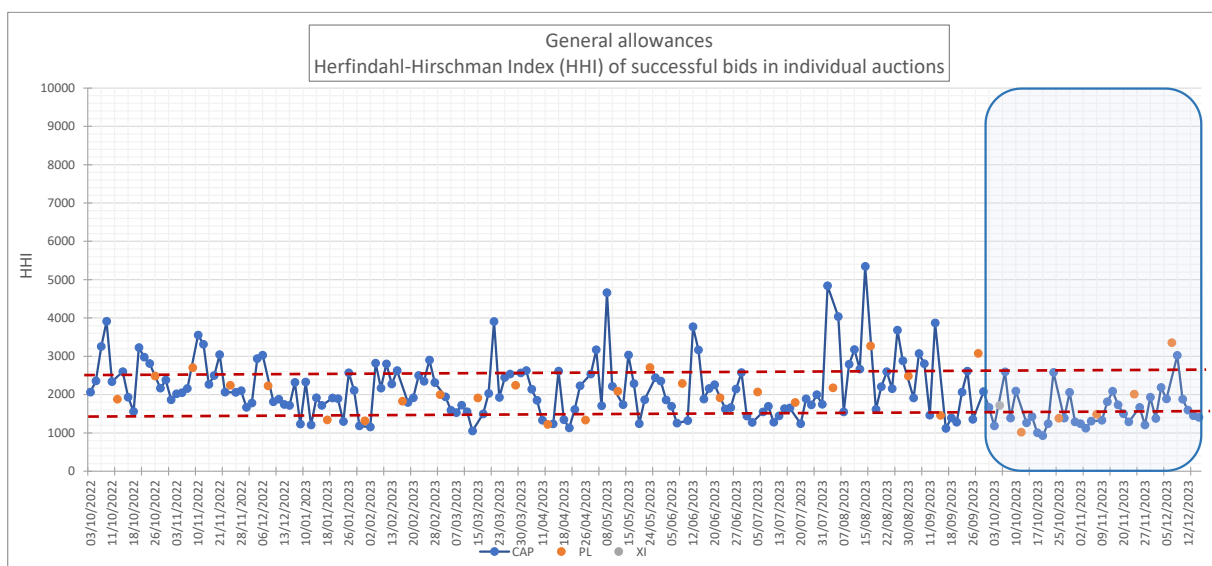
Table 4: General allowances – distribution of volume won per bidder category and their standard deviations

Month	% volume won coming from bidding on behalf of a client	Bidder category	% volume won	Standard deviation of % of volume won
Oct 23	0.00%	Operators (including Business groupings)	65.45%	11.6% points
		Investment firms (including persons exempt)	9.26%	6.1% points
		Credit institutions	25.29%	10.5% points
Nov 23	0.00%	Operators (including Business groupings)	56.41%	10.6% points
		Investment firms (including persons exempt)	8.49%	3.0% points
		Credit institutions	35.09%	10.8% points
Dec 23	0.00%	Operators (including Business groupings)	60.77%	14.8% points
		Investment firms (including persons exempt)	9.13%	4.0% points
		Credit institutions	30.10%	12.9% points

