

EU Emissions Trading System data viewer

Background note



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Contents

Acknowledgements	4
1. Introduction.....	5
2. Data sources	6
2.1. EUTL.....	6
2.2. Other sources	6
2.2.1. Main activity of individual entities	6
2.2.2. Corrections to freely allocated allowances	8
2.2.3. Auctions.....	8
2.2.4. Estimates for 2008-2012 to reflect the current scope of EU ETS.....	8
3. Regional disaggregation	9
4. Temporal disaggregation.....	10
5. information.....	10
6. Activity.....	12
6.1. Translation of activity codes.....	12
6.2. Information on stationary installations covered.....	14
6.3. Information on aviation operators covered.....	16
7. Size of entities	17
8. Number of entities	17
9. Measures	18
10. Gases	18
11. Annex I – Correction of freely allocated allowances.....	18
11.1. Stationary installations.....	18
11.2. Aviation.....	19
12. Annex II - Auctioning	21
13. Annex III – Estimates to reflect current ETS scope for stationary installations	25

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1. Introduction

The European Union (EU) Emissions Trading System (ETS) is one of the main and most prominent measures introduced by the EU to reduce its greenhouse gas emissions and reach its reduction target under the Kyoto Protocol, the internal EU-target for 2020. The main source of information on the system at EU level is the European Union Transaction Log (EUTL), formerly called Community Independent Transaction Log (CITL) ⁽¹⁾. The EUTL, which is run by the European Commission, checks and records all transactions carried out under the EU ETS. It contains information on each entity covered by the system, including its main activity type, the quantity of allocated allowances and verified emissions on an annual basis. However, the data is not easily accessible in a user-friendly format.

The European Environment Agency (EEA) ⁽²⁾ and its European Topic Centre on Climate change mitigation and energy (ETC/CME) ⁽³⁾ developed the EU ETS data viewer, a tool to facilitate access to the information contained in the EUTL, as well as relevant additional information related to the EU ETS. The EEA's EU ETS data viewer aims to support governments, market players and other stakeholders in their assessment of the EU ETS. The EU ETS data viewer is accessible on EEA website at: <https://www.eea.europa.eu/data-and-maps/dashboards/emissions-trading-viewer-1>.

This viewer enables users to assess the data concerning stationary installations and aircraft operators and emissions contained in the EUTL by country or country grouping, activity, size and year. While entity-level data are available from the EUTL, the EU ETS data viewer provides aggregated data at national level.

In the first and second trading period (2005–2007 and 2008–2012) the EUTL contained information for the nine categories of activities for stationary installations mentioned in Annex I of the Emission Trading Directive ⁽⁴⁾ and an additional category for opt-in installations. For the third trading period (2013-2020) new activity categories have been introduced. In total, there are now 28 categories of activities for stationary installations, some of which correspond to old categories while others pertain to new activities covered by the scheme from the third trading period onwards (see Chapter 7). Information on aviation operators (ETS activity type 10) is also included in the EU ETS data viewer

This manual describes the functionalities and underlying data of the EU ETS data viewer. The latest version of the EU ETS data viewer is based on data accessed from the EUTL on 01 July 2019.

⁽¹⁾ <http://ec.europa.eu/environment/ets>

⁽²⁾ <http://www.eea.europa.eu>

⁽³⁾ <https://plone5demo.eionet.europa.eu/etcs/etc-cme>

⁽⁴⁾ Directive 2009/29/EC of the European Parliament and of the council of 23 April 2009 amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community, Official Journal of the European Union, 5.6.2009

2. Data sources

The EU ETS data viewer contains information for all stationary installations included in the EU ETS since 2005, as well as for aircraft operators covered by the EU ETS.

2.1. EUTL

Most of the data included in the EU ETS data viewer originate from the EUTL. The following elements of the data viewer are based on entity-level data available from the EUTL (see Chapter 6 for further explanation):

- the quantity of allowances allocated to each entity for the years 2005 to 2018 for non-excluded entities;
- the quantity of verified emissions of that entity for the years 2005 to 2018 for non-excluded entities; and
- the amount of total units surrendered: the amounts of EU Allowances (EUAs or EUAAs) surrendered; for 2008–2012: the amounts of certified reduction units (CERs) and emission reduction units (ERUs) surrendered (in the third trading period CERs and ERUs are exchanged for EUAs and EUAAs before being surrendered).

The data contained in the EUTL is undergoing constant changes, for examples due to:

- entities entering or leaving the EU ETS;
- addition of missing information, e.g. late verified emission reports;
- correction of emission reports or inaccurate data in national registries; and
- changes of allocated amounts following legal proceedings.

The EU ETS data viewer reflects data as available from the EUTL, including for those entities for which data may still be incomplete (e.g. in case of missing reports on verified emissions, on-going legal proceedings on allocation, etc.).

2.2. Other sources

2.2.1. *Main activity of individual entities*

Main activity type codes are generally available from EUTL.

With the start of the third trading period of the EU ETS (2013-2020) new activity codes (codes 20-47) have been introduced. All new entities entering the scheme are automatically assigned a new activity code. However, not all installations that were already part of the scheme before the start of the third trading period have changed to the new activity codes, but kept the old codes. The ETC/ACM applied a methodology to map those old codes (1-9) to new codes (20-43) in order to facilitate analysis of the different activities. The methodology is mainly based on information on NACE codes which have been published by the European Commission as part of the preparation of the carbon leakage list for 2015-2019 ⁽⁵⁾. Details on the translation of activity codes are available in an ETC/ACM technical paper ⁽⁶⁾. The

⁽⁵⁾ https://ec.europa.eu/clima/sites/clima/files/installation_nace_rev2_matching_en.xls
as of 18 December 2017.

⁽⁶⁾ http://acm.eionet.europa.eu/docs/ETCACM_EU-ETS_translation_of_activity_codes_April_2016_for_publication.pdf

translation is regularly updated to include country specific information. The most actual translation table is available as download from the EEA Data Service⁷.

