

# Auctions by the *Common Auction Platform*

## October, November, December 2018

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**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:*

1, 2, 4, 8, 9, 10(PL)<sup>1</sup>, 11, 15, 16, 18, 22, 23, 24(PL), 25, 29 and 30 October 2018;

1, 5, 6, 7(PL), 8, 12, 13, 15, 19, 20, 21(PL), 22, 26, 27 and 29 November 2018;

3, 4, 5(PL), 6, 10, 11, 13 and 17 December 2018;

*Aviation Allowances:*

21 November 2018;

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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 3.7 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*. Two auction platforms are in place. 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. The second auction platform is ICE Futures Europe (ICE) in London, which acts as the United Kingdom's platform. Poland may appoint an opt-out auction platform but is using for the time being the common auction platform.

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, taking into account the free allocation volumes. Up to 2020 ten per cent are allocated to the least wealthy EU Member States and the remaining two per cent is given as a 'Kyoto bonus' to nine EU Member States, which by 2005 had reduced their greenhouse gas emissions by at least 20% of levels in their Kyoto Protocol base year or period.

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.

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<sup>1</sup> Auctions conducted by EEX for Poland.

For further information: [http://ec.europa.eu/clima/policies/ets/cap/auctioning/index\\_en.htm](http://ec.europa.eu/clima/policies/ets/cap/auctioning/index_en.htm)

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**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.

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## 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).

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 contracted EEX to auction its share of allowances to be auctioned. These auctions were held on the Transitional Common Auction Platform between 16 September 2013 and 18 August 2016<sup>2</sup>. Auctioning by CAP2 for Poland started as from 19 March 2017 following the conclusion of a bilateral agreement between EEX and Poland.

The Member States of the European Free Trade Association (EFTA) that are Party to the European Economic Area (EEA)<sup>3</sup> have also stated their intention to make use of the *Common Auction Platform* by aggregating their volumes to those auctioned on behalf of the *participating Member States*. The preparations for this are ongoing.

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<sup>2</sup> Due to the back-loading, no auctions were held for Poland from May to December 2014, the auctions restarted in January 2015. Due to transition between common auction platforms, no auctions were held for Poland between September 2016 and mid-March 2017.

<sup>3</sup> Iceland, Liechtenstein and Norway.

## Executive summary

In the reporting period, EEX, in its capacity as the *Common Auction Platform (CAP2)*, conducted auctions of *general allowances* and *aviation allowances* for the *third 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 2018 auctions at a glance:**

|  | <b>General Allowances</b> |               |             | <b>Aviation Allowances</b> |            |     |
|--|---------------------------|---------------|-------------|----------------------------|------------|-----|
|  | Oct                       | Nov           | Dec         | Oct                        | Nov        | Dec |
| <b>General</b>                                   |                           |               |             |                            |            |     |
| Number of auctions                               | 16                        | 15            | 8           | -                          | 1          | -   |
| Total volume auctioned                           | 66 076 000                | 61 863 000    | 32 969 000  | -                          | 955 000    | -   |
| Amount raised from the auctions (€)              | 1 290 645 520             | 1 163 035 100 | 681 979 150 | -                          | 19 195 500 | -   |
| Average Auction Clearing Price (€/allowance)     | 19.5                      | 18.8          | 20.7        | -                          | 20.1       | -   |
| Total bid volume                                 | 194 879 000               | 124 963 500   | 76 976 500  | -                          | 3 580 000  | -   |
| Average <i>Cover ratio</i>                       | 2.9                       | 2.0           | 2.3         | -                          | 3.7        | -   |
| Monthly HHI                                      | 1989                      | 1874          | 1634        | -                          | 2841       | -   |
| <b>Participation</b>                             |                           |               |             |                            |            |     |
| Number of eligible bidders                       | 77                        | 78            | 79          | -                          | 78         | -   |
| Number of participating bidders <sup>(1)</sup>   | 34                        | 38            | 38          | -                          | 10         | -   |
| Number of successful bidders <sup>(1)</sup>      | 31                        | 36            | 32          | -                          | 7          | -   |
| Average number of bidders per auction            | 26.2                      | 26.3          | 28.0        | -                          | 10         | -   |
| Average number of successful bidders per auction | 19.1                      | 17.7          | 19.6        | -                          | 7          | -   |
| <b>Auction data</b>                              |                           |               |             |                            |            |     |
| Average total volume bid per bidder per auction  | 457 738                   | 320 463       | 345 385     | -                          | 358 000    | -   |
| Average bid size (volume per bid)                | 133 295                   | 97 811        | 106 364     | -                          | 63 929     | -   |
| Average volume won per bidder per auction        | 221 301                   | 256 657       | 213 923     | -                          | 136 429    | -   |
| Average range of bids (€)                        | 15.10                     | 14.87         | 15.68       | -                          | 0.97       | -   |

(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* and Poland from the start of the *Third trading period* auctions (November 2012) to December 2018 are EUR 24 003 407 465 , and of *aviation allowances* EUR 241 294 900. Further data are 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 website<sup>4</sup>.

Please note that in all parts of this report monthly averages provided are weighted by each auction's auction volume, unless otherwise indicated.

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<sup>4</sup> <https://www.eex.com/en/products/environmental-markets/emissions-auctions/overview>

## 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.

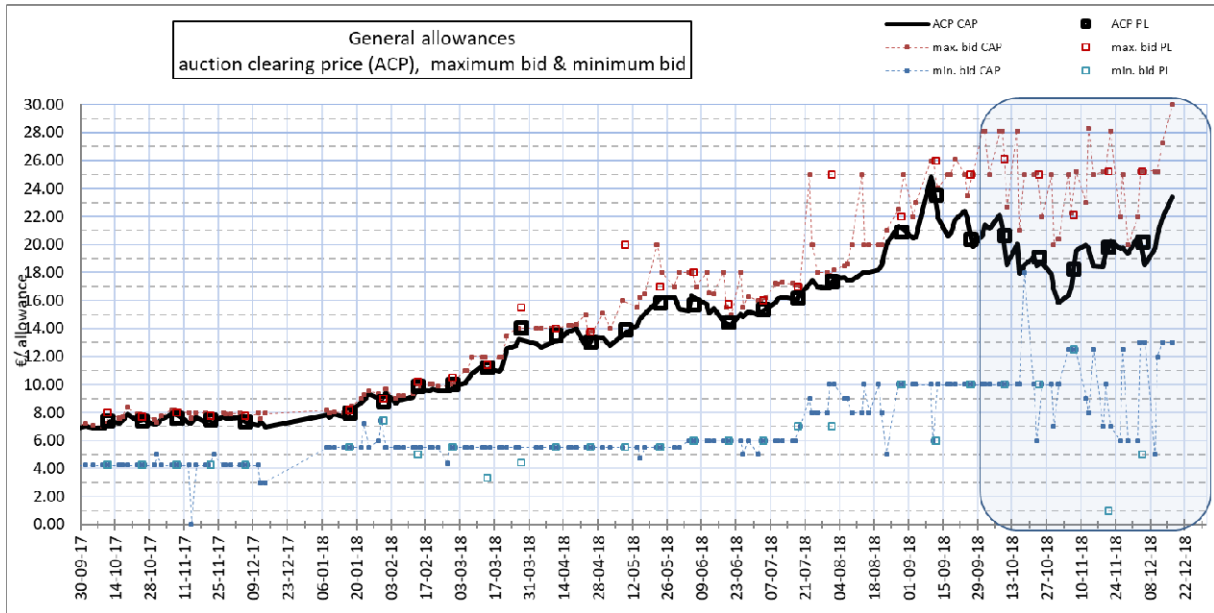
**Table 1:** General allowances - main statistics on the results of the auctions per month

| Month             | Total auction volume | Total bid volume     | Total revenue (€)    | Average Cover ratio <sup>5</sup> | Average number of bidders | Average number of successful bidders | Average auction clearing price (€) |
|-------------------|----------------------|----------------------|----------------------|----------------------------------|---------------------------|--------------------------------------|------------------------------------|
| December 2018     | 32 969 000           | 76 976 500           | 681 979 150          | 2.3                              | 28.0                      | 19.6                                 | 20.69                              |
| November 2018     | 61 863 000           | 124 963 500          | 1 163 035 100        | 2.0                              | 26.3                      | 17.7                                 | 18.80                              |
| October 2018      | 66 076 000           | 194 879 000          | 1 290 645 520        | 2.9                              | 26.2                      | 19.1                                 | 19.53                              |
| September 2018    | 53 437 000           | 137 998 000          | 1 163 471 730        | 2.6                              | 25.9                      | 19.7                                 | 21.77                              |
| August 2018       | 28 795 000           | 118 920 000          | 537 691 740          | 4.1                              | 24.7                      | 16.5                                 | 18.67                              |
| July 2018         | 66 076 000           | 217 971 000          | 1 070 680 240        | 3.3                              | 26.4                      | 18.1                                 | 16.20                              |
| June 2018         | 57 650 000           | 131 660 500          | 874 353 320          | 2.3                              | 25.9                      | 17.6                                 | 15.17                              |
| May 2018          | 45 011 000           | 105 676 000          | 669 952 180          | 2.3                              | 26.2                      | 20.6                                 | 14.88                              |
| April 2018        | 61 863 000           | 117 729 000          | 817 157 360          | 1.9                              | 26.1                      | 19.3                                 | 13.21                              |
| March 2018        | 57 650 000           | 150 726 000          | 659 294 570          | 2.6                              | 27.3                      | 16.4                                 | 11.44                              |
| February 2018     | 57 650 000           | 152 580 500          | 542 292 760          | 2.7                              | 23.6                      | 15.6                                 | 9.41                               |
| January 2018      | 53 437 000           | 132 613 000          | 447 037 060          | 2.5                              | 21.2                      | 14.9                                 | 8.37                               |
| December 2017     | 30 435 500           | 73 929 500           | 222 478 410          | 2.4                              | 20.7                      | 14.7                                 | 7.31                               |
| November 2017     | 65 113 500           | 162 391 500          | 492 532 545          | 2.5                              | 21.1                      | 13.9                                 | 7.56                               |
| October 2017      | 65 113 500           | 177 255 000          | 473 493 315          | 2.7                              | 22.0                      | 14.2                                 | 7.27                               |
| <b>2017 total</b> | <b>648 415 500</b>   | <b>1 761 212 000</b> | <b>3 744 838 845</b> | <b>2.7</b>                       | <b>21.2</b>               | <b>14.6</b>                          | <b>5.78</b>                        |
| <b>2016 total</b> | <b>474 261 000</b>   | <b>1 092 400 000</b> | <b>2 496 870 295</b> | <b>2.3</b>                       | <b>19.0</b>               | <b>13.4</b>                          | <b>5.26</b>                        |
| <b>2015 total</b> | <b>413 874 000</b>   | <b>1 337 010 500</b> | <b>3 154 940 925</b> | <b>3.2</b>                       | <b>18.3</b>               | <b>13.3</b>                          | <b>7.62</b>                        |
| <b>2014 total</b> | <b>335 052 000</b>   | <b>1 796 711 000</b> | <b>1 977 712 120</b> | <b>5.4</b>                       | <b>17.6</b>               | <b>11.9</b>                          | <b>5.90</b>                        |
| <b>2013 total</b> | <b>530 488 000</b>   | <b>1 761 639 500</b> | <b>2 349 853 340</b> | <b>3.3</b>                       | <b>18.4</b>               | <b>13.2</b>                          | <b>4.43</b>                        |