1.1.4. Concentration - general allowances

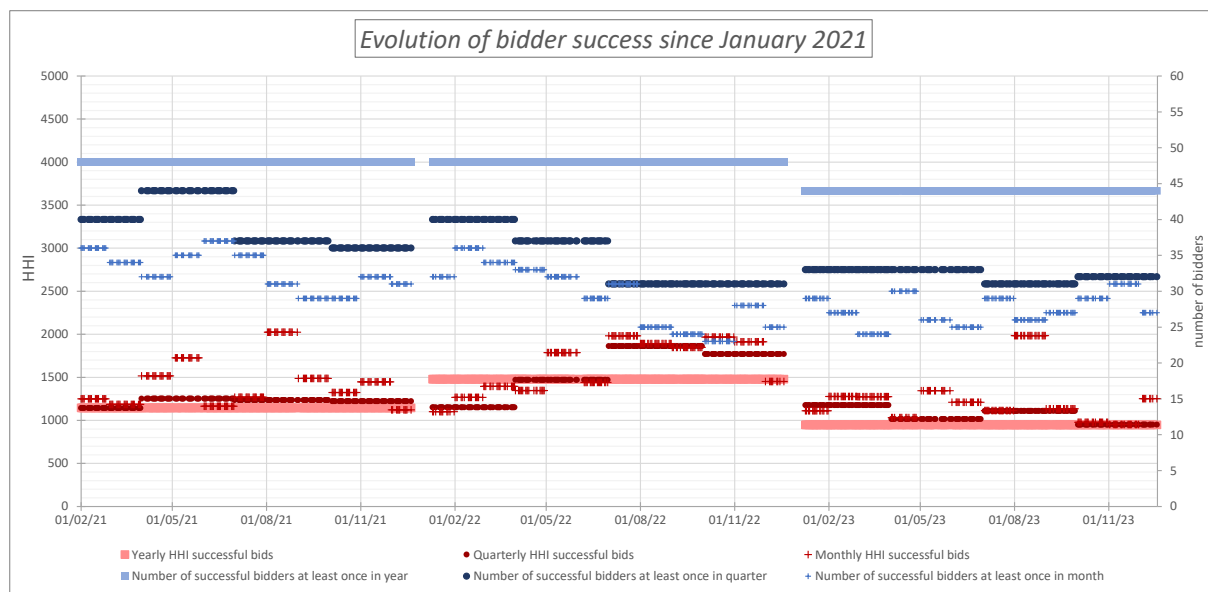
The Herfindahl-Hirschman Index (HHI) of successful bids is used to measure market concentration³. The HHI ranges from a value of 0 (perfect competition) to 10 000 (a single buyer). A common interpretation of the HHI is that a score below 1 500 is 'not-concentrated', between 1 500 and 2 500 is 'moderately 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



³ 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 2014⁴. Pursuant to the published *auction calendar*, only *aviation allowances* for the calendar year 2012 were auctioned in 2014⁵; 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]
Dec 23	169,500	810,000	11,814,150	4.8	10.0	4.0	69.70
Nov 23	766,500	1,973,000	60,898,425	2.6	10.0	8.0	79.45
Oct 23	-	-	-	-	-	-	-
Sep 23	775,500	2,398,000	61,884,900	3.1	12.0	6.0	79.80
Aug 23	-	-	-	-	-	-	-
Jul 23	775,500	1,645,000	66,165,660	2.1	13.0	9.0	85.32
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

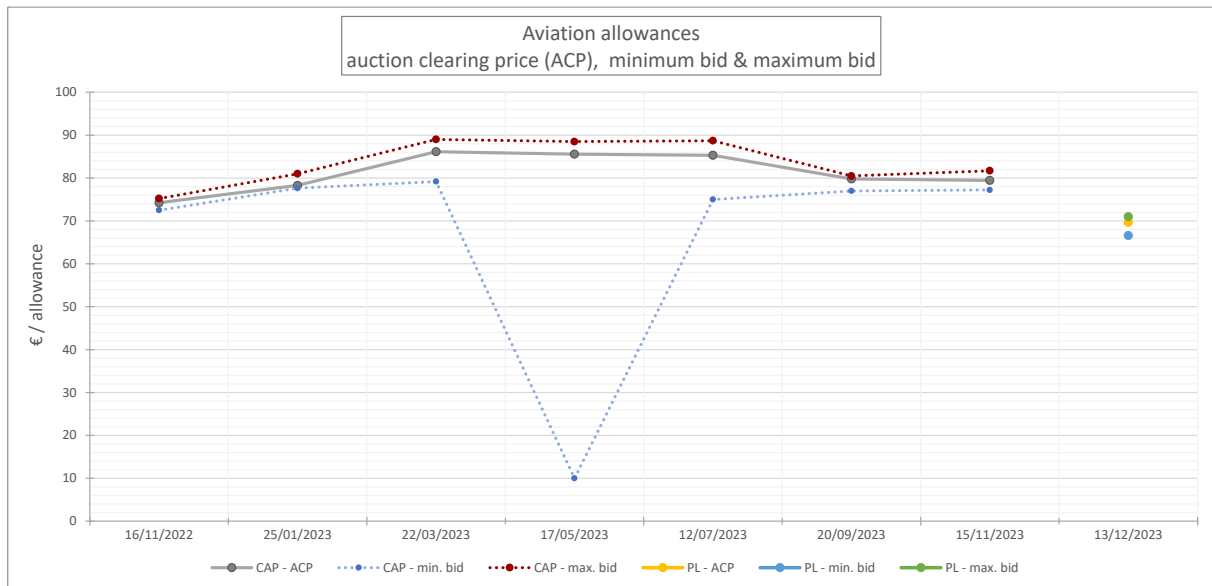
⁴ The auctions were suspended end 2012, see the Regulatory update published by the Commission on 16 November 2012: https://ec.europa.eu/clima/news-your-voice/news/auctions-2012-aviation-allowances-put-hold-2012-11-16_en