(⁷) See Translation of activity codes in the information section at <https://www.eea.europa.eu/data-and-maps/dashboards/emissions-trading-viewer-1>



2.2.2. *Corrections to freely allocated allowances*

For stationary installations, corrections to freely allocated allowances are provided in the EU ETS data viewer on country level. These corrections are reflecting information provided directly by countries in the course of MS consultation cycles for the annual EEA Trends and Projections Reports of last years.

For aviation-related information, a correction for freely allocated allowances in the year 2012 is provided. As some aviation operators choose to comply only with the reduced aviation scope due to the “stop the clock decision”, freely allocated allowances exceeding this reduced scope had to be returned. To a large extent these returns are not reflected in the EUTL. The corrections to freely allocated allowances due to the change in scope have been provided by the European Commission ⁽⁸⁾.

Further detailed information on these corrections is provided in Annex I – Correction of freely allocated allowances.

2.2.3. *Auctions*

Information on EUAs and EUAAs auctioned or sold by governments has been gathered from various sources and is available on the country level. For the first and second trading period the number of EUAs auctioned or sold by governments has been collected from publications from the respective countries, as well as auction reports published by the trading platforms on which the auctions are carried out, details on these sources are given in **Table 7-1**.

From the third trading period onwards, auctioned volumes are derived from auction calendars and auction reports published by the two exchanges that carry out auctions of allowances for the third trading period: The European Energy Exchange (EEX) and the Intercontinental Exchange (ICE) ⁽⁹⁾.

Further detailed information on auctioned amounts is provided in Annex II - Auctioning.

2.2.4. *Estimates for 2008-2012 to reflect the current scope of EU ETS*

An estimate to reflect current EU ETS scope is necessary in order to compare ETS data on a stable basis across years and trading periods. Using information from a range of data sources, including the EUTL, national GHG inventories and EU ETS documentation, an estimate to reflect current ETS scope for stationary installations has been calculated by the EEA for each year and for each participating country. This estimate is applied both to verified emissions and allocated allowances. It does not address changes related to the inclusion or exclusion of individual entities within trading periods (e.g. new entrants and closures). No estimate was quantified for aviation. The methodology applied by EEA for such estimates is documented in detail in an ETC/ACM technical paper ⁽¹⁰⁾.

A short explanation of the estimates to reflect current ETS scope provided in the EU ETS data viewer is provided in Annex III – Estimates to reflect current ETS scope for stationary installations.

⁽⁸⁾ https://ec.europa.eu/clima/sites/clima/files/transport/aviation/docs/20130926_returns_en.pdf

⁽⁹⁾ www.eex.com; www.theice.com

⁽¹⁰⁾ see information section at <https://www.eea.europa.eu/data-and-maps/dashboards/emissions-trading-viewer-1>



3. Regional disaggregation

The EU ETS data viewer includes data for all countries participating in the EU ETS. The user can select individual countries or country groups. Countries are sorted alphabetically followed by the country groups. **Table 3-1** lists all participating countries and indicates to which groups they belong.

Table 3-1 Countries and country groups

	EU-28	All countries
Austria	x	x
Belgium	x	x
Bulgaria	x	x
Croatia	x	x
Cyprus	x	x
Czech Republic	x	x
Denmark	x	x
Estonia	x	x
Finland	x	x
France	x	x
Germany	x	x
Greece	x	x
Hungary	x	x
Iceland		x
Ireland	x	x
Italy	x	x
Latvia	x	x
Liechtenstein		x
Lithuania	x	x
Luxembourg	x	x
Malta	x	x
Netherlands	x	x
Norway		x
Poland	x	x
Portugal	x	x
Romania	x	x
Slovak Republic	x	x
Slovenia	x	x
Spain	x	x
Sweden	x	x
United Kingdom	x	x

In addition, the auctioning of a number of allowances at EU level only, as part of the NER300 program, made it necessary to include an additional item “NER 300” in the list of countries.

4. Temporal disaggregation

Emission caps under the EU ETS are determined for multiannual trading periods, and operators must comply with their obligations on an annual basis. The nature of the entities covered under the EU ETS, as well as allocation rules might differ between trading periods. The first trading period (also called supplementary program commitment period) covered three years (2005-2007); the second trading period covered five years (2008-2012), while the third trading period (2013-2020) covers eight years. No 'banking' (carry-over) of EUAs was possible between the first and the second trading period.

The user can choose the following settings in the category 'year':

- 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017 or 2018: data for an individual year.
- total 1st trading period (2005–2007): sum of the three years (2005 to 2007) of the first trading period.
- total 2nd trading period (2008–2012): sum of the five years (2008 to 2012) of the second trading period.
- total 3rd trading period (2013–2018): sum of the first four years (2013 to 2018) of the third trading period.

As illustrated in Annex III – Estimates to reflect current ETS scope for stationary installations, the number of countries participating in the EU ETS has increased over time. For example Bulgaria and Romania only entered the EU ETS in 2007. If 2005 or 2006 is selected, no data is shown for these two countries. The same applies to the selection of the years 2005, 2006 or 2007 for Norway and Liechtenstein who joined the EU ETS in 2008. For Iceland, no data is shown for the years 2005 to 2011 and for Croatia no data is shown for the years 2005 to 2012.

5. information

The EU ETS data viewer gives the possibility to visualise data related to one or several types of information related to the EU ETS (See table below).

Table 5-1 ETS information

Item	Description
1. Total allocated allowances (EUAs and EUAAs)	Total number of allocated allowances.
1.1. Freely allocated allowances	Total number of allowances received free of charge. This does not include allowances bought, e.g. through auctioning.
1.1.1 Free allocation to existing entities (Art. 10a(1))	Number of allowances received free of charge by existing entities under Art. 10a(1) of the ETS Directive.
1.1.2 Free allocation from the new entrants reserve (Art. 10 a(7))	Number of allowances received free of charge by new entities under Art. 10a(7) of the ETS Directive.
1.1.3 Free allocation for modernisation of electricity generation (Art. 10c)	Number of allowances received free of charge for a transitional period by electricity generators under Art. 10c of the ETS Directive to help modernise production.