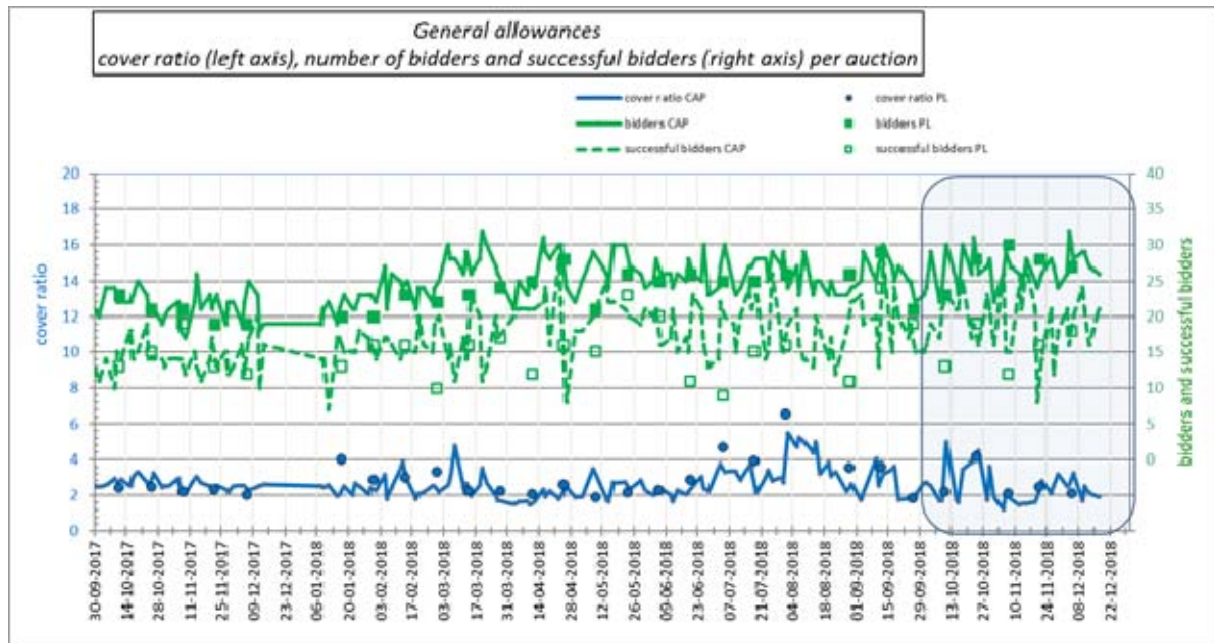
During October, November, December 2018, the difference between the Auction Clearing Prices and the mean of the *best-ask* and *best-bid* prices on the EEX *spot secondary market* for *general allowances* at the closure of the auction *bidding window* was on average EUR - 0.14, - 0.01, - 0.11 respectively, and this difference had a standard deviation of EUR 0.23, 0.17, 0.09 respectively.

<sup>5</sup> Cover ratio is the ratio between the total bid volume and the auction volume.

**Graph 1: General allowances - auction clearing price (ACP), maximum bid & minimum bid<sup>6</sup>**



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

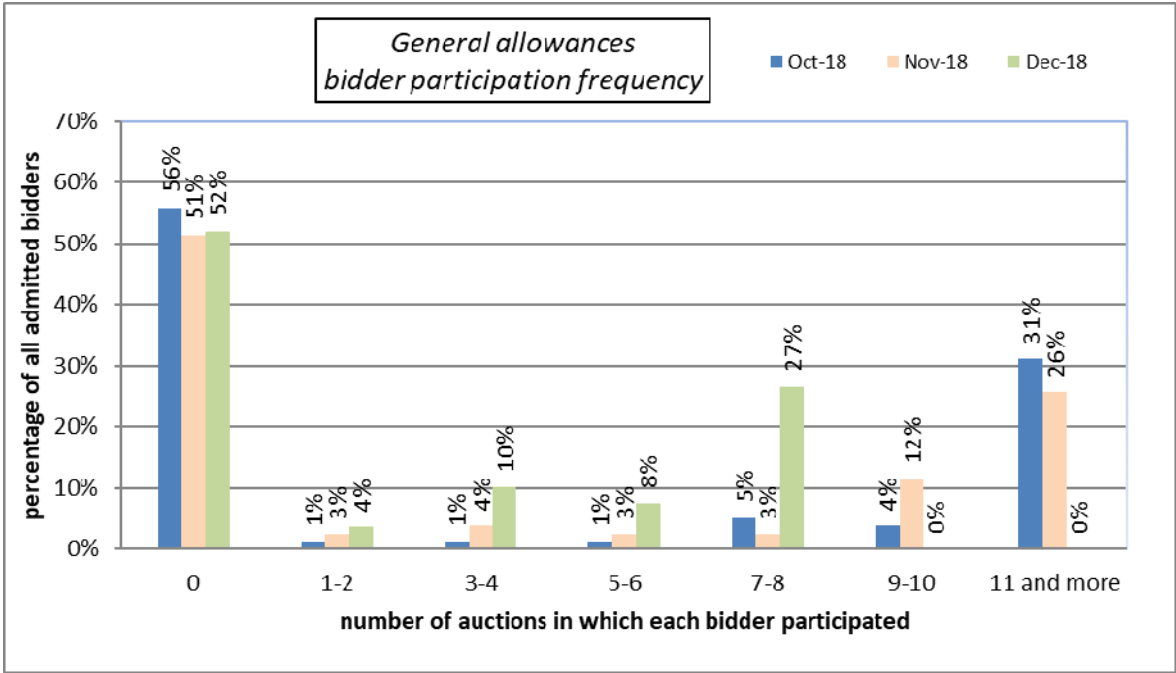


The number of eligible bidders is provided in Section 2. Out of these, 34, 38 and 38 different bidders participated in the auctions in respectively in October, November, December 2018. Graph 3A indicates the participation frequency over these months.

<sup>6</sup> Auctions on behalf of Poland were held on the following days: 11/10/2017, 25/10/2017, 8/11/2017, 22/11/2017, 6/12/2017, 17/1/2018, 31/1/2018, 14/2/2018, 28/2/2018, 14/3/2018, 28/3/2018, 11/4/2018, 25/4/2018, 9/5/2018, 23/5/2018, 6/6/2018, 20/6/2018, 4/7/2018, 18/7/2018, 1/8/2018, 29/8/2018, 12/9/2018, 26/9/2018, 10/10/2018, 24/10/2018, 7/11/2018, 21/11/2018 and 5/12/2018.