⁵ 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

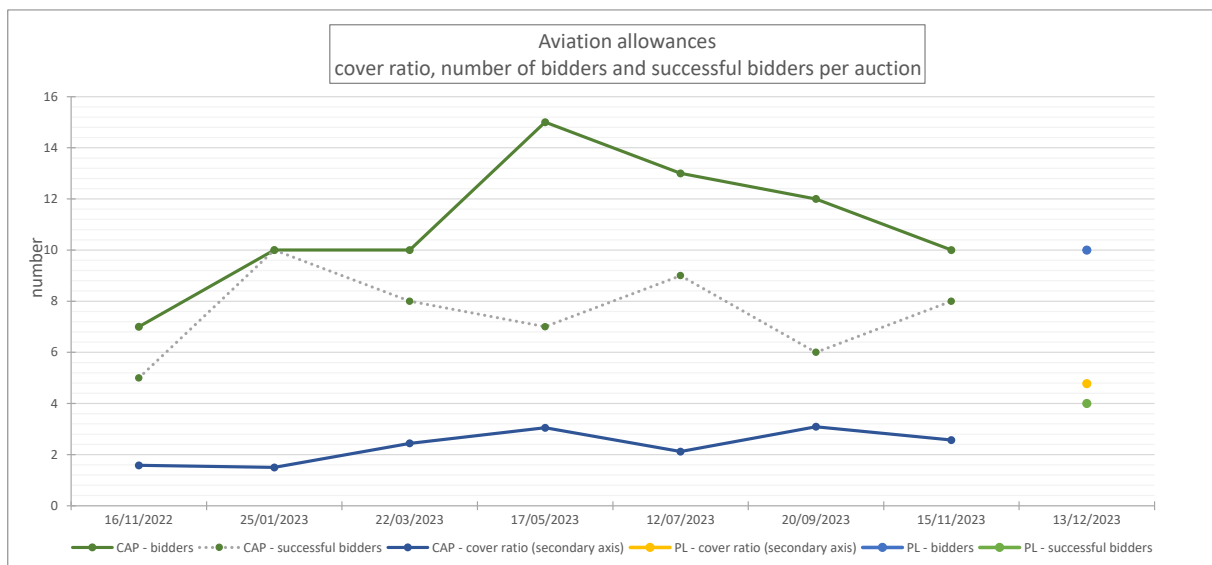
Oct 22	-	-	-	-	-	-	-
2023 total	4,813,500	12,242,500	394,645,890	2.8	11.4	7.4	81.99
2022 total	3,111,500	5,998,000	251,280,375	2.3	7.5	5.8	80.76
2021 total	3,185,500	7,463,000	171,307,490	2.6	6.5	4.5	53.78
2020 total	5,049,500	13,474,500	119,509,185	2.7	8.0	5.0	23.67
2019 total	4,701,000	13,172,500	119,584,255	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