1.2. Correction to freely allocated allowances (not reflected in EUTL)	<p>Correction of the number of allowances allocated free of charge, due to:</p> <ul style="list-style-type: none"> • transfers of allowances in six countries; • adjustment of free allocation for aviation operators in the year 2012 due to the 'stop the clock' decision. <p>These transfers and adjustments are not reflected in the EUTL (see further details in Annex I – Correction of freely allocated allowances).</p>
1.3 Allowances auctioned or sold (EUAs and EUAAs)	Number of EUAs and EUAAs auctioned or sold by participating countries (see further details in Annex II - Auctioning).
2. Verified emissions	Emissions of installations and aviation operators which have been verified by an independent third party.
3. Estimates to reflect current scope for allowances and emissions	Estimates to reflect current ETS scope in the period 2005 to 2012 to be added to allowances and verified emissions for a consistent comparison between years and trading periods (see further details in Annex III – Estimates to reflect current ETS scope for stationary installations).
4. Total surrendered units	Total number of emission trading units (allowances, aviation allowances and Kyoto project credits) surrendered by operators to their authorities for compliance under the EU ETS. Each unit represents one tonne of CO ₂ -eq.
4.1 Surrendered EU allowances (EUAs and EUAAs)	Allowances surrendered by operators of stationary installations, or allowances and aviation allowances surrendered by aviation operators.
4.2 Surrendered certified emission reductions (CERs)	CERs (Certified Emission Reductions) originating from Clean Development Mechanism projects under the Kyoto Protocol, i.e. emission reduction projects in non-Annex 1 countries (countries without an emission reduction target under the Kyoto-Protocol. In the third trading period, only the total number of surrendered units is publicly available (no detail on the type of unit surrendered is publicly available).
4.3 Surrendered emission reduction units (ERUs)	ERUs (Emission Reduction Units) originating from Joint Implementation projects under the Kyoto Protocol, i.e. emission reduction projects in Annex 1 countries (countries with an emission reduction target under the Kyoto Protocol). In the third trading period, only the total number of surrendered units is publicly available (no detail on the type of unit surrendered is publicly available).



6. Activity

All entities included in the EUTL are grouped by activity type as shown below.

Table 6-1 EUTL activity types

Activity type code	Activity
10	Aviation
20	Combustion of fuels
21	Refining of mineral oil
22	Production of coke
23	Metal ore roasting or sintering
24	Production of pig iron or steel
25	Production or processing of ferrous metals
26	Production of primary aluminium
27	Production of secondary aluminium
28	Production or processing of non-ferrous metals
29	Production of cement clinker
30	Production of lime, or calcination of dolomite/magnesite
31	Manufacture of glass
32	Manufacture of ceramics
33	Manufacture of mineral wool
34	Production or processing of gypsum or plasterboard
35	Production of pulp
36	Production of paper or cardboard
37	Production of carbon black
38	Production of nitric acid
39	Production of adipic acid
40	Production of glyoxal and glyoxylic acid
41	Production of ammonia
42	Production of bulk chemicals
43	Production of hydrogen and synthesis gas
44	Production of soda ash and sodium bicarbonate
45	Capture of greenhouse gases under Directive 2009/31/EC
46	Transport of greenhouse gases under Directive 2009/31/EC
47	Storage of greenhouse gases under Directive 2009/31/EC
99	Other activity opted-in pursuant to Article 24 of Directive 2003/87/EC
20-99	All stationary installations
21-99	All industrial installations

6.1. Translation of activity codes

Table 6-1 shows the new activity type codes (codes 20-47) introduced for the third trading period of the EU ETS (2013-2020). All new entities entering the scheme are automatically assigned a new activity code. However, not all installations that were already part of the scheme before the start of the third trading period have changed to the new activity codes, but kept the old codes.



ETC/ACM applied a methodology to map those old codes (1-9) to new codes (20-43) in order to facilitate analysis of the different activities. The methodology is mainly based on information on NACE codes which have been published by the European Commission as part of the preparation of the carbon leakage list for 2015-2019 ⁽¹¹⁾. These NACE codes were attributed to installations based on operator information on NACE rev.1.1 and rev. 2 codes in the National Implementation Measures (NIMs), ETS activity code and benchmarks used for allocation. Within the carbon leakage list exercise all codes have been checked for plausibility. Details on the translation of activity codes are available in an ETC/ACM technical paper ⁽¹²⁾. The translation is regularly updated to include country specific information.

This mapping from old to new codes is carried out for all activity codes except code 99 “Other activity opted-in under Art. 24”, if not indicated otherwise by Member States. The reason for keeping this activity separate is due to the fact that the nature of such activities could be very diverse across the 13 countries that opted-in installations falling into this category. For example, Sweden decided to include all installations with a thermal input below 20 MW that are nevertheless connected to a district heating network with a total rated thermal input above 20 MW. In practice, the activity of an installation which is listed under activity type 99 in the EUTL is rarely clear. In addition, some installations included under the EU ETS after 2013 used this activity code, too.

For three iron and steel plants with major emissions the main activity type code has been changed from 20 to 24 after an exchange with competent authorities of the respective Member States.

The result of the translation is shown in **Table 6-2** with regard to the number of installations and related verified emissions 2018. The most actual translation table is available as download from the EEA Data Service¹³.

⁽¹¹⁾ https://ec.europa.eu/clima/sites/clima/files/installation_nace_rev2_matching_en.xls as of 18 December 2017.