**Graph 3A:** 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 <sup>(1)</sup> | Total volume of bids | Average total volume bid per bidder per auction <sup>7</sup> | Average total volume bid per bidder per auction over the month <sup>8</sup> | standard deviation of total volume bid per bidder per auction over the month <sup>9</sup> | Total monthly nr of bids | Average nr. of bids per bidder per auction <sup>10</sup> | Average bid size <sup>11</sup> |
|----------------|----------------|------------------------------|----------------------|--|---|---|--------------------------|--|--------------------------------|
| December 2018  | 8              | 38                           | 76 976 500           | 345 385  | 343 645   | 604 296   | 723                      | 3.2  | 106 364                        |
| November 2018  | 15             | 38                           | 124 963 500          | 320 463  | 317 166   | 492 124   | 1 268                    | 3.2  | 97 811                         |
| October 2018   | 16             | 34                           | 194 879 000          | 457 738  | 465 105   | 1 156 241   | 1 441                    | 3.4  | 133 295                        |
| September 2018 | 13             | 38                           | 137 998 000          | 409 090  | 409 490   | 1 019 008   | 1 095                    | 3.2  | 126 527                        |
| August 2018    | 14             | 37                           | 118 920 000          | 343 427  | 343 699   | 604 447   | 1 169                    | 3.4  | 100 930                        |
| July 2018      | 16             | 40                           | 217 971 000          | 519 872  | 516 519   | 979 991   | 1 760                    | 4.2  | 123 820                        |
| June 2018      | 14             | 40                           | 131 660 500          | 363 573  | 362 701   | 492 632   | 1 449                    | 4.0  | 92 844                         |
| May 2018       | 11             | 38                           | 105 676 000          | 365 298  | 366 931   | 568 540   | 1 171                    | 4.1  | 89 889                         |
| April 2018     | 14             | 40                           | 117 729 000          | 328 154  | 322 545   | 453 292   | 1 441                    | 4.0  | 83 345                         |
| March 2018     | 14             | 38                           | 150 726 000          | 392 674  | 394 571   | 761 433   | 1 468                    | 3.8  | 101 809                        |
| February 2018  | 14             | 36                           | 152 580 500          | 459 684  | 462 365   | 765 564   | 1 297                    | 3.9  | 118 027                        |
| January 2018   | 13             | 33                           | 132 613 000          | 479 767  | 480 482   | 699 468   | 1 034                    | 3.8  | 127 675                        |
| December 2017  | 7              | 31                           | 73 929 500           | 517 558  | 509 859   | 676 667   | 695                      | 4.9  | 106 770                        |
| November 2017  | 15             | 32                           | 162 391 500          | 515 072  | 512 276   | 790 627   | 1 568                    | 5.0  | 104 084                        |
| October 2017   | 15             | 35                           | 177 255 000          | 538 042  | 537 136   | 760 748   | 1 599                    | 4.9  | 111 259                        |

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

<sup>7</sup> 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.

<sup>8</sup> 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).

<sup>9</sup> Standard deviation of total volume bid per bidder in each auction over the month.

<sup>10</sup> 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).

<sup>11</sup> 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.

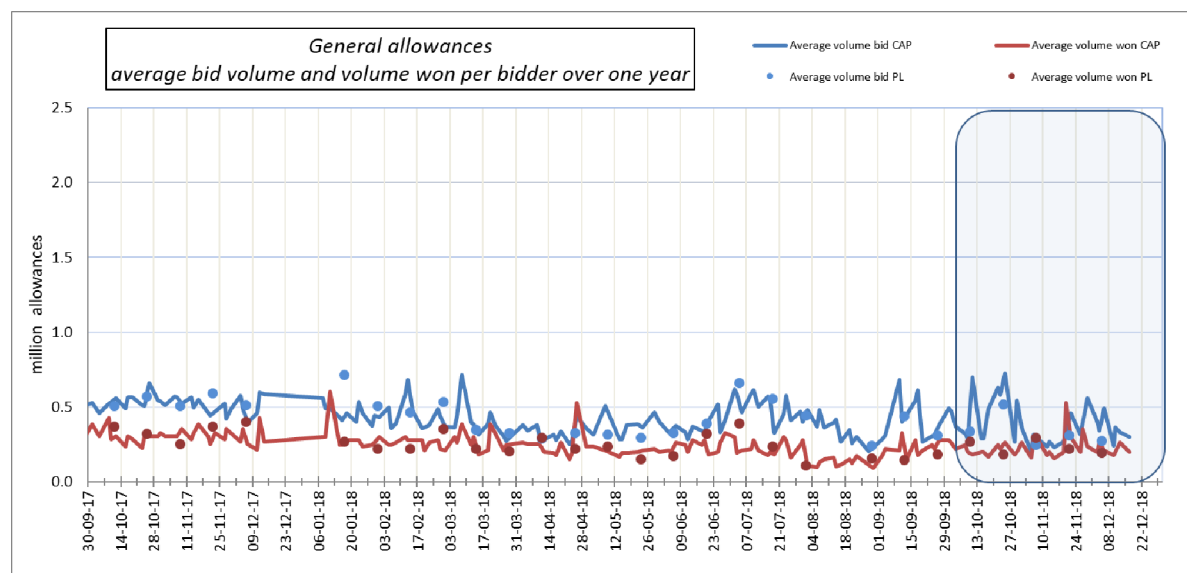
Table 3 provides monthly data on successful bids over 15 months. See also Graph 4.

**Table 3:** General Allowances - monthly statistics on successful bids

| Month          | Nr of auctions | Nr of successful bidders <sup>(1)</sup> | Total auction volume | Average volume won per bidder per auction <sup>12</sup> | Average volume won per bidder per auction over the month <sup>13</sup> | Standard deviation of volume won per bidder per auction over the month <sup>14</sup> | Total monthly nr of successful bids |
|----------------|----------------|---|----------------------|---|--|--|-------------------------------------|
| December 2018  | 8              | 32                                      | 32 969 000           | 213 923   | 209 994  | 336 420  | 286                                 |
| November 2018  | 15             | 36                                      | 61 863 000           | 256 657   | 232 568  | 396 305  | 537                                 |
| October 2018   | 16             | 31                                      | 66 076 000           | 221 301   | 215 935  | 398 880  | 614                                 |
| September 2018 | 13             | 38                                      | 53 437 000           | 219 901   | 208 738  | 329 342  | 513                                 |
| August 2018    | 14             | 36                                      | 28 795 000           | 129 177   | 124 654  | 152 306  | 347                                 |
| July 2018      | 16             | 39                                      | 66 076 000           | 240 954   | 228 637  | 329 842  | 568                                 |
| June 2018      | 14             | 35                                      | 57 650 000           | 242 955   | 234 350  | 266 266  | 531                                 |
| May 2018       | 11             | 37                                      | 45 011 000           | 202 060   | 199 164  | 208 690  | 492                                 |
| April 2018     | 14             | 40                                      | 61 863 000           | 247 803   | 229 122  | 290 603  | 620                                 |
| March 2018     | 14             | 33                                      | 57 650 000           | 265 154   | 251 747  | 302 989  | 400                                 |
| February 2018  | 14             | 35                                      | 57 650 000           | 267 853   | 263 242  | 304 836  | 445                                 |
| January 2018   | 13             | 31                                      | 53 437 000           | 291 987   | 275 448  | 352 565  | 384                                 |
| December 2017  | 7              | 27                                      | 30 435 500           | 313 651   | 295 490  | 412 417  | 216                                 |
| November 2017  | 15             | 27                                      | 65 113 500           | 316 418   | 311 548  | 441 629  | 438                                 |
| October 2017   | 15             | 28                                      | 65 113 500           | 313 612   | 305 697  | 387 758  | 390                                 |

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

**Graph 4:** General allowances - average bid volume and volume won per bidder over 15 months<sup>15</sup>



<sup>12</sup> 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.

<sup>13</sup> 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).

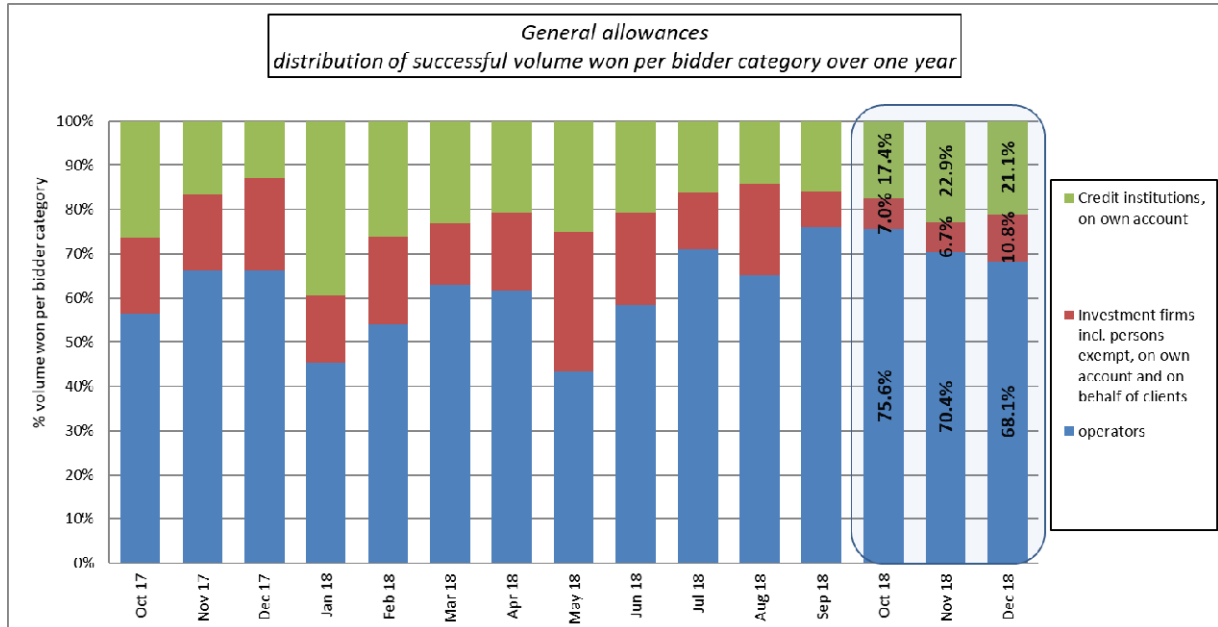
<sup>14</sup> Standard deviation of volume won per bidder in each auction over the month.

<sup>15</sup> Auctions on behalf of Poland were held on the following days: 11/10/2017, 25/10/2017, 8/11/2017, 22/11/2017, 6/12/2017, 17/1/2018, 31/1/2018, 14/2/2018, 28/2/2018, 14/3/2018, 28/3/2018, 11/4/2018, 25/4/2018, 9/5/2018, 23/5/2018, 6/6/2018, 20/6/2018, 4/7/2018, 18/7/2018, 1/8/2018, 29/8/2018, 12/9/2018, 26/9/2018, 10/10/2018, 24/10/2018, 7/11/2018, 21/11/2018 and 5/12/2018.