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

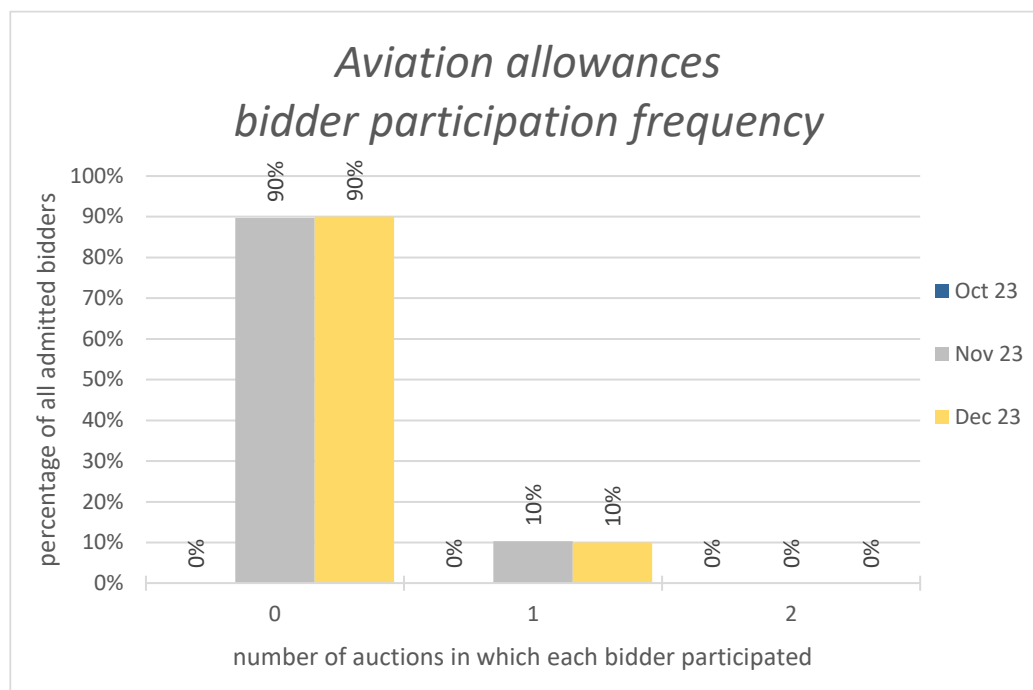
Graph 8: Aviation allowances - auction clearing price (ACP) & maximum prices bid & minimum prices bid



Graph 9: Aviation allowances - cover ratio, number of bidders and successful bidders 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 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]
Dec 23	1	10	810,000	81,000	81,000	42,811	40	4.0	20,250
Nov 23	1	10	1,973,000	197,300	197,300	208,808	60	6.0	32,883
Oct 23	-	-	-	-	-	-	-	-	-
Sep 23	1	12	2,398,000	199,833	199,833	216,624	63	5.3	38,063
Aug 23	-	-	-	-	-	-	-	-	-
Jul 23	1	13	1,645,000	126,538	126,538	193,424	48	3.7	34,271
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	-	-	-	-	-	-	-	-	-

(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
Dec 23	1	4	169,500	42,375	42,375	12,920	4
Nov 23	1	8	766,500	95,813	95,813	125,641	10
Oct 23	-	-	-	-	-	-	-
Sep 23	1	6	775,500	129,250	129,250	96,248	13
Aug 23	-	-	-	-	-	-	-
Jul 23	1	9	775,500	86,167	86,167	115,250	21
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	-	-	-	-	-	-	-

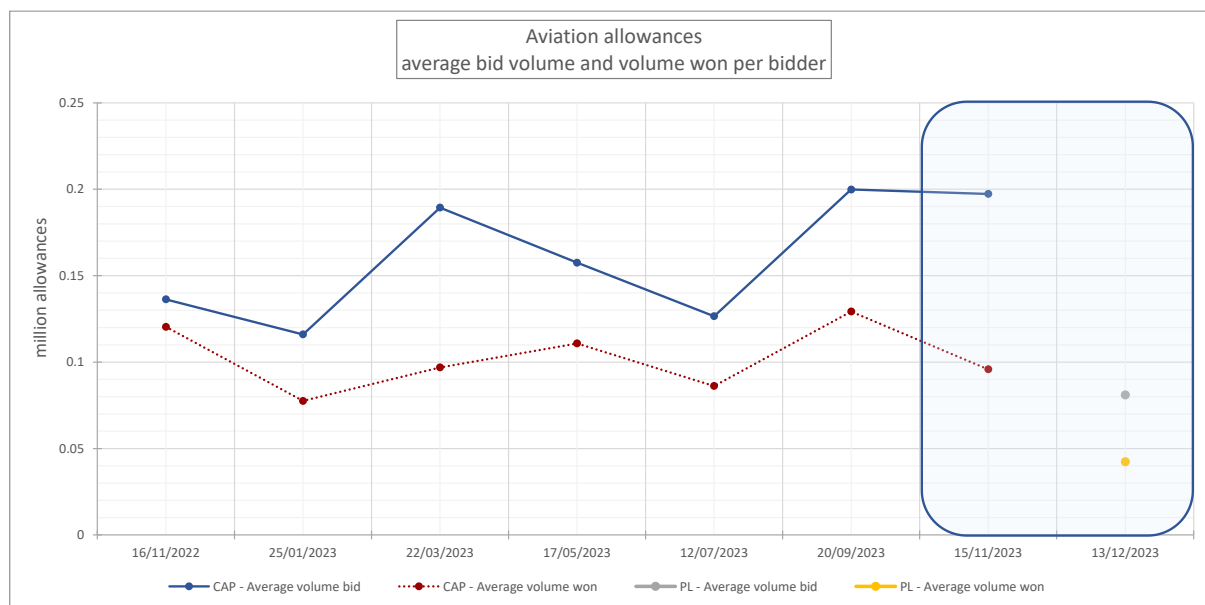
(1): Number of unique individual bidders or unique successful bidders present in a whole month.

