Reported information under Directive 2001/80/EC, on large combustion plants

Information on the database structure and use

Version 3.1

European Environment Agency

Cover design: EEA
Cover photo: Jorge Franganillo, Creative Commons Attribution 2.0 Generic (https://goo.gl/rqHYk6)
Layout: EEA

Acknowledgments

The compilation of the database and this document was done in cooperation with the European Topic Centre on Air and Climate Change (http://acm.eionet.europa.eu/). The main contributor is Lorenz Moosmann (Umweltbundesamt-Austria).

The dataflow is managed by Daniel Montalvo (EEA), please refer to him for further enquiries (daniel.montalvo@eea.europa.eu).

About the database

This database contains plant-by-plant data on Large Combustion Plants (LCP) for the years 2004 to 2015. The data include rated thermal input, annual energy input and emissions of SO_2, NO_X and dust. In addition, information on opt-outs (article 4.4) and on other derogations is provided.

The data for 2004 to 2012 were reported by EU Member States to the European Commission. Data for 2013, 2014 and 2015 were reported to the EEA. The EEA implemented a two-tiered quality assurance process to identify inconsistences and including a comparison with data reported under the European Pollutant Release and Transfer Register (E-PRTR).

Data reported for the years 2007 to 2012 were checked for consistency/completeness by an external consultant on behalf of the European Commission. For the data of 2004 to 2006, no such checks were carried out and these data may be inconsistent or incomplete in some cases.

In 2017, the EEA asked countries to provide clarifications on important inconsistencies in the whole time series. Time series consistency, identification of plants, removal of duplicates and information gaps were tackled. Countries provided corrections covering the most pressing issues although the data can further improve.

Outliers detected in the database

The EEA has in place a procedure to identify outliers and other quality issues in the database. Once this outliers are identified, countries are notified and they start a correction procedure. Critical outliers are those that affect the totals of the relevant dimension and need to be entirely excluded to analise the data. The current version of the database does not present critical outliers for a single parameter. Some pieces of data are statistically abnormal but have been confirmed as correct by countries, reason why they are not listed as critical outliers.

The EEA has however identified inconsistencies between energy data and emissions that lead to individual emission factors that become critical outliers. These cases will be subject of checking in the next reporting cycle.

What is new in version 3.1

Version 3.1 covers the same time series as version 3.0, but a number of changes and additions were made:

- For Bulgaria, Germany, Estonia, Romania and the United Kingdom, small corrections and additions in the dataset were made, based on feedback from the Member States.
- For the Netherlands, Slovakia and Italy, small corrections were made, based on an internal review.
- For Slovakia, energy inputs and emissions for 2004 and 2005 were corrected, based on an internal review.
- A table was added (Table 7), containing information on plants subject to derogations under the Industrial Emissions Directive 2010/75/EU (IED). This information was obtained from the European Commission (Commission Decisions and tabular overviews).

Table of contents

1 Content of the EEA dataservice entry

The EEA dataservice is the secton of the EEA website where datasets are made available to the public. The permanent link to the dataset on Large combustion plants is this one:
https://www.eea.europa.eu/ds_resolveuid/DAT-149-en

The link always presents the latest version available but the user can also navigate to older versions using the relevant option in the fiche (see Figure 1). Figure 2 provides an overview of the various files that are offered in the fiche of the latest version of the dataset.