### 1.1.3. Type of bidders - general allowances

The volume submitted by intermediaries on behalf of a client<sup>16</sup> in October, November and December 2018 was respectively 0%, 0% and 0%, the remaining volume bid was 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



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

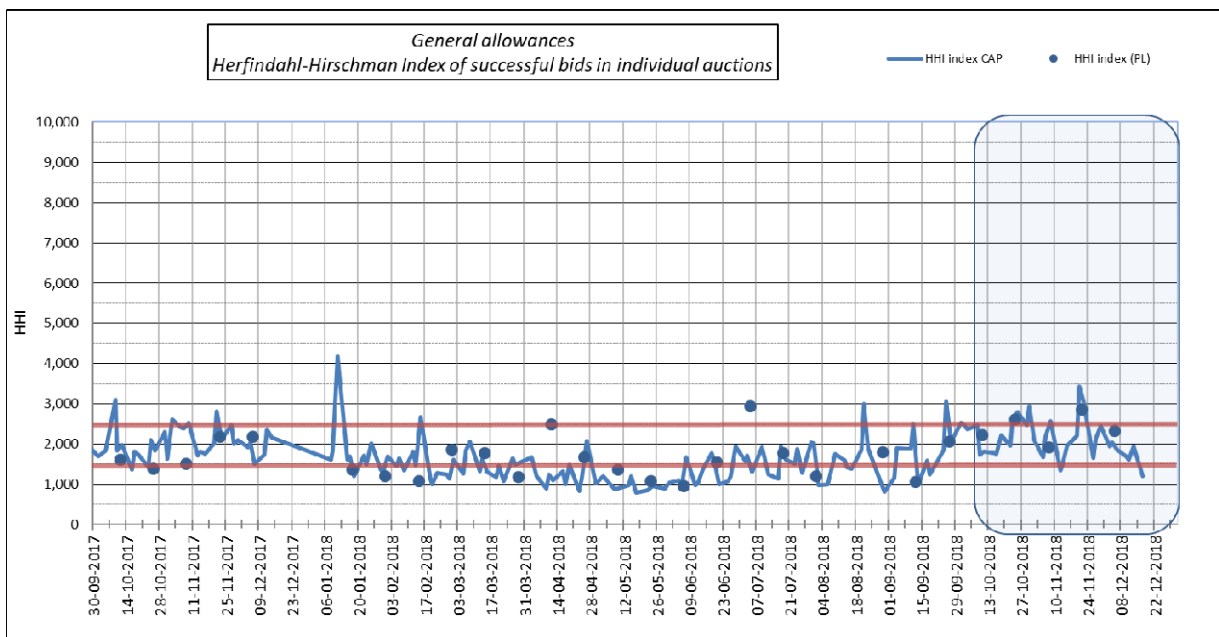
| Month         | % volume won coming from bidding on behalf of a client | Bidder category                             | % volume won | Standard deviation of % of volume won |
|---------------|--|---|--------------|---------------------------------------|
| October 2018  | 0%   | Operators (including Business groupings)    | 75.6%        | 10.6% points                          |
|               |  | Investment firms (including persons exempt) | 7.0%         | 4.2% points                           |
|               |  | Credit institutions                         | 17.4%        | 10.4% points                          |
| November 2018 | 0%   | Operators (including Business groupings)    | 70.4%        | 8.0% points                           |
|               |  | Investment firms (including persons exempt) | 6.7%         | 4.1% points                           |
|               |  | Credit institutions                         | 22.9%        | 8.4% points                           |
| December 2018 | 0%   | Operators (including Business groupings)    | 68.1%        | 4.3% points                           |
|               |  | Investment firms (including persons exempt) | 10.8%        | 3.0% points                           |
|               |  | Credit institutions                         | 21.1%        | 3.7% points                           |

<sup>16</sup> The data related to bidding on behalf of clients reflects the self-assessment of the respective trader.

### 1.1.4. Concentration - general allowances

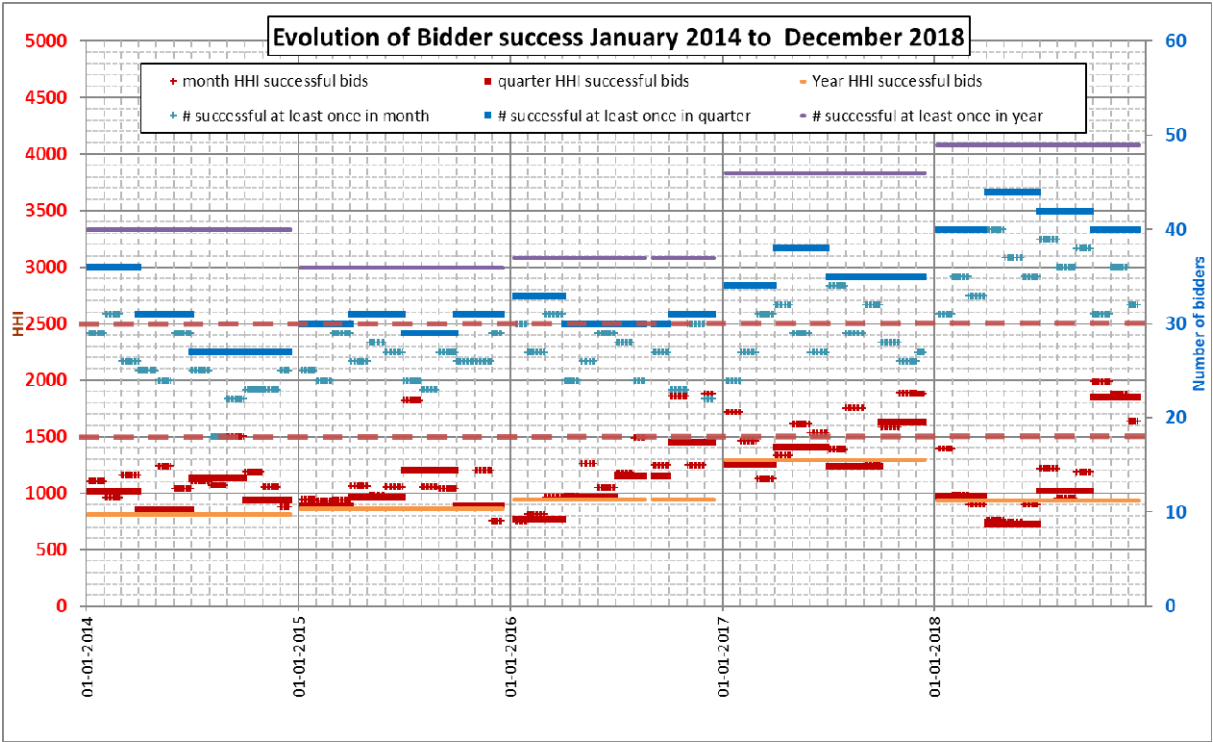
The Herfindahl-Hirschman Index (HHI) of successful bids is used to measure market concentration<sup>17</sup>. The HHI ranges from a value of 0 (perfect competition) to 10 000 (a single buyer). A common interpretation of the HHI is that a score below 1 500 is 'not-concentrated,' between 1 500 and 2 500 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



<sup>17</sup> 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 2014<sup>18</sup>. Pursuant to the published *auction calendar*, only *aviation allowances* for the calendar year 2012 were auctioned in 2014<sup>19</sup>; 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