[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



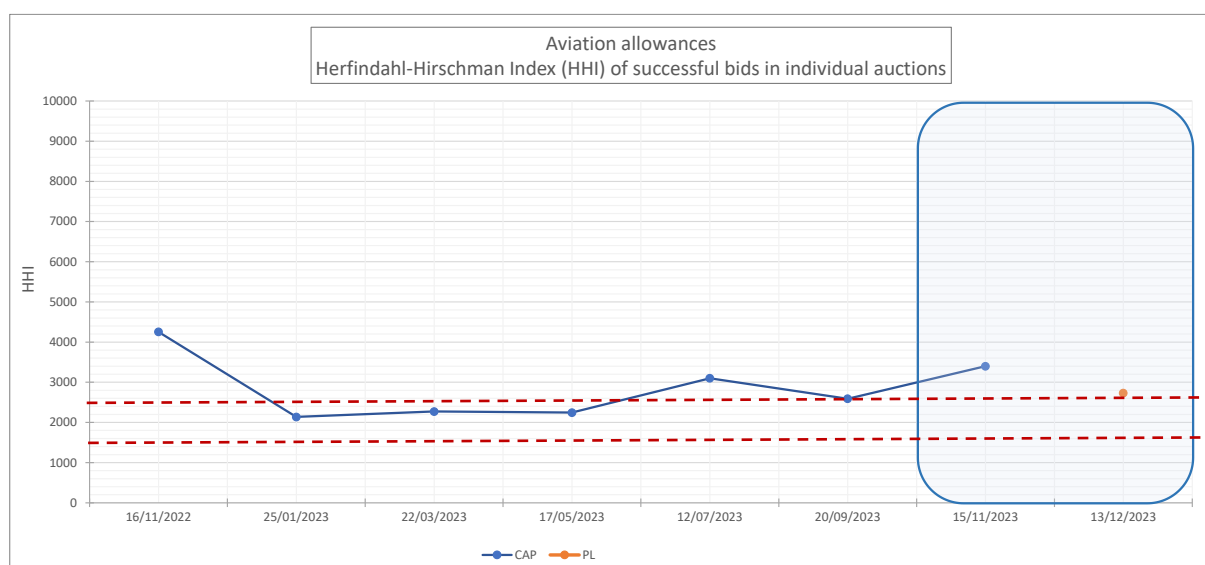
1.2.3 Type of bidders – aviation allowances

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 concentration⁶. 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



⁶ 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 auctions⁷.

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	Oct 23	-	-	-	-	-	-	177
	Nov 23	-	-	-	-	-	-	179
	Dec 23	-	-	-	-	-	-	183
Participants eligible to bid in the auctions	Oct 23	69	1	10	7	1	8	96
	Nov 23	69	1	10	8	1	8	97
	Dec 23	71	1	11	8	1	8	100
(Of which:) Participants eligible to bid in the auctions on behalf of clients	Oct 23	-	-	2	2	-	1	5
	Nov 23	-	-	2	2	-	1	5
	Dec 23	-	-	3	2	-	1	6
(Of which:) Auction-only access	Oct 23	2	-	2	1	-	1	6
	Nov 23	2	-	2	1	-	1	6
	Dec 23	2	-	2	1	-	1	6

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

⁷ This assessment is based on the auction participants' activity in EEX's secondary market and general market knowledge of EEX.