Figure 1 Option in the navigation panel to browse dataset versions

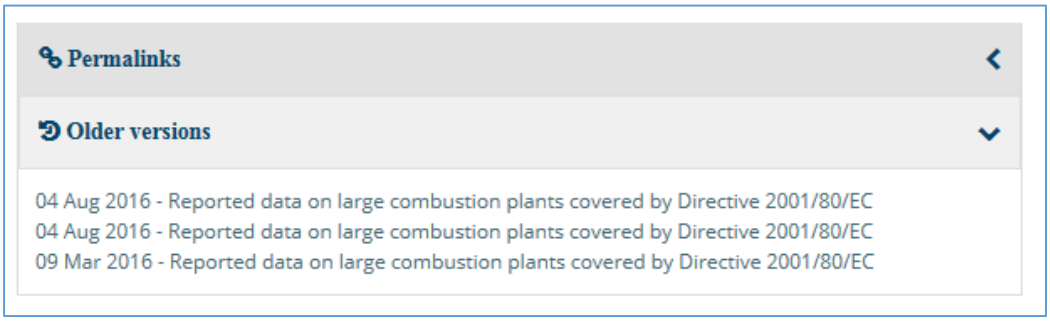
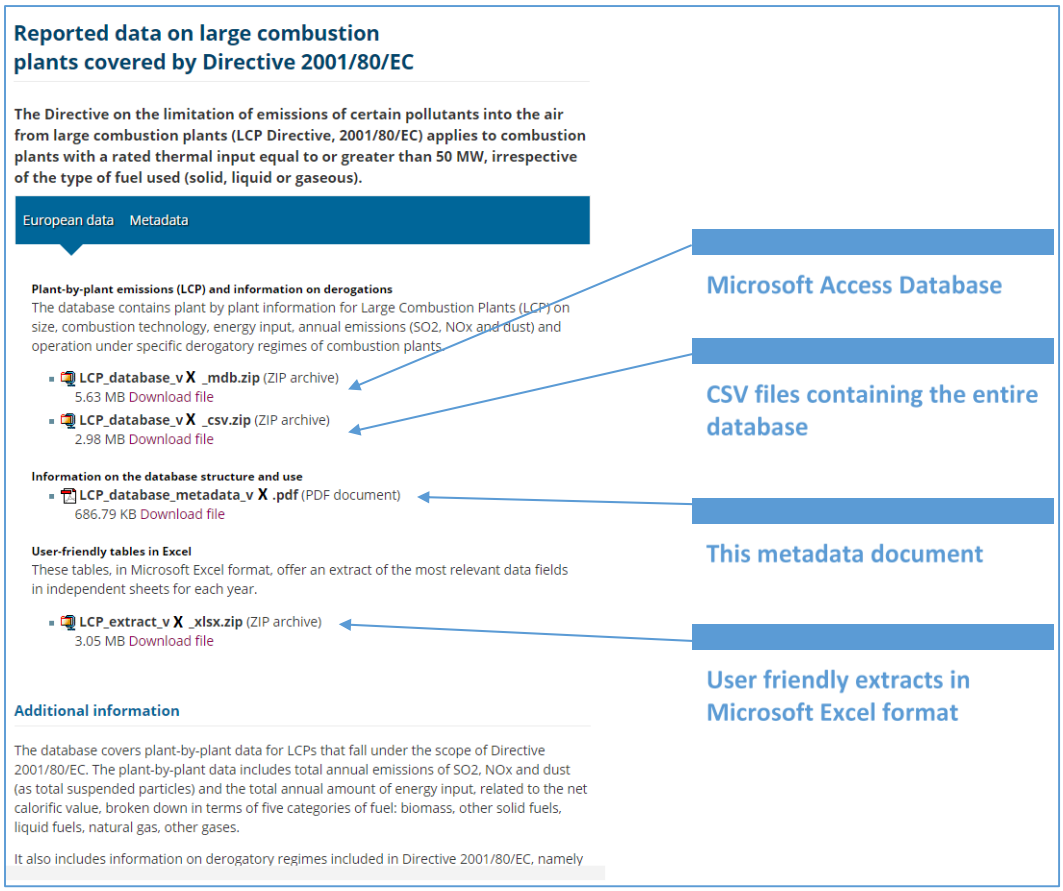