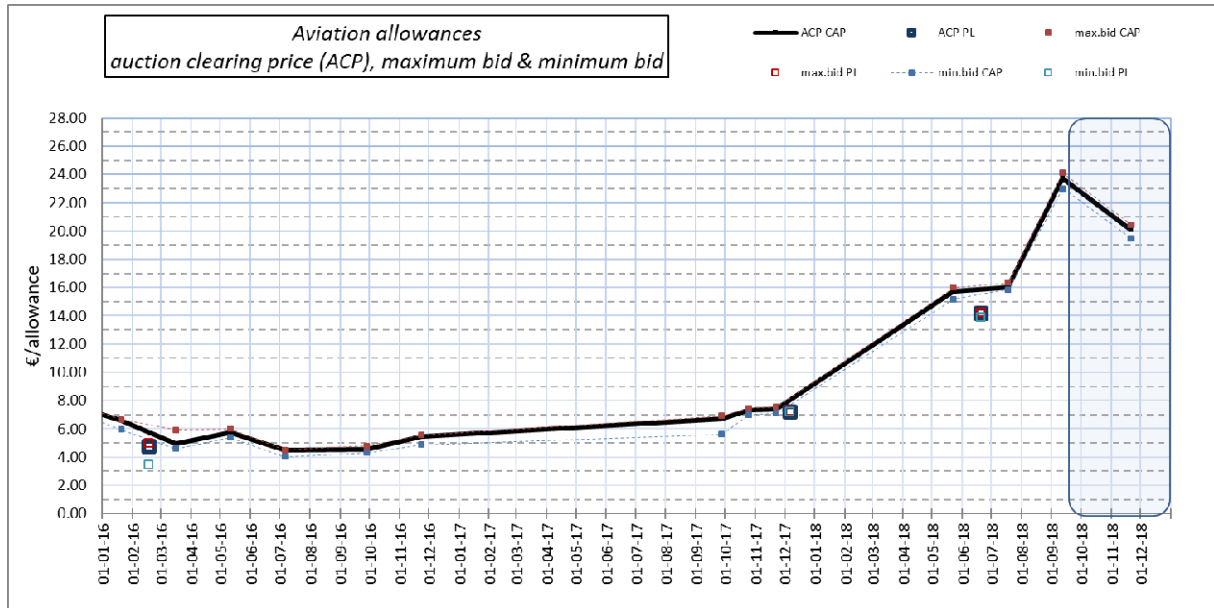
| Month             | Total auction volume | Total bid volume  | Total revenue (€) | Average Cover ratio <sup>20</sup> | Average number of bidders | Average number of successful bidders | Average auction clearing price (€) |
|-------------------|----------------------|-------------------|-------------------|-----------------------------------|---------------------------|--------------------------------------|------------------------------------|
| December 2018     | -                    | -                 | -                 | -                                 | -                         | -                                    | -                                  |
| November 2018     | 955 000              | 3 580 000         | 19 195 500        | 3.7                               | 10                        | 7                                    | 20.1                               |
| October 2018      | -                    | -                 | -                 | -                                 | -                         | -                                    | -                                  |
| September 2018    | 958 000              | 1 906 000         | 22 752 500        | 2.0                               | 9                         | 7                                    | 23.75                              |
| August 2018       | -                    | -                 | -                 | -                                 | -                         | -                                    | -                                  |
| July 2018         | 958 000              | 1 236 000         | 15 337 580        | 1.3                               | 6                         | 6                                    | 16.01                              |
| June 2018         | 112 000              | 170 000           | 1 591 520         | 1.5                               | 2                         | 2                                    | 14.21                              |
| May 2018          | 958 000              | 3 938 000         | 15 078 920        | 4.1                               | 11                        | 5                                    | 15.74                              |
| April 2018        | -                    | -                 | -                 | -                                 | -                         | -                                    | -                                  |
| March 2018        | -                    | -                 | -                 | -                                 | -                         | -                                    | -                                  |
| February 2018     | -                    | -                 | -                 | -                                 | -                         | -                                    | -                                  |
| January 2018      | -                    | -                 | -                 | -                                 | -                         | -                                    | -                                  |
| December 2017     | 95 000               | 285 000           | 687 800           | 3.0                               | 3                         | 2                                    | 7.24                               |
| November 2017     | 1 078 500            | 3 414 000         | 7 937 760         | 3.2                               | 8                         | 7                                    | 7.36                               |
| October 2017      | 1 078 000            | 3 726 000         | 7 912 520         | 3.5                               | 8                         | 7                                    | 7.34                               |
| <b>2017 total</b> | <b>3 329 500</b>     | <b>10 300 000</b> | <b>23 771 460</b> | <b>3.1</b>                        | <b>7.5</b>                | <b>6.5</b>                           | <b>7.14</b>                        |
| <b>2016 total</b> | <b>4 219 000</b>     | <b>17 973 500</b> | <b>22 266 205</b> | <b>4.3</b>                        | <b>10.4</b>               | <b>4.6</b>                           | <b>5.28</b>                        |
| <b>2015 total</b> | <b>11 641 000</b>    | <b>39 026 000</b> | <b>81 846 705</b> | <b>3.4</b>                        | <b>11.0</b>               | <b>7.5</b>                           | <b>7.03</b>                        |
| <b>2014 total</b> | <b>6 570 500</b>     | <b>28 201 500</b> | <b>39 454 510</b> | <b>4.3</b>                        | <b>13.0</b>               | <b>8.0</b>                           | <b>6.00</b>                        |

<sup>18</sup> The auctions were suspended end 2012, see the Regulatory update published by the Commission on 16 November 2012 [http://ec.europa.eu/clima/news/articles/news\\_2012111601\\_en.htm](http://ec.europa.eu/clima/news/articles/news_2012111601_en.htm).

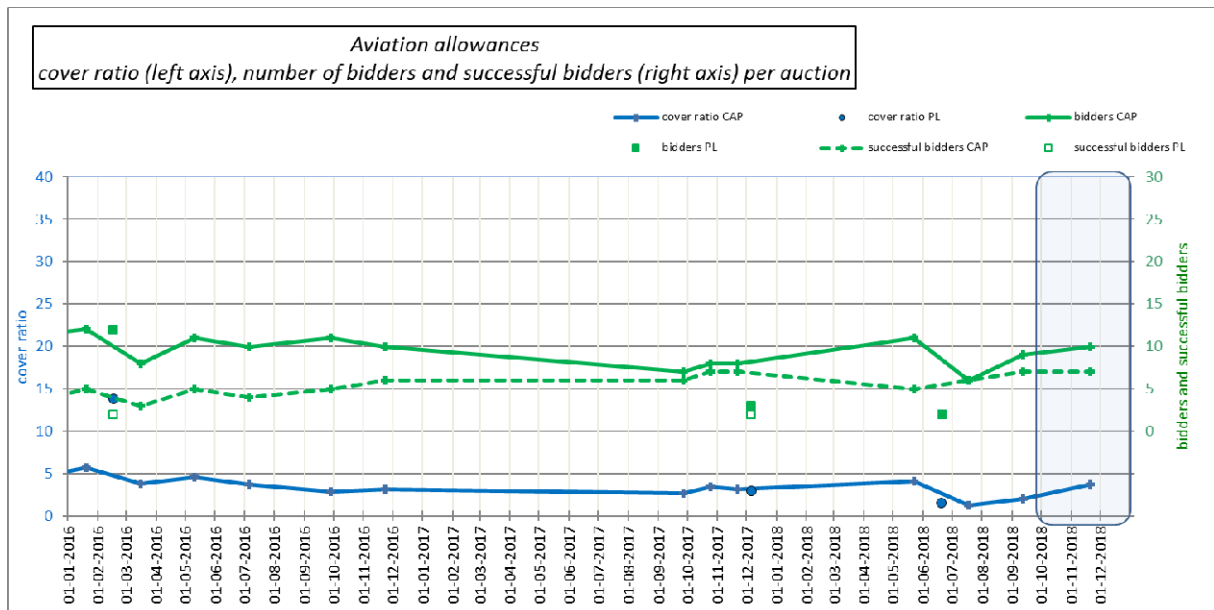
<sup>19</sup> See also the regulatory update published by the Commission on 29 July 2014: [http://ec.europa.eu/clima/news/articles/news\\_2014072901\\_en.htm](http://ec.europa.eu/clima/news/articles/news_2014072901_en.htm).

<sup>20</sup> 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<sup>21</sup>**



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



<sup>21</sup> Auctions on behalf of Poland were held on the following days: 25/3/2015, 17/2/2016, 6/12/2017 and 20/6/2018.

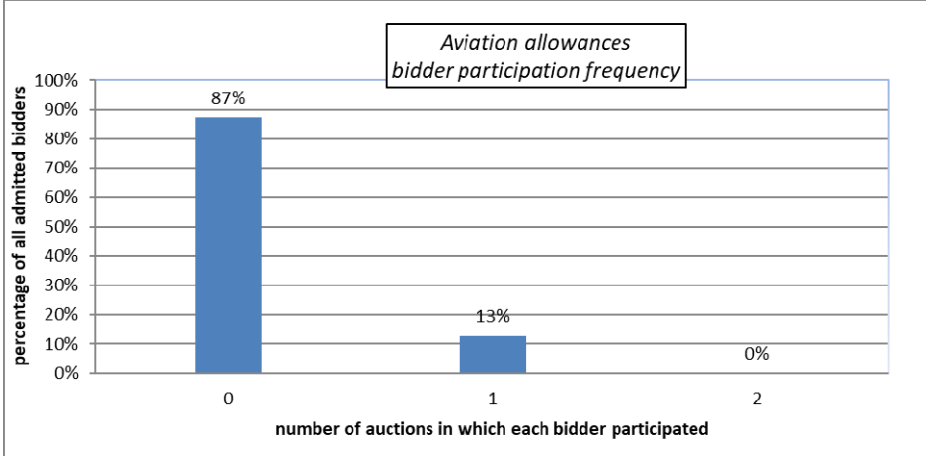


**Graph 10: Aviation allowances – bidder participation frequency**

October

No aviation allowances have been auctioned in October 2018.

November



December

No aviation allowances have been auctioned in December 2018.

### 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 <sup>(1)</sup> | Total volume of bids | Average total volume bid per bidder per auction <sup>22</sup> | Average total volume bid per bidder per auction over the month <sup>23</sup> | standard deviation of total volume bid per bidder per auction over the month <sup>24</sup> | Total monthly nr of bids | Average nr. of bids per bidder per auction <sup>25</sup> | Average bid size <sup>26</sup> |
|----------------|----------------|------------------------------|----------------------|---|--|--|--------------------------|--|--------------------------------|
| December 2018  | -              | -                            | -                    | -   | -  | -  | -                        | -  | -                              |
| November 2018  | 1              | 10                           | 3 580 000            | 358 000   | 358 000  | 302 491  | 56                       | 5.6  | 63 929                         |
| October 2018   | -              | -                            | -                    | -   | -  | -  | -                        | -  | -                              |
| September 2018 | 1              | 9                            | 1 906 000            | 211 778   | 211 778  | 168 779  | 51                       | 5.7  | 37 373                         |
| August 2018    | -              | -                            | -                    | -   | -  | -  | -                        | -  | -                              |
| July 2018      | 1              | 6                            | 1 236 000            | 206 000   | 206 000  | 114 588  | 27                       | 4.5  | 45 778                         |
| June 2018      | 1              | 2                            | 170 000              | 85 000  | 85 000   | 27 000   | 9                        | 4.5  | 18 889                         |
| May 2018       | 1              | 11                           | 3 938 000            | 358 000   | 358 000  | 280 602  | 52                       | 4.7  | 75 731                         |
| April 2018     | -              | -                            | -                    | -   | -  | -  | -                        | -  | -                              |
| March 2018     | -              | -                            | -                    | -   | -  | -  | -                        | -  | -                              |
| February 2018  | -              | -                            | -                    | -   | -  | -  | -                        | -  | -                              |
| January 2018   | -              | -                            | -                    | -   | -  | -  | -                        | -  | -                              |
| December 2017  | 1              | 3                            | 285 000              | 95 000  | 95 000   | 0  | 10                       | 3.3  | 28 500                         |
| November 2017  | 1              | 8                            | 3 414 000            | 426 750   | 426 750  | 360 364  | 48                       | 6.0  | 71 125                         |
| October 2017   | 1              | 8                            | 3 726 000            | 465 750   | 465 750  | 374 869  | 45                       | 5.6  | 82 800                         |

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

<sup>22</sup> 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.