⁽¹²⁾ http://acm.eionet.europa.eu/docs/ETCACM_EU-ETS_translation_of_activity_codes_April_2016_for_publication.pdf

⁽¹³⁾ see information section at <https://www.eea.europa.eu/data-and-maps/dashboards/emissions-trading-viewer-1>



Table 6-2 Allocation of new activity codes to installation with old codes

MAIN_ACTIV ITY_TYPE_C ODE	Before Translation		After Translation		Conducted Translation		Percentage of translation to total	
	No of installations	VE 2018	No of installations	VE 2018	No of installations	VE 2018	No of installations	VE 2018
1	2.739	78.299.602						
2	38	9.022.508						
3	3	-						
4	4	-						
5	47	5.326.369						
6	129	5.938.976						
7	109	1.262.710						
8	557	922.788						
9	274	2.338.014						
10	1548	67.001.190	1.548	67.001.190	0	0	0%	0%
20	7348	1.039.250.237	9702	1.095.190.975	2.354	55.940.738	24%	5%
21	138	115.597.379	175	124.619.887	37	9.022.508	21%	7%
22	19	11.096.868	29	11.216.715	10	119.847	34%	1%
23	12	2.660.547	12	2.660.547	0	0	0%	0%
24	243	99.940.029	296	122.202.811	53	22.262.782	18%	18%
25	245	13.156.746	284	13.346.019	39	189.273	14%	1%
26	33	8.903.493	40	8.903.493	7	0	18%	0%
27	34	1.310.735	35	1.310.735	1	0	3%	0%
28	92	7.706.109	99	7.706.109	7	0	7%	0%
29	246	116.443.620	332	121.312.369	86	4.868.749	26%	4%
30	271	29.457.447	426	31.990.340	155	2.532.893	36%	8%
31	360	16.946.090	463	18.146.740	103	1.200.650	22%	7%
32	1175	13.933.641	1739	14.845.114	564	911.473	32%	6%
33	43	1.933.202	65	2.295.858	22	362.656	34%	16%
34	42	1.201.180	42	1.201.180	0	0	0%	0%
35	174	5.258.069	194	5.562.576	20	304.507	10%	5%
36	549	19.135.583	868	21.855.769	319	2.720.186	37%	12%
37	18	1.688.557	18	1.688.557	0	0	0%	0%
38	34	3.741.561	37	4.305.748	3	564.187	8%	13%
39	3	111.662	3	111.662	0	0	0%	0%
40	1	10.833	1	10.833	0	0	0%	0%
41	29	20.614.322	30	20.614.322	1	0	3%	0%
42	346	35.861.078	456	38.361.234	110	2.500.156	24%	7%
43	41	8.047.919	46	8.389.121	5	341.202	11%	4%
44	14	2.987.903	14	2.987.903	0	0	0%	0%
45	2	337	2	337	0	0	0%	0%
46	1	1.428	1	1.428	0	0	0%	0%
99	416	1.915.480	420	1.184.640	4	-730.840	1%	-62%
Group 1-9	3.900	103.110.967	-	-				
Group 10-99	13.477	1.645.913.245	17.377	1.749.024.212				
Total	17.377	1.749.024.212	17.377	1.749.024.212	3.900	103.110.967	22%	6%

Source: EUTL, July, 2019; EEA.

The sums for all activity codes (as outlined in **Table 6-1**), as well as sums for all industrial activities or sums for all stationary installations can also be shown in the EEA EU ETS data viewer.

6.2. Information on stationary installations covered

The EU ETS covered 11 936 stationary installations in most industrial sectors in 2018 ⁽¹⁴⁾.

⁽¹⁴⁾ This number includes all non-excluded stationary installations with any EU ETS information reported in 2018.



The scope of the EU ETS includes all combustion installations exceeding 20 MW and all installations where activities listed in Annex I of the ETS Directive are carried out (EU, 2003). The total emissions of all stationary installations covered by the EU ETS in 2018 were equal to 1 682 Mt CO₂-eq.

The stationary installations covered by the EU ETS can be grouped into eight main categories, based on their main activities responsible for GHG emissions:

1. fuel combustion (mainly electricity generation plus various manufacturing industries);
2. refineries;
3. iron and steel, coke, and metal ore production;
4. cement, clinker and lime production;
5. other non-metallic minerals (glass, ceramics, mineral wool and gypsum);
6. production of pulp and paper;
7. production of chemicals;
8. other (opt-ins and capture of GHGs).

The majority of the stationary installations in the EU ETS are fuel combustion plants (63%), and together they account for an even higher proportion of total verified emissions from stationary installations (65 %). In terms of emissions, the cement, clinker and lime production sector is the second largest sector (9% of emissions), even though it ranks fifth in terms of the number of installations. The iron, steel and coke sector account for 8% and the refinery sector account for 7 % of emissions from stationary installations, followed by the chemicals sector, responsible for 5 % of emissions. The remaining installations account for 25 % of the stationary installations covered by the EU ETS, but are only responsible for 6 % of the total verified emissions of stationary installations (**Table 6-3**).



Table 6-3 Activities and sectors covered by the EU ETS in 2017

Activities	Sectors	Number of entities	Verified emissions Mt CO ₂ -eq
20 Combustion of fuels	Combustion	7496	1.095
21 Refining of mineral oil	Refineries	139	125
22 Production of coke	Iron and Steel, coke, metal ore	20	11
23 Metal ore roasting or sintering		9	3
24 Production of pig iron or steel		247	122
25 Production or processing of ferrous metals	Other metals (incl. aluminium)	250	13
26 Production of primary aluminium		33	9
27 Production of secondary aluminium		33	1
28 Production or processing of non-ferrous metals		91	8
29 Production of cement clinker	Cement and Lime	261	121
30 Production of lime, or calcination of dolomite/magnesite		297	32
31 Manufacture of glass	Other non- metallic minerals	372	18
32 Manufacture of ceramics		1083	15
33 Manufacture of mineral wool		52	2
34 Production or processing of gypsum or plasterboard		40	1
35 Production of pulp	Pulp and Paper	179	6
36 Production of paper or cardboard		586	22
37 Production of carbon black	Chemicals	18	2
38 Production of nitric acid		37	4
39 Production of adipic acid		3	0
40 Production of glyoxal and glyoxylic acid		1	0
41 Production of ammonia		29	21
42 Production of bulk chemicals		364	38
43 Production of hydrogen and synthesis gas		42	8
44 Production of soda ash and sodium bicarbonate		14	3
45 Capture of greenhouse gases under Directive 2009/31/EC	Other	2	0
46 Transport of greenhouse gases under Directive 2009/31/EC		1	0
99 Other activity opted-in under Art. 24		257	1
Sum of all stationary installations		11.956	1.682
10 Aviation		511	67

Note: Entity is counted if it is not excluded and if it has any ETS information in 2017.

Source: EUTL, July 1, 2019, own calculation.