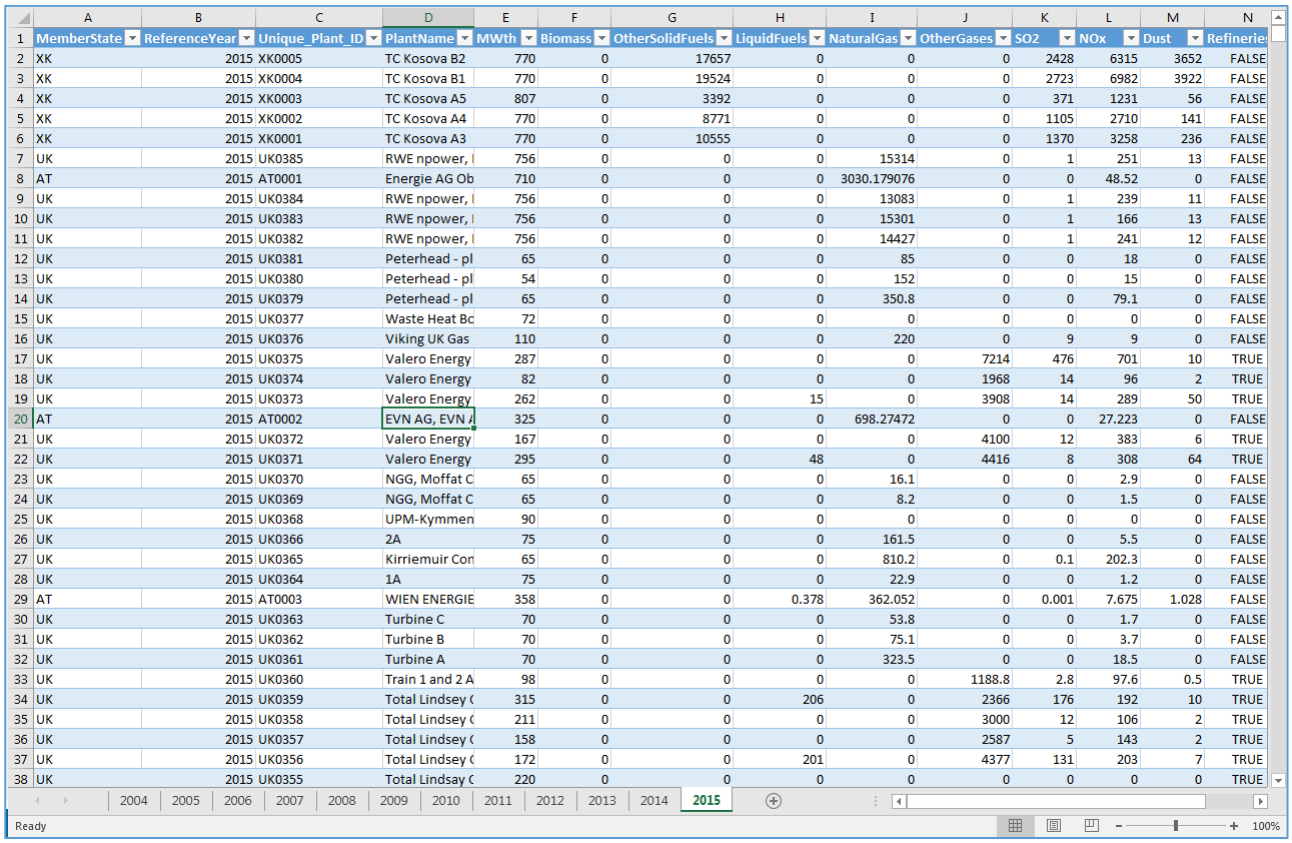
Figure 2 Overview of the content of the fiche of this dataset entry



2 User friendly tables with yearly data

The user-friendly tables are an extract of the database containing the most relevant fields and provided in Excel format. It extracts the data for each year in an independent sheet. This presentation of the data is meant to help those users who are not familiar with Microsoft Access. As depictied in Figure 3, the tab control at the bottom of the Excel window allows to browse the different years. The coulums are filtered so that the user can e.g. define a specific set of countries or restrict the sizes of the plants presented.