<sup>23</sup> 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 the whole month of number of bidders present in each auction).

<sup>24</sup> Standard deviation of total volume bid per bidder in each auction over the month.

<sup>25</sup> 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).

<sup>26</sup> 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.

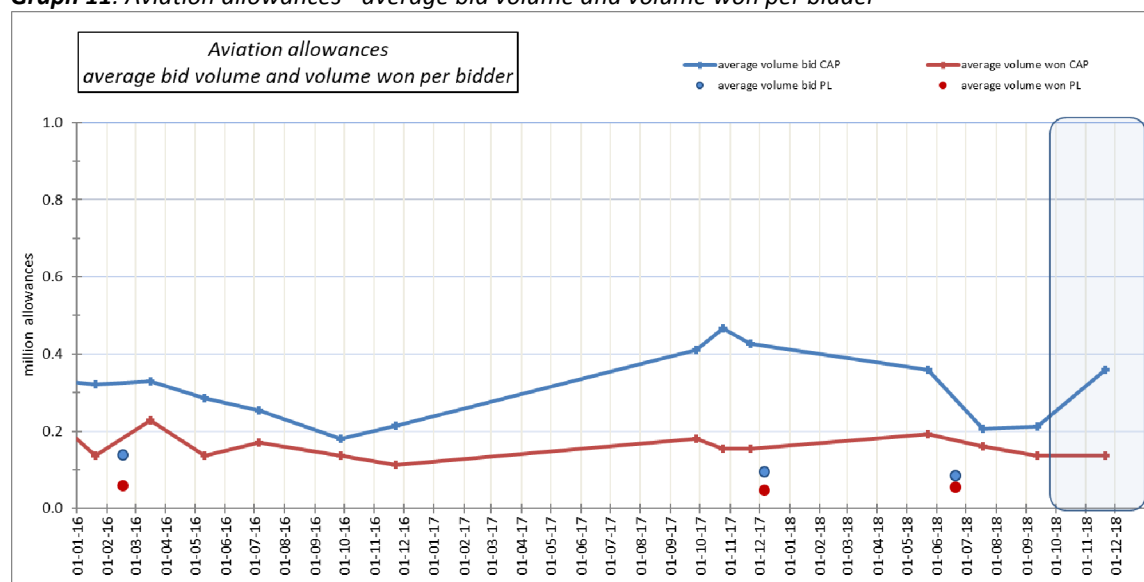
Table 7 provides monthly data on successful bids over 15 months. See also Graph 11.

**Table 7: Aviation Allowances – Monthly statistics on successful bids**

| Month          | Nr of auctions | Nr of successful bidders <sup>(1)</sup> | Total auction volume | Average volume won per bidder per auction <sup>27</sup> | Average volume won per bidder per auction over the month <sup>28</sup> | Standard deviation of volume won per bidder per auction over the month <sup>29</sup> | Total monthly nr of successful bids |
|----------------|----------------|---|----------------------|---|--|--|-------------------------------------|
| December 2018  | -              | -                                       | -                    | -   | -  | -  | -                                   |
| November 2018  | 1              | 7                                       | 955 000              | 136 429   | 136 429  | 135 677  | 12                                  |
| October 2018   | -              | -                                       | -                    | -   | -  | -  | -                                   |
| September 2018 | 1              | 7                                       | 958 000              | 136 857   | 136 857  | 88 006   | 20                                  |
| August 2018    | -              | -                                       | -                    | -   | -  | -  | -                                   |
| July 2018      | 1              | 6                                       | 958 000              | 159 667   | 159 667  | 59 779   | 21                                  |
| June 2018      | 1              | 2                                       | 112 000              | 56 000  | 56 000   | 27 000   | 3                                   |
| May 2018       | 1              | 5                                       | 958 000              | 191 600   | 191 600  | 76 107   | 11                                  |
| April 2018     | -              | -                                       | -                    | -   | -  | -  | -                                   |
| March 2018     | -              | -                                       | -                    | -   | -  | -  | -                                   |
| February 2018  | -              | -                                       | -                    | -   | -  | -  | -                                   |
| January 2018   | -              | -                                       | -                    | -   | -  | -  | -                                   |
| December 2017  | 1              | 2                                       | 95 000               | 47 500  | 47 500   | 22 500   | 4                                   |
| November 2017  | 1              | 7                                       | 1 078 500            | 154 071   | 154 071  | 114 369  | 16                                  |
| October 2017   | 1              | 7                                       | 1 078 000            | 154 000   | 154 000  | 64 717   | 16                                  |

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

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



<sup>27</sup> 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.

<sup>28</sup> 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 the whole month of number of bidders present in each auction).

<sup>29</sup> Standard deviation of volume won per bidder in each auction over the month.

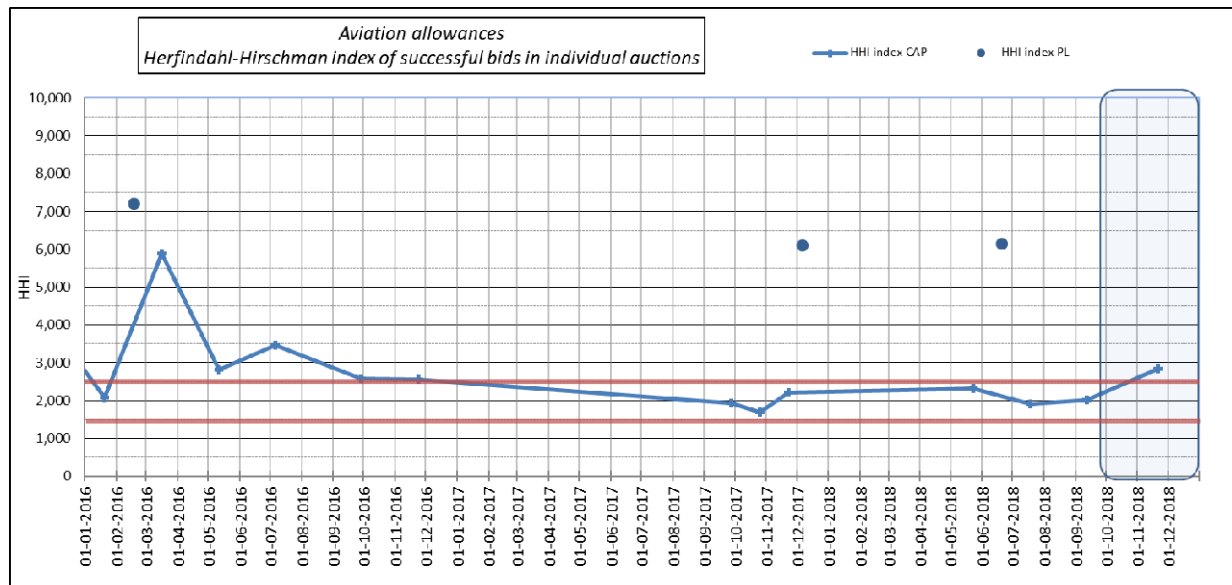
### 1.2.3 Type of bidders – aviation allowances

In October, November, December all volume bid was done on own account.

### 1.2.4 Concentration – aviation allowances

The HHI of successful bids is used to measure market concentration<sup>30</sup>. 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



<sup>30</sup> 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.

## 2. 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 auctions<sup>31</sup>.

**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 2018 |            |          |                 |                    |                   |                                       | 119   |
|   | Nov 2018 | -          |          |                 |                    |                   |                                       | 118   |
|   | Dec 2018 |            |          |                 |                    |                   |                                       | 118   |
| Participants eligible to bid in the auctions                                  | Oct 2018 | 56         |          |                 |                    |                   | 5                                     | 77    |
|   | Nov 2018 | 56         | 1        | 10              | 5                  | 0                 | 6                                     | 78    |
|   | Dec 2018 | 57         |          |                 |                    |                   | 6                                     | 79    |
| (Of which:) Participants eligible to bid in the auctions on behalf of clients | Oct 2018 |            |          |                 |                    |                   |                                       |       |
|   | Nov 2018 | -          | -        | 1               | 2                  | -                 | 2                                     | 5     |
|   | Dec 2018 |            |          |                 |                    |                   |                                       |       |
| (Of which:) Auction-only access   | Oct 2018 |            |          |                 |                    |                   |                                       |       |
|   | Nov 2018 | 1          | 0        | 0               | 0                  | 0                 | 1                                     | 2     |
|   | Dec 2018 |            |          |                 |                    |                   |                                       |       |

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.

<sup>31</sup> This assessment is based on the auction participants' activity in EEX's secondary market and general market knowledge of EEX.