6.3. Information on aviation operators covered

The EU ETS covered 525 aircraft operators in 2018. The total emissions of aviation covered by the EU ETS in 2018 were equal to 67 Mt CO₂-eq.. Since its inclusion in the EU ETS in 2012, the aviation sector has had to purchase EUAs from the stationary sector to fully cover aviation emissions. Initially the scope of aviation covered all flights from, to and within the European Economic Area. However, to allow time for negotiations within the ICAO on a global market-based measure for aviation, the requirements of the EU ETS were suspended for flights to and from non-European countries for 2013-2016. The balance between the supply of and demand for EUAs changed considerably between 2012 and 2013-2016, because in 2012 operators were allowed to choose the applicable scope, whereas since 2013 a uniform scope has been applied. For more information see the report “EEA Trends and Projections in the EU ETS 2018” ⁽¹⁵⁾.

⁽¹⁵⁾ <https://www.eea.europa.eu/publications/trends-and-projections-in-the>



In light of the adoption of a Resolution by the 2016 ICAO Assembly on the global Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) the EU has decided to maintain the geographic scope of the EU ETS limited to intra-EEA flights from 2017 onwards. The EU ETS for aviation will be subject to a new review in the light of the international developments related to the operationalisation of CORSIA. The next review should consider how to implement the global measure in Union law through a revision of the EU ETS legislation. In the absence of a new amendment, the EU ETS would revert back to its original full scope from 2024.

Therefore, in December 2017 a regulation has been adopted ⁽¹⁶⁾. From 2021 onwards, the same linear reduction factor as for stationary installations shall apply to aviation operators. In the Regulation it is laid down that the Commission is required to report to the European Parliament and the Council on the implementation of the global market-based measure (GMBM) and to consider a revision of the EU ETS Directive.

7. Size of entities

In the EU ETS data viewer, it is possible to limit the data to entities of a certain size category. An overview of the possible choices is presented below.

Table 7-1 **Size definitions**

Size	Emission values
large	Entities with verified emissions higher than 500 000 t CO ₂
medium	Entities with verified emissions comprised between 50 000 and 500 000 t CO ₂
small	Entities with verified emissions comprised between 25 000 and 50 000 t CO ₂
mini	Entities with verified emissions lower than 25 000 t CO ₂
zero	Entities with verified emissions equal to 0
unknown	Entities where verified emissions are unknown
All sizes	All entities

The EUTL does not contain information on the size of an entity. As an approximation, the maximum emissions of an entity over the time series are used to define its size.

8. Number of entities

The viewer can show the number of entities. A good indicator of whether an entity is participating in the system in a given year is that it is not excluded and that it has any ETS information in that year. Therefore, the number of entities only takes into account entities which are not excluded and for which ETS information (emissions, allocations or total surrendered units) are available in the year shown (including the reporting of zero emissions).

⁽¹⁶⁾ <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017R2392&from=EN>



9. Measures

The unit in which the information is downloaded from the EUTL is the tonne of CO₂ equivalent and the emission trading unit — emission allowance or emission credit — one unit being equivalent to one tonne of CO₂.

The EU ETS data viewer also offers the option to change the output values in kilo tonnes of CO₂ equivalents or million tonnes of CO₂ equivalents.

10. Gases

By default the ETS covered only CO₂ emissions in the first two trading periods (with the exemption of some smaller opt-ins in the second trading period). Since 2013, N₂O from the production of nitric, adipic and glyoxylic acid and PFC emissions from aluminium production are also included.

As all allowances and verified emissions are reported in CO₂ equivalent, it is not possible to distinguish whether an installation emitted CO₂, N₂O, PFC or a combination of gases.

11. Annex I – Correction of freely allocated allowances

11.1. Stationary installations

The amount of freely allocated allowances recorded in the EUTL has been corrected manually for six countries (see **Table 11-1**).

- Free allocation to installations in Austria and France has been corrected downwards as these countries have bought EUAs from the market and allocated these to new entrants. Therefore, the amount of free allocation recorded in the EUTL is higher than the amount of EUAs initially issued by these two countries.
- In Germany, some operators gave back their free allocation and it was not possible to correct this in the EUTL.
- Similarly, an excess of allowances on closed accounts was deleted in Denmark, which was not recorded in the EUTL.
- For Spain, the overall quantity recorded is correct, however, a correction is applied to its distribution across years.
- Finally, the EUTL does not contain any information on free allocation to Bulgarian installations in 2007.

Table 11-1 **Corrections to freely allocated allowances for stationary installations**



	2005	2006	2007	2008	2009	2010	2011	2012
	million EUA							
Austria				0.58	-1.56	-1.56	-1.86	-3.48
Bulgaria			39.70					
Denmark				-0.08	-0.08	-0.08	-0.08	-0.08
France						-5.41	-5.41	-5.41
Germany				-0.96	-0.96	-0.96	-0.96	-0.96
Spain				0.26	0.69	-0.95		

11.2. Aviation

EUAAs allocated for free for the year 2012 had to be returned by aviation operators if they chose to account for the reduced scope of the stop the clock decision. For the analysis of verified emissions of aviation operators in the year 2012, it is therefore necessary to reflect the amount of allowances returned following this decision, which is not recorded in the EUTL. The amount which had to be returned is publicly available on operator level. The European Commission has sent the according excel file with amounts which have to be returned. On the basis of this file and the EUAAs allocated for free as shown in the EUTL, returned allowances can be calculated on MS level as displayed in the right column in **Table 11-2**.