Figure 3 Overview of the Excel sheet



	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	MemberState	ReferenceYear	Unique_Plant_ID	PlantName	MWth	Biomass	OtherSolidFuels	LiquidFuels	NaturalGas	OtherGases	SO2	NOx	Dust	Refineries
2	XK	2015	XK0005	TC Kosova B2	770	0	17657	0	0	0	2428	6315	3652	FALSE
3	XK	2015	XK0004	TC Kosova B1	770	0	19524	0	0	0	2723	6982	3922	FALSE
4	XK	2015	XK0003	TC Kosova A5	807	0	3392	0	0	0	371	1231	56	FALSE
5	XK	2015	XK0002	TC Kosova A4	770	0	8771	0	0	0	1105	2710	141	FALSE
6	XK	2015	XK0001	TC Kosova A3	770	0	10555	0	0	0	1370	3258	236	FALSE
7	UK	2015	UK0385	RWE npower, I	756	0	0	0	15314	0	1	251	13	FALSE
8	AT	2015	AT0001	Energie AG Ob	710	0	0	0	3030.179076	0	0	48.52	0	FALSE
9	UK	2015	UK0384	RWE npower, I	756	0	0	0	13083	0	1	239	11	FALSE
10	UK	2015	UK0383	RWE npower, I	756	0	0	0	15301	0	1	166	13	FALSE
11	UK	2015	UK0382	RWE npower, I	756	0	0	0	14427	0	1	241	12	FALSE
12	UK	2015	UK0381	Peterhead - pl	65	0	0	0	85	0	0	18	0	FALSE
13	UK	2015	UK0380	Peterhead - pl	54	0	0	0	152	0	0	15	0	FALSE
14	UK	2015	UK0379	Peterhead - pl	65	0	0	0	350.8	0	0	79.1	0	FALSE
15	UK	2015	UK0377	Waste Heat Bc	72	0	0	0	0	0	0	0	0	FALSE
16	UK	2015	UK0376	Viking UK Gas	110	0	0	0	220	0	9	9	0	FALSE
17	UK	2015	UK0375	Valero Energy	287	0	0	0	0	7214	476	701	10	TRUE
18	UK	2015	UK0374	Valero Energy	82	0	0	0	0	1968	14	96	2	TRUE
19	UK	2015	UK0373	Valero Energy	262	0	0	15	0	3908	14	289	50	TRUE
20	AT	2015	AT0002	EVN AG, EVN A	325	0	0	0	698.27472	0	0	27.223	0	FALSE
21	UK	2015	UK0372	Valero Energy	167	0	0	0	0	4100	12	383	6	TRUE
22	UK	2015	UK0371	Valero Energy	295	0	0	48	0	4416	8	308	64	TRUE
23	UK	2015	UK0370	NGG, Moffat C	65	0	0	0	16.1	0	0	2.9	0	FALSE
24	UK	2015	UK0369	NGG, Moffat C	65	0	0	0	8.2	0	0	1.5	0	FALSE
25	UK	2015	UK0368	UPM-Kymmen	90	0	0	0	0	0	0	0	0	FALSE
26	UK	2015	UK0366	2A	75	0	0	0	161.5	0	0	5.5	0	FALSE
27	UK	2015	UK0365	Kirriemuir Cor	65	0	0	0	810.2	0	0.1	202.3	0	FALSE
28	UK	2015	UK0364	1A	75	0	0	0	22.9	0	0	1.2	0	FALSE
29	AT	2015	AT0003	WIEN ENERGIE	358	0	0	0.378	362.052	0	0.001	7.675	1.028	FALSE
30	UK	2015	UK0363	Turbine C	70	0	0	0	53.8	0	0	1.7	0	FALSE
31	UK	2015	UK0362	Turbine B	70	0	0	0	75.1	0	0	3.7	0	FALSE
32	UK	2015	UK0361	Turbine A	70	0	0	0	323.5	0	0	18.5	0	FALSE
33	UK	2015	UK0360	Train 1 and 2 A	98	0	0	0	0	1188.8	2.8	97.6	0.5	TRUE
34	UK	2015	UK0359	Total Lindsey (	315	0	0	206	0	2366	176	192	10	TRUE
35	UK	2015	UK0358	Total Lindsey (	211	0	0	0	0	3000	12	106	2	TRUE
36	UK	2015	UK0357	Total Lindsey (	158	0	0	0	0	2587	5	143	2	TRUE
37	UK	2015	UK0356	Total Lindsey (	172	0	0	201	0	4377	131	203	7	TRUE
38	UK	2015	UK0355	Total Lindsay (	220	0	0	0	0	0	0	0	0	TRUE