### 3. 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:** DD/MM/2019

## 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: <a href="http://ec.europa.eu/clima/policies/ets/cap/auctioning/documentation_en.htm">http://ec.europa.eu/clima/policies/ets/cap/auctioning/documentation_en.htm</a> . |
| 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> .  |
| 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: <a href="http://ec.europa.eu/clima/policies/ets/documentation_en.htm">http://ec.europa.eu/clima/policies/ets/documentation_en.htm</a> .   |

|                             |   |
|-----------------------------|---|
| General Allowance           | Allowance to emit one tonne of CO <sub>2</sub> -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 <sub>2</sub> -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, Poland and the UK, 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> .  |
| Common auction platform     | Auction platform appointed pursuant to Article 26(1) or (2) of the <i>Auctioning Regulation</i> . The common auction platform appointed pursuant to Article 26(2) of the <i>Auctioning Regulation</i> (also referred to as transitional common auction platform or TCAP) conducted auctions until 18 August 2016. The <i>common auction platform</i> referred to as CAP2 the second common auction platform or CAP2 was appointed, pursuant to Article 26(1) of the <i>Auctioning Regulation</i> , on 13 July 2016 until July 2021. |



## Annex 1 Auction revenues per Member State from 12 November 2012 until December 2018 (reported in euros)

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

|                 | General allowances    | Aviation allowances | General and aviation allowances |
|-----------------|-----------------------|---------------------|---------------------------------|
| Austria         | 540,959,545           | 7,038,750           | 547,998,295                     |
| Belgium         | 978,636,895           | 8,736,675           | 987,373,570                     |
| Bulgaria        | 814,440,365           | 2,482,120           | 816,922,485                     |
| Croatia         | 204,422,090           | 1,379,565           | 205,801,655                     |
| Cyprus          | 33,171,295            | 3,827,090           | 36,998,385                      |
| Czech Republic  | 1,146,609,755         | 3,436,780           | 1,150,046,535                   |
| Denmark         | 483,862,225           | 7,896,600           | 491,758,825                     |
| Estonia         | 249,373,005           | 422,155             | 249,795,160                     |
| Finland         | 649,681,540           | 6,102,940           | 655,784,480                     |
| France          | 2,127,522,605         | 40,292,135          | 2,167,814,740                   |
| Greece          | 1,344,818,880         | 13,497,595          | 1,358,316,475                   |
| Hungary         | 549,920,360           | 2,748,630           | 552,668,990                     |
| Ireland         | 360,677,570           | 6,202,140           | 366,879,710                     |
| Italy           | 3,744,501,985         | 41,050,670          | 3,785,552,655                   |
| Latvia          | 104,554,720           | 1,462,950           | 106,017,670                     |
| Lithuania       | 200,972,655           | 761,150             | 201,733,805                     |
| Luxemburg       | 46,821,525            | 1,183,300           | 48,004,825                      |
| Malta           | 39,446,090            | 1,511,650           | 40,957,740                      |
| The Netherlands | 1,301,114,225         | 14,611,405          | 1,315,725,630                   |
| Poland          | 2,302,723,425         | 5,837,800           | 2,308,561,225                   |
| Portugal        | 682,333,960           | 8,447,780           | 690,781,740                     |
| Romania         | 1,625,120,915         | 4,277,880           | 1,629,398,795                   |
| Slovak Republic | 597,541,155           | 533,860             | 598,075,015                     |
| Slovenia        | 172,064,275           | 387,795             | 172,452,070                     |
| Spain           | 3,356,202,860         | 47,110,875          | 3,403,313,735                   |
| Sweden          | 345,913,545           | 10,054,610          | 355,968,155                     |
| <b>TOTAL</b>    | <b>24,003,407,465</b> | <b>24,294,900</b>   | <b>24,244,702,365</b>           |

## Annex 2 Results of individual auctions on behalf of participating Member States and Poland in October – December 2018

(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 2018 |                        |                   |                   |                |                  |                      |                  |             |               |                          |               |            |                       |                           |                  |                                 |   |                               |   |
|-----------------------------------|------------------------|-------------------|-------------------|----------------|------------------|----------------------|------------------|-------------|---------------|--------------------------|---------------|------------|-----------------------|---------------------------|------------------|---------------------------------|---|-------------------------------|---|
| 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 |
| 01/10/2018                        | 20.70                  | 10.00             | 28.10             | 19.89          | 20.62            | 4,213,000            | 11,345,500       | 2.69        | 23            | 15                       | 87,209,100    | 77         | 28                    | 3.35                      | 147 344          | 493 283                         | 740 588   | 280 867                       | 470 799                                     |
| 02/10/2018                        | 21.45                  | 10.00             | 28.12             | 20.64          | 21.25            | 4,213,000            | 11,380,500       | 2.70        | 24            | 16                       | 90,368,850    | 84         | 28                    | 3.50                      | 135 482          | 474 188                         | 634 314   | 263 313                       | 458 021                                     |
| 04/10/2018                        | 21.15                  | 10.00             | 25.00             | 20.20          | 20.91            | 4,213,000            | 10,673,500       | 2.53        | 29            | 19                       | 89,104,950    | 99         | 30                    | 3.41                      | 107 813          | 368 052                         | 497 213   | 221 737                       | 416 039                                     |
| 08/10/2018                        | 22.09                  | 10.00             | 28.12             | 21.01          | 22.05            | 4,213,000            | 7,037,000        | 1.67        | 22            | 17                       | 93,065,170    | 73         | 34                    | 3.32                      | 96 397           | 319 864                         | 459 988   | 247 824                       | 442 977                                     |
| 09/10/2018                        | 21.32                  | 10.00             | 28.12             | 20.50          | 21.39            | 4,213,000            | 6,980,500        | 1.66        | 24            | 21                       | 89,821,160    | 84         | 54                    | 3.50                      | 83 101           | 290 854                         | 405 825   | 200 619                       | 325 364                                     |
| 10/10/2018                        | 20.70                  | 10.00             | 26.12             | 19.73          | 20.37            | 3,547,000            | 7,855,500        | 2.21        | 23            | 13                       | 73,422,900    | 92         | 24                    | 4.00                      | 85 386           | 341 543                         | 490 474   | 272 846                       | 376 538                                     |
| 11/10/2018                        | 18.57                  | 10.00             | 22.70             | 17.94          | 18.49            | 4,213,000            | 20,896,500       | 4.96        | 30            | 23                       | 78,235,410    | 104        | 44                    | 3.47                      | 200 928          | 696 550                         | 2037 354  | 183 174                       | 325 432                                     |
| 15/10/2018                        | 20.03                  | 10.00             | 28.12             | 19.24          | 20.05            | 4,213,000            | 7,241,500        | 1.72        | 25            | 21                       | 84,386,390    | 82         | 47                    | 3.28                      | 88 311           | 289 660                         | 401 021   | 200 619                       | 332 559                                     |
| 16/10/2018                        | 17.90                  | 10.00             | 21.00             | 17.49          | 18.05            | 4,213,000            | 6,613,500        | 1.57        | 23            | 21                       | 75,412,700    | 84         | 61                    | 3.65                      | 78 732           | 287 543                         | 401 475   | 200 619                       | 328 278                                     |
| 18/10/2018                        | 18.53                  | 17.99             | 25.00             | 18.82          | 18.60            | 4,213,000            | 14,589,000       | 3.46        | 30            | 25                       | 78,066,890    | 82         | 51                    | 2.73                      | 177 915          | 486 300                         | 1618 973  | 168 520                       | 359 302                                     |
| 22/10/2018                        | 19.10                  | 10.00             | 25.00             | 18.60          | 18.90            | 4,213,000            | 16,320,000       | 3.87        | 26            | 17                       | 80,468,300    | 93         | 30                    | 3.58                      | 175 484          | 627 692                         | 1387 831  | 247 824                       | 379 010                                     |
| 23/10/2018                        | 18.50                  | 6.00              | 25.12             | 18.09          | 18.30            | 4,213,000            | 17,999,500       | 4.27        | 31            | 19                       | 77,940,500    | 111        | 33                    | 3.58                      | 162 158          | 580 629                         | 1373 356  | 221 737                       | 445 156                                     |
| 24/10/2018                        | 19.10                  | 10.00             | 25.00             | 18.69          | 18.97            | 3,547,000            | 14,635,500       | 4.13        | 28            | 19                       | 67,747,700    | 97         | 32                    | 3.46                      | 150 881          | 522 696                         | 1466 393  | 186 684                       | 373 597                                     |
| 25/10/2018                        | 18.72                  | 10.00             | 22.00             | 18.23          | 18.47            | 4,213,000            | 18,889,000       | 4.48        | 26            | 16                       | 78,867,360    | 100        | 27                    | 3.85                      | 188 890          | 726 500                         | 1786 589  | 263 313                       | 491 657                                     |
| 29/10/2018                        | 17.91                  | 10.00             | 25.00             | 17.78          | 17.95            | 4,213,000            | 7,230,000        | 1.72        | 27            | 23                       | 75,454,830    | 88         | 50                    | 3.26                      | 82 159           | 267 778                         | 422 504   | 183 174                       | 396 487                                     |
| 30/10/2018                        | 16.87                  | 7.00              | 20.00             | 16.68          | 16.83            | 4,213,000            | 15,192,000       | 3.61        | 28            | 21                       | 71,073,310    | 91         | 41                    | 3.25                      | 166 945          | 542 571                         | 1195 007  | 200 619                       | 456 085                                     |

Note: volume variables reported in tCO<sub>2</sub>, 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.