Table 11-2 Adjustment to freely allocated allowances for aviation operators in the year 2012

Country	Original allowance 2012	Adjusted allowance 2012	Adjustment
	EUAA		
Austria	1.932.411	682.958	1.249.453
Belgium	3.056.619	1.753.311	1.303.308
Bulgaria	269.245	261.881	7.364
Cyprus	461.758	275.834	185.924
Czech Republic	798.821	798.821	-
Germany	42.770.182	13.521.585	29.248.597
Denmark	1.074.189	1.045.920	28.269
Estonia	58.429	35.249	23.180
Spain	9.488.760	3.802.703	5.686.057
Finland	2.109.537	782.793	1.326.744
France	20.022.081	7.724.503	12.297.578
United Kingdom	54.783.369	12.858.960	41.924.409
Greece	717.685	691.075	26.610
Croatia	66.442	66.442	-
Hungary	1.097.418	1.085.442	11.976
Ireland	7.012.841	7.012.245	596
Iceland	434.617	209.720	224.897
Italy	4.909.375	2.481.235	2.428.140
Liechtenstein			
Lithuania	55.953	55.953	-
Luxembourg	2.311.181	2.311.181	-
Latvia	311.520	221.198	90.322
Malta	212.330	197.164	15.166
Netherlands	12.369.053	4.018.267	8.350.786
Norway	1.068.510	1.014.306	54.204
Poland	651.131	254.866	396.265
Portugal	2.111.265	773.001	1.338.264
Romania	380.258	335.568	44.690
Sweden	3.144.641	3.144.575	66
Slovenia	82.534	44.556	37.978
Slovakia	55.051	55.051	-
Total	173.817.206	67.516.366	106.300.840



12. Annex II - Auctioning

EUAs auctioned or sold by governments are not recorded in the EUTL. For the first and second trading period the number of EUAs auctioned or sold by governments has been collected from publications from the respective countries, as well as auction reports published by the trading platforms on which the auctions are carried out. **Table 12-1** summarises the amount of EUAs auctioned or sold by countries during the first and second trading period and includes the relevant sources ⁽¹⁷⁾. Some countries (Belgium, Bulgaria, Czech Republic, Denmark, Hungary, Lithuania, Luxembourg, Norway, Poland and Romania) sold/auctioned allowances relative to the second trading period in the first months of 2013. These were mainly EUAs remaining in the new entrants reserve or unused EUAs set aside for UN backed emission reduction projects. These volumes are added to the 2012 figures (redistributed amounts; see **Table 12-1** below).

Table 12-1 EUAs (1st and 2nd trading period) auctioned or sold, 2005 to 2013

	Auctions/sales concluded										Auctions/sales redistributed		Sources
	1st trading phase			2nd trading phase						2nd trad. phase			
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2012	2013		
Austria					0.4	0.4	0.2	1.0			1.0		www.climex.com
Belgium									9.6		9.6		www.eex.com
Bulgaria									0.1		0.1		www.eex.com
Cyprus													
Czech Republic								1.0	1.6		2.6		www.eex.com
Denmark		4.4									2.8		http://greenstream.dev.aucor.fi/content/greenstream-network-appointed-trustee-sell-2775-million-euas-behalf-danish-state
Estonia													
Finland													
France													
Germany				49.1	41.1	41.1	40.7	48.1			48.1		www.bmu.de, www.dehst.de
Greece							10.0	8.8			8.8		http://www.helex.gr/index2.php?option=com_content&task=view&id=2239&pop=1&page=0&Itemid=10554
Hungary		1.2	1.2						2.5	5.2	7.7		www.euets.com; www.eex.com
Iceland													
Ireland		1.2			0.2	0.2	0.2						www.pointcarbon.com, www.ec.europa.eu
Italy													
Latvia													
Liechtenstein													
Lithuania			0.6				0.9	1.7	0.8		2.5		www.eex.com
Luxembourg											0.0		www.eex.com
Malta													
Netherlands						8.0	4.0	4.0			4.0		www.eex.com
Norway					12.6	6.3	6.3	9.6	0.1		9.8		Email from Norwegian financial department.
Poland										0.2	0.2		http://www.gpw.pl/wydarzenia_en/?ph_tresc_glowna_start=show&ph_tresc_glowna_cmn_id=50140
Portugal													
Romania											0.6		www.eex.com
Slovakia													
Slovenia													
Spain													
Sweden													
United Kingdom				4.0	25.0	35.8	30.7	27.3			27.3		http://www.dmo.gov.uk/index.aspx?page=ETS/AuctionInfo

⁽¹⁷⁾ Auctions in Germany in 2008 include sales of 8.125 million EUA by the KfW to compensate for costs of the replenishment of the NER in period I. Source (page 69): http://www.dehst.de/cln_162/SharedDocs/Downloads/Publikationen/Auswertung_1_Handelsperiode.templateId=raw,property=publicationFile.pdf/Auswertung_1_Handelsperiode.pdf

From the third trading period onwards, a much larger share of allowances is auctioned. Volumes can be derived from auction calendars and auction reports published by the two exchanges that carry out auctions of allowances for the third trading period: The European Energy Exchange (EEX) and the Intercontinental Exchange (ICE) ⁽¹⁸⁾. However, auctions scheduled for a certain year may take place in an earlier or later year, due to technical or procedural reasons. To prevent delays to the timing of auctioning from significantly distorting annual trends, auctioned allowances have partly been redistributed in the third trading period. The following special cases have to be taken into account:

- In 2012 so-called “early auctions” of third trading period EUAs were held. The volumes of these auctions were equal to 90 million EUA and are added to 2013 auctioning volumes in the data viewer.
- Part of the new entrants reserve for the third trading period (NER300: 300 million EUAs in total) was auctioned to generate financial support for CCS and innovative renewable energy projects. These NER300 sales were carried out in two tranches; the first tranche of 210.6 million (sold in 2011 and 2012) is attributed to 2013, while the second tranche of 89.5 million EUAs (sold at the end of 2013/beginning of 2014) is attributed to 2014¹⁹.

In a change from the previous years of reporting, auctioning volumes of both EUAs and EUAAs will no longer be further redistributed and only the auction sales that have been concluded will now be referred to in the data viewer. Given that the MSR will start operation in 2019, the decision has been taken to only refer to auction sales that have been concluded so that the information provided in the data viewer is aligned to future publications by the Commission on the total number of allowances in circulation, which is a key parameter influencing the operation of the MSR. The tables below summarise auctioned or sold amounts of EUAs and EUAAs for the years 2012 to 2018.