2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015

Ready 100%

3 Complete MS Access database

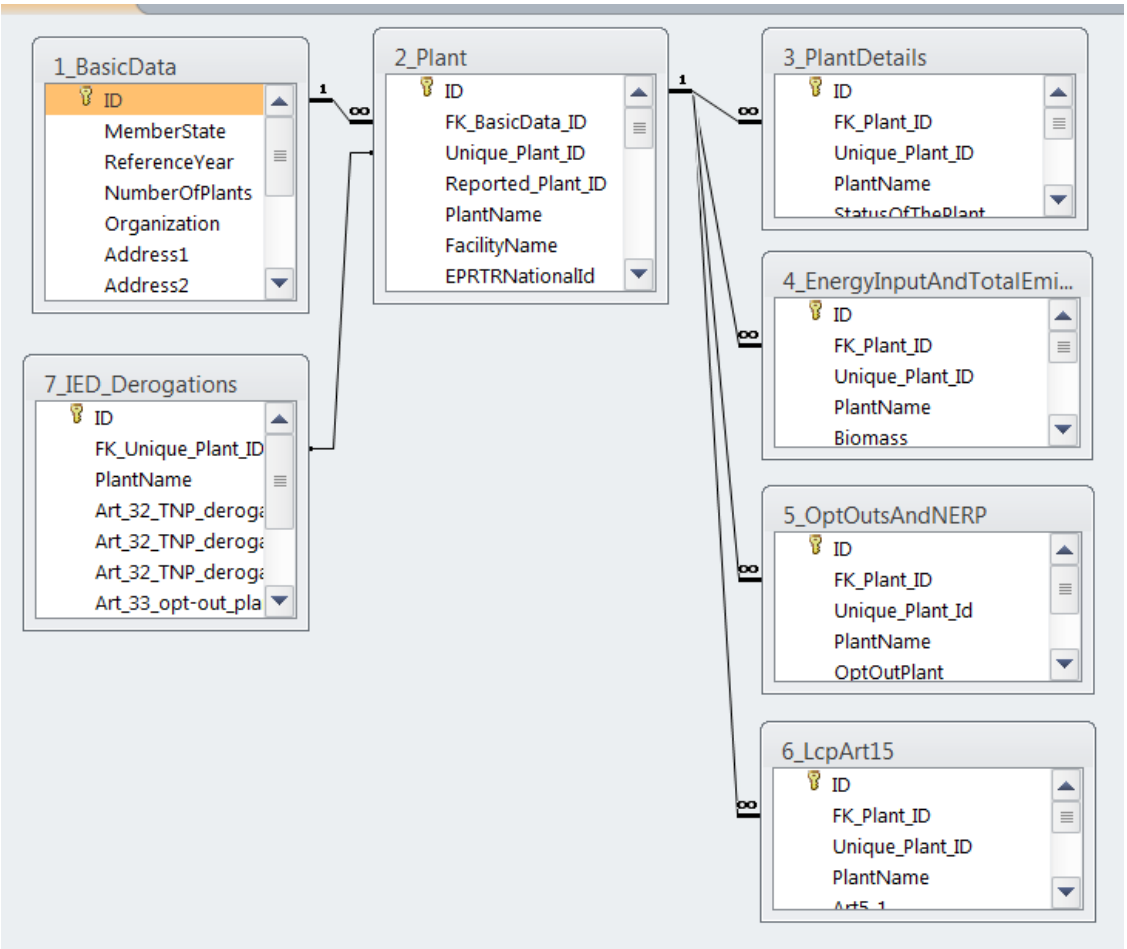
The European dataset is provided in its complete version in Microsoft Access data format. This section outlines the strtucture of the data, the interpretation of the data fields and the metadata of the file.

The data model

The database consists of 6 tables. Its structure is shown in the figure below. The table 1_BasicData contains one entry for each Member State and each year. The table 2_Plant contains entries for each individual plant and year.

Tables 3 to 6 contain corresponding entries for each plant and year included in table 2_Plant. Table 5_OptOutsAndNerps contains either one or more entries for each plant and year.

Figure: Structure of the LCP database v3.1



The field "ID" in table 1_BasicData is the foreign key for table 2_Plant. The field "ID" in table 2_Plant is the foreign key for tables 3 to 7. The IDs and foreign keys are in "hidden mode" in the Access data tables. The field "Unique_Plant_ID" in table 2_Plant is the foreign key for table 7. All fields in the various tables are described below.