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: 15/01/2024

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>EUAA</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 4 2023
(reported in euros)

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

<i>Cumulated Revenues since November 2012 (start of Phase III)</i>	General allowances	Aviation allowances	General and aviation allowances
Austria	2,013,886,140	33,220,460	2,047,106,600
Belgium	3,601,497,585	43,094,930	3,644,592,515
Bulgaria	4,791,050,245	13,954,970	4,805,005,215
Croatia	754,942,920	10,269,255	765,212,175
Cyprus	384,163,925	13,941,220	398,105,145
Czech Republic	4,537,385,850	16,166,465	4,553,552,315
Denmark	1,856,038,550	39,432,290	1,895,470,840
Estonia	1,474,349,430	3,406,620	1,477,756,050
Finland	2,566,014,205	31,920,830	2,597,935,035
France	8,894,594,900	178,569,015	9,073,163,915
Greece	6,109,048,785	76,021,535	6,185,070,320
Hungary	2,185,106,300	14,503,055	2,199,609,355
Iceland	73,947,340	13,580,770	87,528,110
InnoFund RRF	1,531,285,330	-	1,531,285,330
Innovation Fund	8,501,105,600	-	8,501,105,600
Ireland	1,108,853,485	29,987,075	1,138,840,560
Italy	15,499,582,560	194,452,990	15,694,035,550
Latvia	420,369,410	7,976,310	428,345,720
Liechtenstein	2,157,630	-	2,157,630
Lithuania	670,299,895	5,732,250	676,032,145
Luxembourg	117,334,170	5,183,010	122,517,180
Malta	179,451,930	8,687,505	188,139,435
Modernisation Fund	14,809,523,325	-	14,809,523,325
MS RRF	1,296,934,775	-	1,296,934,775
The Netherlands	5,443,495,370	64,974,950	5,508,470,320
Northern Ireland	247,041,110	-	247,041,110
Norway	1,829,729,160	86,537,180	1,916,266,340
Poland	23,965,896,425	37,241,940	24,003,138,365
Portugal	3,082,753,700	53,026,360	3,135,780,060
Romania	4,708,631,995	26,166,445	4,734,798,440
Slovak Republic	2,079,617,575	2,537,855	2,082,155,430
Slovenia	788,858,475	1,964,850	790,823,325
Spain	14,956,948,115	230,286,465	15,187,234,580
Sweden	1,386,136,805	54,785,495	1,440,922,300
TOTAL	141,868,033,015	1,297,622,095	143,165,655,110

Annex 1b Auction revenues per Member State and for Poland from January 2021 to the end of Quarter 4 2023

(reported in euros)

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

<i>Cumulated Revenues since January 2021 (start of Phase IV)</i>	General allowances	Aviation allowances	General and aviation allowances
Austria	1,110,363,020	20,698,295	1,131,061,315
Belgium	1,916,319,285	28,079,315	1,944,398,600
Bulgaria	3,089,873,370	9,355,675	3,099,229,045
Croatia	407,026,860	7,481,885	414,508,745
Cyprus	288,092,300	6,809,490	294,901,790
Czech Republic	2,043,723,510	9,951,220	2,053,674,730
Denmark	1,045,924,150	25,232,245	1,071,156,395
Estonia	940,064,525	2,616,675	942,681,200
Finland	1,480,762,495	20,861,325	1,501,623,820
France	5,340,782,370	109,918,550	5,450,700,920
Greece	3,759,728,620	50,884,530	3,810,613,150
Hungary	1,183,170,915	9,441,465	1,192,612,380
Iceland	13,755,195	8,892,375	22,647,570
InnoFund RRF	1,531,285,330	-	1,531,285,330
Innovation Fund	7,167,282,595	-	7,167,282,595
Ireland	504,372,750	18,791,530	523,164,280
Italy	9,209,176,415	119,817,705	9,328,994,120
Latvia	232,171,755	5,276,835	237,448,590
Liechtenstein	845,365	-	845,365
Lithuania	299,336,815	4,309,760	303,646,575
Luxembourg	36,973,125	3,473,535	40,446,660
Malta	109,671,015	5,841,615	115,512,630
Modernisation Fund	14,809,523,325	-	14,809,523,325
MS RRF	1,296,934,775	-	1,296,934,775
The Netherlands	3,269,405,090	41,796,150	3,311,201,240
Northern Ireland	247,041,110	-	247,041,110
Norway	632,374,225	41,101,930	673,476,155
Poland	15,961,787,655	26,330,445	15,988,118,100
Portugal	1,894,232,405	37,859,315	1,932,091,720
Romania	1,534,295,720	18,167,800	1,552,463,520
Slovak Republic	995,747,500	1,551,080	997,298,580
Slovenia	486,777,940	1,259,000	488,036,940
Spain	9,153,228,070	145,160,165	9,298,388,235
Sweden	792,248,065	36,273,845	828,521,910
TOTAL	92,784,297,660	817,233,755	93,601,531,415