**General Allowances – November 2018**

| 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 |
|------------|------------------------|-------------------|-------------------|----------------|------------------|----------------------|------------------|-------------|---------------|--------------------------|---------------|------------|-----------------------|---------------------------|------------------|---------------------------------|---|-------------------------------|---|
| 01/11/2018 | 15.85                  | 10.00             | 20.40             | 15.70          | 15.80            | 4,213,000            | 7,962,000        | 1.89        | 22            | 16                       | 66,776,050    | 81         | 37                    | 3.68                      | 98 296           | 361 909                         | 422 901   | 263 313                       | 404 639                                     |
| 05/11/2018 | 16.40                  | 12.50             | 25.01             | 16.85          | 16.69            | 4,213,000            | 5,126,000        | 1.22        | 26            | 26                       | 69,093,200    | 79         | 68                    | 3.04                      | 64 886           | 197 154                         | 323 039   | 162 038                       | 297 435                                     |
| 06/11/2018 | 16.99                  | 12.50             | 22.22             | 16.90          | 16.79            | 4,213,000            | 9,206,500        | 2.19        | 29            | 15                       | 71,578,870    | 96         | 29                    | 3.31                      | 95 901           | 317 466                         | 516 269   | 280 867                       | 426 159                                     |
| 07/11/2018 | 18.25                  | 12.50             | 22.12             | 17.88          | 18.01            | 3,547,000            | 7,528,500        | 2.12        | 30            | 12                       | 64,732,750    | 84         | 19                    | 2.80                      | 89 625           | 250 950                         | 309 319   | 295 583                       | 340 549                                     |
| 08/11/2018 | 19.56                  | 12.50             | 25.25             | 19.20          | 19.36            | 4,213,000            | 7,625,500        | 1.81        | 27            | 15                       | 82,406,280    | 82         | 33                    | 3.04                      | 92 994           | 282 426                         | 438 663   | 280 867                       | 475 532                                     |
| 12/11/2018 | 20.01                  | 9.00              | 23.00             | 19.63          | 20.11            | 4,213,000            | 6,121,000        | 1.45        | 26            | 24                       | 84,302,130    | 73         | 54                    | 2.81                      | 83 849           | 235 423                         | 296 328   | 175 542                       | 261 331                                     |
| 13/11/2018 | 19.76                  | 8.00              | 28.28             | 19.53          | 19.81            | 4,213,000            | 6,410,500        | 1.52        | 24            | 21                       | 83,248,880    | 73         | 46                    | 3.04                      | 87 815           | 267 104                         | 321 327   | 200 619                       | 288 130                                     |
| 15/11/2018 | 18.46                  | 12.50             | 25.00             | 18.41          | 18.52            | 4,213,000            | 6,411,500        | 1.52        | 28            | 27                       | 77,771,980    | 79         | 49                    | 2.82                      | 81 158           | 228 982                         | 366 832   | 156 037                       | 322 467                                     |
| 19/11/2018 | 18.43                  | 7.00              | 25.22             | 18.23          | 18.44            | 4,213,000            | 6,756,000        | 1.60        | 25            | 21                       | 77,645,590    | 84         | 43                    | 3.36                      | 80 429           | 270 240                         | 371 502   | 200 619                       | 383 405                                     |
| 20/11/2018 | 19.40                  | 10.00             | 25.25             | 19.08          | 19.14            | 4,213,000            | 8,191,500        | 1.94        | 24            | 8                        | 81,732,200    | 77         | 19                    | 3.21                      | 106 383          | 341 313                         | 513 337   | 526 625                       | 694 501                                     |
| 21/11/2018 | 19.84                  | 1.00              | 25.25             | 19.21          | 19.67            | 3,547,000            | 8,766,500        | 2.47        | 28            | 16                       | 70,372,480    | 75         | 24                    | 2.68                      | 116 887          | 313 089                         | 525 111   | 221 688                       | 419 332                                     |
| 22/11/2018 | 20.30                  | 7.00              | 28.12             | 19.71          | 20.05            | 4,213,000            | 11,880,500       | 2.82        | 26            | 14                       | 85,523,900    | 90         | 26                    | 3.46                      | 132 006          | 456 942                         | 734 636   | 300 929                       | 544 828                                     |
| 26/11/2018 | 19.71                  | 6.00              | 22.00             | 19.30          | 19.62            | 4,213,000            | 8,860,500        | 2.10        | 28            | 21                       | 83,038,230    | 106        | 37                    | 3.79                      | 83 590           | 316 446                         | 376 394   | 200 619                       | 315 961                                     |
| 27/11/2018 | 19.77                  | 12.50             | 25.00             | 19.25          | 19.49            | 4,213,000            | 10,697,000       | 2.54        | 27            | 12                       | 83,291,010    | 94         | 20                    | 3.48                      | 113 798          | 396 185                         | 574 654   | 351 083                       | 438 648                                     |
| 29/11/2018 | 19.35                  | 6.00              | 20.00             | 18.82          | 19.18            | 4,213,000            | 13,420,000       | 3.19        | 24            | 18                       | 81,521,550    | 95         | 33                    | 3.96                      | 141 263          | 559 167                         | 837 982   | 234 056                       | 431 345                                     |

Note: volume variables reported in tCO<sub>2</sub>, 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.

*General Allowances – December 2018*

| 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 |
|------------|------------------------|-------------------|-------------------|----------------|------------------|----------------------|------------------|-------------|---------------|--------------------------|---------------|------------|-----------------------|---------------------------|------------------|---------------------------------|---|-------------------------------|---|
| 03/12/2018 | 20.52                  | 6.00              | 22.00             | 19.92          | 20.50            | 4,213,000            | 10,568,000       | 2.51        | 26            | 21                       | 86,450,760    | 86         | 39                    | 3.31                      | 122 884          | 406 462                         | 742 227   | 200 619                       | 351 004                                     |
| 04/12/2018 | 20.35                  | 13.00             | 25.22             | 20.04          | 20.15            | 4,213,000            | 10,877,000       | 2.58        | 32            | 16                       | 85,734,550    | 108        | 29                    | 3.38                      | 100 713          | 339 906                         | 634 565   | 263 313                       | 397 677                                     |
| 05/12/2018 | 20.21                  | 5.00              | 25.25             | 19.72          | 20.12            | 3,543,000            | 7,442,500        | 2.10        | 27            | 18                       | 71,604,030    | 90         | 33                    | 3.33                      | 82 694           | 275 648                         | 362 318   | 196 833                       | 353 152                                     |
| 06/12/2018 | 18.55                  | 13.00             | 25.25             | 18.40          | 18.42            | 4,213,000            | 13,720,500       | 3.26        | 28            | 20                       | 78,151,150    | 100        | 32                    | 3.57                      | 137 205          | 490 018                         | 906 857   | 210 650                       | 348 285                                     |
| 10/12/2018 | 19.77                  | 5.00              | 25.25             | 19.83          | 19.80            | 4,213,000            | 6,981,500        | 1.66        | 29            | 24                       | 83,291,010    | 78         | 43                    | 2.69                      | 89 506           | 240 741                         | 394 072   | 175 542                       | 306 856                                     |
| 11/12/2018 | 20.77                  | 12.00             | 25.25             | 20.43          | 20.74            | 4,213,000            | 10,562,000       | 2.51        | 29            | 21                       | 87,504,010    | 94         | 42                    | 3.24                      | 112 362          | 364 207                         | 639 379   | 200 619                       | 310 634                                     |
| 13/12/2018 | 21.88                  | 13.00             | 27.22             | 21.57          | 21.78            | 4,213,000            | 8,969,000        | 2.13        | 27            | 16                       | 92,180,440    | 83         | 33                    | 3.07                      | 108 060          | 332 185                         | 503 083   | 263 313                       | 380 754                                     |
| 17/12/2018 | 23.40                  | 13.00             | 30.00             | 22.82          | 23.29            | 4148000              | 7,856,000        | 1.89        | 26            | 21                       | 97,063,200    | 84         | 35                    | 3.23                      | 93 524           | 302 154                         | 373 698   | 197 524                       | 243 496                                     |

Note: volume variables reported in tCO<sub>2</sub>, 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.

| Aviation Allowances – October 2018 |                        |                   |                   |                |                  |                      |                  |             |               |                          |               |            |                       |                           |                  |                                 |   |                               |   |
|------------------------------------|------------------------|-------------------|-------------------|----------------|------------------|----------------------|------------------|-------------|---------------|--------------------------|---------------|------------|-----------------------|---------------------------|------------------|---------------------------------|---|-------------------------------|---|
| 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.

**Aviation Allowances – November 2018**

| 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 |
|------------|------------------------|-------------------|-------------------|----------------|------------------|----------------------|------------------|-------------|---------------|--------------------------|---------------|------------|-----------------------|---------------------------|------------------|---------------------------------|---|-------------------------------|---|
| 21/11/2018 | 20.10                  | 19.48             | 20.45             | 19.96          | 19.98            | 955 000              | 3580 000         | 3.75        | 10            | 7                        | 19195 500     | 56         | 12                    | 5.60                      | 63 929           | 358 000                         | 302 491   | 136 429                       | 135 677                                     |
|            |                        |                   |                   |                |                  |                      |                  |             |               |                          |               |            |                       |                           |                  |                                 |   |                               |   |

Note: volume variables reported in tCO<sub>2</sub>, 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.

| Aviation Allowances – December 2018 |                        |                   |                   |                |                  |                      |                  |             |               |                          |               |            |                       |                           |                  |                                 |   |                               |   |
|-------------------------------------|------------------------|-------------------|-------------------|----------------|------------------|----------------------|------------------|-------------|---------------|--------------------------|---------------|------------|-----------------------|---------------------------|------------------|---------------------------------|---|-------------------------------|---|
| 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 tCO<sub>2</sub>, 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.

The data for previous auctions can be downloaded from EEX's website: <https://www.eex.com/en/products/environmental-markets/emissions-auctions/overview>