⁽¹⁸⁾ www.eex.com; www.theice.com

⁽¹⁹⁾ Summary report on the monetisation of 300 million EU allowances (EUAs), European Investment Bank. http://www.eib.org/attachments/ner_summary_report_en.pdf

Table 12-2 Auctions concluded (2012 – 2018) (Mio. EUAs)

	Auctions (concluded)						
	2012	2013	2014	2015	2016	2017	2018
Austria	1.6	12.7	8.8	10.0	11.2	13.7	13.5
Belgium		26.1	16.1	18.2	20.4	24.9	24.6
Bulgaria	3.3	12.0	6.1	15.9	16.2	22.6	23.8
Croatia				11.3	3.8	4.7	4.6
Cyprus	0.2	0.1	0.1			1.1	1.6
Czech Republic		18.6	9.4	14.5	22.4	34.6	37.8
Denmark	0.2	12.7	8.0	9.0	10.1	12.3	12.1
Estonia		4.1	1.2	2.8	4.5	6.8	9.1
Finland	2.0	15.2	10.6	12.0	13.4	16.4	16.2
France	6.4	49.9	34.8	39.3	44.0	53.8	53.1
Germany	23.5	182.6	127.1	143.9	160.8	196.8	172.2
Greece	2.3	33.4	22.0	24.9	27.9	34.1	33.6
Hungary	0.6	7.8	9.5	10.8	12.1	14.8	14.5
Iceland							
Ireland		9.6	5.9	6.7	7.5	9.2	9.1
Italy	11.3	87.9	61.2	69.3	77.4	94.7	93.4
Latvia	0.3	2.5	1.7	1.9	2.2	2.6	2.6
Liechtenstein							
Lithuania	0.5	4.5	2.9	3.7	3.9	5.4	5.2
Luxembourg	0.1	1.1	0.8	0.9	1.0	1.2	1.2
Malta	0.0	1.0	0.6	0.7	0.8	1.0	1.0
Netherlands	3.9	30.6	21.3	24.1	26.9	32.9	32.5
Norway							
Poland		51.2	13.3	17.1	25.6	85.9	78.0
Portugal	1.6	16.5	11.2	12.6	14.1	17.3	17.0
Romania	5.9	27.9	16.5	25.4	36.8	45.2	46.5
Slovakia	1.8	14.0	9.7	11.1	12.4	15.1	14.9
Slovenia	0.5	4.0	2.8	3.2	3.6	4.4	4.3
Spain	10.1	78.8	54.8	62.1	69.3	84.9	83.7
Sweden	1.0	8.1	5.6	6.4	7.1	8.8	8.6
United Kingdom	12.3	95.1	66.2	75.0	80.3	106.0	101.1
NER300		210.6	89.5				
EU-28	89.7	808.1	528.4	632.7	715.3	951.2	915.8
Total	89.7	1018.7	617.8	632.7	715.3	951.2	915.8



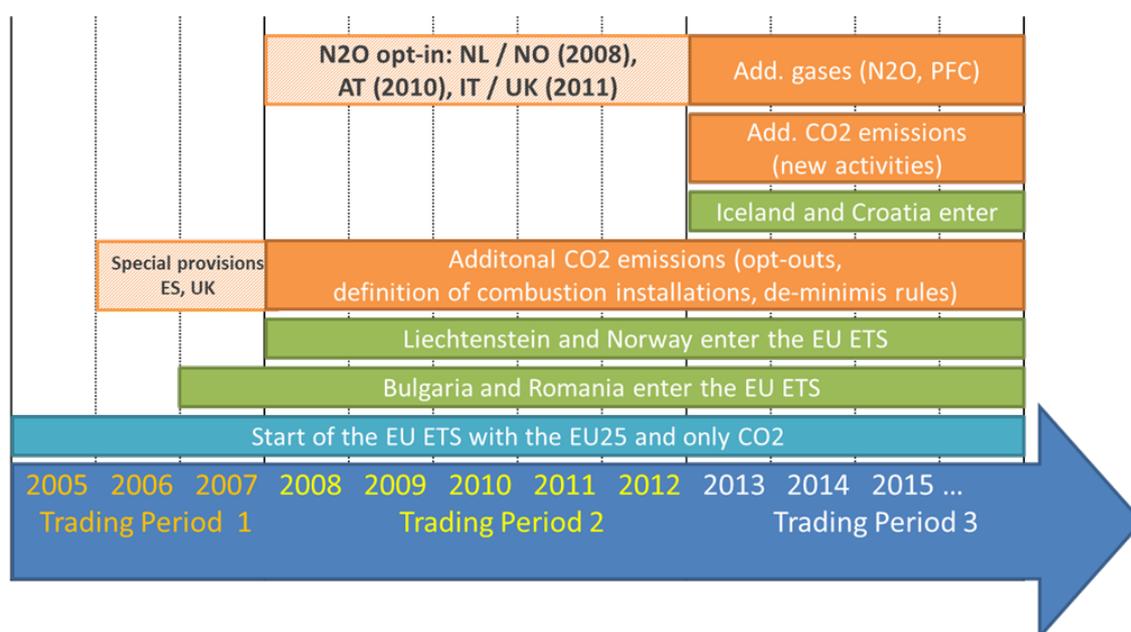
Table 12-3 Auctions of aviation allowances concluded (2012 – 2018) (Mio. EUAs)

	Auctions concluded						
	2012	2013	2014	2015	2016	2017	2018
Austria			0.196	0.336	0.123	0.097	0.115
Belgium			0.341	0.383	0.140	0.111	0.131
Bulgaria			0.037	0.130	0.047	0.038	0.044
Croatia				0.069	0.031	0.025	0.029
Cyprus			0.050	0.202	0.074	0.058	0.069
Czech Republic			0.078	0.170	0.062	0.049	0.058
Denmark			0.194	0.386	0.141	0.111	0.132
Estonia			0.007	0.022	0.008	0.007	0.008
Finland			0.136	0.303	0.111	0.087	0.104
France			1.674	1.731	0.633	0.498	0.591
Germany	2.500			2.229	0.858	0.676	0.801
Greece			0.183	0.710	0.260	0.205	0.242
Hungary			0.048	0.141	0.052	0.041	0.048
Iceland							
Ireland			0.145	0.305	0.112	0.088	0.104
Italy			0.873	2.049	0.749	0.590	0.700
Latvia			0.024	0.076	0.028	0.022	0.026
Liechtenstein							
Lithuania			0.010	0.041	0.015	0.012	0.014
Luxembourg			0.105	0.032	0.012	0.010	0.011
Malta			0.017	0.081	0.030	0.024	0.028
Netherlands			0.911	0.524	0.191	0.151	0.179
Norway							
Poland				0.434	0.120	0.095	0.112
Portugal			0.212	0.411	0.150	0.119	0.140
Romania			0.054	0.227	0.083	0.066	0.077
Slovakia			0.008	0.028	0.011	0.008	0.010
Slovenia			0.008	0.020	0.007	0.006	0.007
Spain			1.093	2.320	0.848	0.669	0.792
Sweden			0.171	0.517	0.189	0.149	0.177
United Kingdom			2.708	2.521	0.921	0.726	0.860
Total	2.500		9.278	16.391	5.998	4.731	5.602