Annex 2 Results of individual auctions on behalf of *participating Member States* and Poland in October, November, December 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 - October 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
02/10/2023	80.95	72.47	120.00	81.18	80.37	3,035,500	5,372,000	1.77	15	11	245,723,725	70	19	4.67	76,743	358,133	400,418	275,955	251,214
03/10/2023	79.17	65.00	120.00	80.12	79.70	3,035,500	4,694,500	1.55	17	17	240,320,535	80	63	4.71	58,681	276,147	340,138	178,559	179,343
04/10/2023	78.78	58.00	81.41	78.18	78.52	1,000,000	2,208,500	2.21	15	13	78,780,000	75	26	5.00	29,447	147,233	134,370	76,923	85,367
05/10/2023	80.50	70.00	120.00	80.38	80.11	3,035,500	5,776,000	1.90	22	16	244,357,750	92	24	4.18	62,783	262,545	418,288	189,719	336,507
09/10/2023	80.43	60.00	120.00	80.01	80.02	3,035,500	5,468,500	1.80	19	16	244,145,265	87	28	4.58	62,856	287,816	356,922	189,719	209,549
10/10/2023	81.82	60.00	120.00	81.74	81.54	3,035,500	4,163,000	1.37	22	18	248,364,610	81	29	3.68	51,395	189,227	272,302	168,639	280,154
11/10/2023	82.68	70.00	120.00	83.33	83.23	3,347,500	5,002,500	1.49	22	20	276,771,300	97	76	4.41	51,572	227,386	312,192	167,375	169,989
12/10/2023	83.35	75.12	120.00	84.18	83.06	3,035,500	5,352,000	1.76	23	18	253,008,925	94	35	4.09	56,936	232,696	324,959	168,639	190,053
16/10/2023	83.40	75.01	120.00	83.43	83.08	3,035,500	5,700,500	1.88	21	17	253,160,700	98	26	4.67	58,168	271,452	361,723	178,559	212,480
17/10/2023	81.69	73.73	120.00	82.12	81.68	3,035,500	5,370,000	1.77	23	21	247,969,995	102	49	4.43	52,647	233,478	302,489	144,548	151,682
19/10/2023	79.99	70.11	120.00	81.18	80.55	3,035,500	4,627,000	1.52	21	21	242,809,645	85	74	4.05	54,435	220,333	327,122	144,548	140,803
23/10/2023	79.92	77.42	120.00	80.02	79.55	3,035,500	5,110,500	1.68	25	20	242,597,160	102	29	4.08	50,103	204,420	240,262	151,775	184,483
24/10/2023	80.40	77.63	120.00	80.37	79.90	3,035,500	5,059,000	1.67	24	17	244,054,200	109	26	4.54	46,413	210,792	339,112	178,559	328,479
25/10/2023	79.85	77.19	120.00	80.10	79.41	3,347,500	5,425,500	1.62	24	19	267,297,875	94	26	3.92	57,718	226,063	250,550	176,184	224,698
26/10/2023	79.48	76.71	120.00	79.45	78.83	3,035,500	5,037,500	1.66	20	13	241,261,540	87	19	4.35	57,902	251,875	235,171	233,500	208,839
30/10/2023	79.78	77.63	120.00	80.17	79.67	3,035,500	4,622,500	1.52	18	14	242,172,190	84	29	4.67	55,030	256,806	285,439	216,821	297,081
31/10/2023	77.65	75.54	120.00	78.56	77.70	3,035,500	3,949,000	1.30	17	15	235,706,575	69	38	4.06	57,232	232,294	196,815	202,367	195,026