13. Annex III – Estimates to reflect current ETS scope for stationary installations

The EU ETS started in 2005 covering only CO₂ emissions from the EU-25 countries. In 2007, Bulgaria and Romania joined the EU and its ETS. Installations from Liechtenstein and Norway entered the scheme at the start of the second trading period in 2008. At the same time, additional installations from already participating countries started to be covered by the scheme, due to the end of opt-outs and to the clarification of the definition of combustion installations. At the start of the third trading period in 2013, stationary installations from Croatia and Iceland started to be covered by the EU ETS. At the same time, a range of new activities (and gases) were included, in particular N₂O emissions from the production of nitric and adipic acid, glyoxal and glyoxylic acid and PFC emissions from the production of aluminium.

Figure 13-1 Scope of the EU ETS since 2005



To reflect these changes in scope, six types of estimates were applied to ETS verified emissions in order to derive a time-series for stationary installations starting from 2005 consistent with the scope of the third trading period (see **Figure 13-1**).

Estimates to reflect the scope of the second trading period:

- An estimate for Bulgaria and Romania entering the EU ETS. This is relevant in 2005 and 2006 and was calculated using inventory emissions and EUTL verified emissions for these countries in 2007-2009.
- An estimate for Liechtenstein and Norway entering in 2008. Their historical emissions in 2005 were taken from the respective NAP and combined with 2008 verified emissions from the EUTL.
- An estimate for changes in scope between the first and second trading period related to opt-outs and the clarification of the definition of combustion installations. This estimate was performed using information stemming from the process to determine annual allocation allowances (AEAs) under the ESD.

Estimates to reflect the scope of the third trading period:

- An estimate for Croatia entering the EU ETS in 2013. Data stemming from the process to determine annual allocation allowances (AEAs) under the ESD was used to estimate for

Croatia's emissions in 2005–2012, combined with 2013 verified emissions data and inventory emission trends for this country.

- An estimate for non-CO₂ gases entering in 2013. For this purpose, historic emissions in the relevant source categories were taken from GHG inventories and converted to CO₂ equivalent units.
- An estimate for CO₂ emissions of installations which fell into the scope of the EU ETS from 2013 onwards.
- Two countries, Norway and Slovenia, have provided the authors with bottom-up calculated figures to reflect current ETS scope. These are considered to be more accurate than any top-down approach can be and are thus used in further work of the EEA and the EEA EU ETS data viewer.

The estimates to reflect current scope (see **Table 13-1**) is applied both to verified emissions and allocated allowances. It does not address changes related to the inclusion or exclusion of individual installations within trading periods (e.g. new entrants and closures). No estimate was quantified for aviation.

The methodology applied by EEA to quantify the estimates to reflect the current ETS scope by participating country is documented in detail in an ETC/ACM technical paper²⁰.

⁽²⁰⁾ see information section at <https://www.eea.europa.eu/data-and-maps/dashboards/emissions-trading-viewer-1>



Table 13-1 Estimates to reflect current ETS scope for stationary installations in the EU ETS data viewer

	1st trading period			2nd trading period				
	2005	2006	2007	2008	2009	2010	2011	2012
	Mt CO ₂ / Mio. EUAs							
Austria	2.7	2.7	2.6	2.3	2.1	1.9	1.9	1.8
Belgium	11.2	10.2	9.5	4.3	4.3	4.6	3.4	3.4
Bulgaria	37.9	37.9	1.9	1.9	1.5	1.5	1.5	1.3
Croatia	12.4	12.5	13.6	12.7	11.1	10.5	10.4	9.5
Cyprus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Czech Republic	3.7	3.5	3.3	3.3	3.1	2.9	2.9	2.9
Denmark	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Estonia	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0
Finland	2.5	2.3	2.4	2.1	1.3	0.7	0.6	0.7
France	22.9	22.0	21.3	15.2	14.3	12.3	11.5	11.1
Germany	43.9	43.1	45.3	32.7	32.6	24.1	23.2	22.6
Greece	2.4	2.3	2.3	2.2	2.1	2.2	2.2	2.0
Hungary	3.4	2.8	2.3	0.0	0.0	0.0	0.0	0.0
Iceland	1.8	2.1	2.0	2.1	1.8	1.8	1.6	1.6
Ireland	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.3
Italy	21.5	16.5	15.7	8.7	8.7	8.0	7.3	7.1
Latvia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Liechtenstein	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lithuania	4.9	4.9	5.5	5.2	3.0	2.9	3.2	2.8
Luxembourg	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Malta	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Netherlands	11.2	11.1	9.8	1.7	1.6	1.6	1.6	1.5
Norway	26.8	26.2	27.5	7.4	5.1	6.2	6.0	6.0
Poland	18.2	18.0	18.0	12.2	9.1	9.0	8.8	8.7
Portugal	2.0	1.9	1.9	1.1	0.9	0.9	0.7	0.6
Romania	72.2	72.1	9.0	7.3	6.8	7.2	7.1	6.8
Slovakia	3.8	4.1	3.9	2.0	1.8	1.6	1.1	1.0
Slovenia	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	0.0
Spain	16.6	9.9	9.6	9.5	9.2	8.6	8.3	8.0
Sweden	4.1	4.0	3.8	2.1	1.8	1.9	1.7	1.5
United Kingdom	32.3	31.7	23.4	2.7	1.4	1.5	0.4	0.2



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