General Allowances - November 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
02/11/2023	77.88	74.98	120.00	78.00	77.08	3,035,500	5,149,000	1.70	24	14	236,404,740	94	19	3.92	54,777	214,542	223,892	216,821	186,243
06/11/2023	76.02	74.04	120.00	76.93	76.12	3,035,500	3,916,000	1.29	19	18	230,758,710	73	50	3.84	53,644	206,105	193,313	168,639	170,039
07/11/2023	75.58	73.49	120.00	76.54	75.59	3,035,500	4,095,500	1.35	19	17	229,423,090	73	38	3.84	56,103	215,553	202,240	178,559	196,905
08/11/2023	74.56	72.28	120.00	75.31	74.50	3,347,500	4,979,000	1.49	23	19	249,589,600	83	39	3.61	59,988	216,478	246,380	176,184	237,937
09/11/2023	75.75	73.24	120.00	76.41	75.32	3,035,500	4,567,000	1.50	20	15	229,939,125	79	23	3.95	57,810	228,350	221,998	202,367	201,597
13/11/2023	77.01	74.62	120.00	77.29	76.66	3,035,500	4,521,500	1.49	19	15	233,763,855	83	26	4.37	54,476	237,974	290,273	202,367	265,079
14/11/2023	76.62	74.49	120.00	77.76	76.69	3,035,500	4,029,000	1.33	18	16	232,580,010	80	44	4.44	50,363	223,833	286,421	189,719	289,884
16/11/2023	79.00	76.60	120.00	79.26	78.57	3,035,500	4,779,000	1.57	20	15	239,804,500	84	20	4.20	56,893	238,950	288,725	202,367	255,413
20/11/2023	76.35	74.75	84.00	76.44	76.29	3,035,500	4,490,500	1.48	22	22	231,760,425	91	39	4.14	49,346	204,114	232,452	137,977	209,104
21/11/2023	75.69	73.34	120.00	76.15	75.54	3,035,500	4,399,500	1.45	24	21	229,756,995	101	38	4.21	43,559	183,313	209,294	144,548	188,344
22/11/2023	74.84	73.34	120.00	75.36	74.65	3,347,500	5,845,000	1.75	22	16	250,526,900	92	30	4.18	63,533	265,682	298,203	209,219	311,573
23/11/2023	74.50	73.12	120.00	75.27	74.43	3,035,500	4,962,000	1.63	22	17	226,144,750	85	40	3.86	58,376	225,545	244,088	178,559	241,784
27/11/2023	74.57	73.09	120.00	75.13	74.45	3,035,500	4,899,000	1.61	20	18	226,357,235	84	35	4.20	58,321	244,950	244,971	168,639	182,782
28/11/2023	71.71	69.68	120.00	72.30	71.63	3,035,500	4,379,500	1.44	24	21	217,675,705	92	39	3.83	47,603	182,479	251,237	144,548	252,582
30/11/2023	70.79	68.04	120.00	71.35	70.71	3,035,500	4,620,500	1.52	22	18	214,883,045	88	38	4.00	52,506	210,023	211,581	168,639	205,162

General Allowances - December 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
04/12/2023	71.34	69.25	120.00	71.97	70.96	3,035,500	5,511,000	1.82	27	17	216,552,570	103	23	3.81	53,505	204,111	292,900	178,559	294,402
05/12/2023	69.94	67.69	120.00	70.42	69.69	3,035,500	4,650,500	1.53	22	19	212,302,870	91	27	4.14	51,104	211,386	267,311	159,763	256,705
06/12/2023	68.71	67.01	120.00	69.50	68.53	3,350,000	5,366,000	1.60	21	18	230,178,500	93	29	4.43	57,699	255,524	421,069	186,111	417,646
07/12/2023	68.76	66.94	120.00	69.28	68.47	3,035,500	5,133,500	1.69	21	19	208,720,980	96	32	4.57	53,474	244,452	363,595	159,763	347,885
11/12/2023	67.82	65.12	120.00	68.39	67.50	3,035,500	4,751,000	1.57	22	20	205,867,610	95	32	4.32	50,011	215,955	284,598	151,775	251,761
12/12/2023	66.72	64.81	120.00	67.67	66.76	3,035,500	4,206,000	1.39	21	20	202,528,560	83	47	3.95	50,675	200,286	242,972	151,775	224,299
14/12/2023	68.45	66.33	120.00	69.22	68.45	3,035,500	4,168,500	1.37	20	18	207,779,975	83	42	4.15	50,223	208,425	231,103	168,639	213,553
18/12/2023	66.49	64.00	120.00	67.32	66.42	3,041,500	4,527,000	1.49	17	16	202,229,335	73	29	4.29	62,014	266,294	264,403	190,094	212,461

Aviation Allowances - October 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 - November 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
15/11/2023	79.45	77.24	81.70	79.00	79.00	766,500	1,973,000	2.57	10	8	60,898,425	60	10	6.00	32,883	197,300	208,808	95,813	125,641

Aviation Allowances - December 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
13/12/2023	69.70	66.60	71.00	68.96	69.02	169,500	810,000	4.78	10	4	11,814,150	40	4	4.00	20,250	81,000	42,811	42,375	12,920

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.