Tables and fields

The LCP database contains the following tables and fields:

Fields in Table 1_BasicData

- ID (AutoValue, hidden field): Key for this table
- Member State (Text): Two-letter ISO2 country code
- ReferenceYear (Number): Year which the inventory data refers to
- NumberOfPlants (Number): number of plants reported by a Member State in a given year
- Organization (Text): Name of the organization reporting the data
- Address1, Address2, City, State, PostalCode, NameOfContactPerson, Phone, Email (Text): Contact details of the reporting organization

Fields in Table 2_Plant

- ID (AutoValue, hidden field): Key for this table
- FK_BasicData_ID (Text, hidden field): Foreign key, linking each entry in Table 2_Plant to the corresponding year and Member State in table 1_BasicData
- Unique_Plant_ID (Text): Identifier of the plant which stays the same over time. It consists of the two-letter country code and a four-digit number.
- PlantName (Text): Name of the plant
- FacilityName (Text): Name of the E-PRTR Facility associated with the plant
- EPRTRNationalID (Text): National identifier of the E-PRTR Facility associated with the plant
- Address1, Address2, City, Region, PostalCode (Text): Address details of the plant.
- Longitude (Text): Geographical longitude of the plant (in decimal degrees)
- Latitude (Text): Geographical latitude of the plant (in decimal degrees)

Fields in Table 3_PlantDetails

- ID (AutoValue, hidden field): Key for this table
- FK_Plant_ID (Text, hidden field): Foreign key, linking each entry in Table 3_PlantDetails to the corresponding plant in table 2_Plant
- Unique_Plant_ID (Text): Identifier of the plant which stays the same over time. It consists of the two-letter country code and a four-digit number.
- PlantName (Text): Name of the plant
- StatusOfThePlant (Text): Whether the plant falls under Article 4(1), 4(2) or 4(3) of the LCP Directive (depending on the date of start of operation)
- MWth (Number): Rated thermal input of the plant (megawatts thermal – MWth)
- ExtensionBy50MWOrMore (True/false): This entry is true where the plant has been extended by more than 50 MWth (rated thermal input) in the reporting year
- CapacityAddedMW (Number): Increase in rated thermal input due to this extension, in MWth
- Substantial change (True/false): This entry is true where the plant has undergone a substantial change in operation according to Article 12 of the LCP Directive in the reporting year
- CapacityAffectedMW (Number): Capacity affected by this substantial change (MWth)
- DateOfStartOfOperation (Text): Date when the plant started operating
- Refineries (True/false): This entry is true where the plant is part of a refinery
- OtherSector (Text): Name of the plant's sector (other than refinery)
- GasTurbine (True/false): This entry is true where the plant includes a gas turbine
- GasTurbineThermalInput (Number): Rated thermal input of the gas turbine (MWth)
- Boiler (True/false): This entry is true where the plant includes a boiler
- BoilerThermalInput (Number): Rated thermal input of the boiler (MWth)
- GasEngine (True/false): This entry is true where the plant includes a gas engine
- GasEngineThermalInput (Number): Rated thermal input of the gas engine (MWth)
- DieselEngine (True/false): This entry is true where the plant includes a diesel engine
- DieselEngineThermalInput (Number): Rated thermal input of the diesel engine (MWth)
- Other (True/false): This entry is true where the plant includes another type of combustion engine
- OtherTypeOfCombustion (Text): This entry specifies the type of this combustion engine
- OtherThermalInput (Number): Rated thermal input of the other combustion engine (MWth)
- OperatingHours (Number): Operating hours of the LCP
- Comments (Text): Comments by the reporting authority

Fields in Table 4_EnergyInputAndTotalEmissionsToAir

- ID (AutoValue, hidden field): Key for this table
- FK_Plant_ID (Text, hidden field): Foreign key, linking each entry in Table 4 to the corresponding plant in table 2_Plant
- Unique_Plant_ID (Text): Identifier of the plant which stays the same over time. It consists of the two-letter country code and a four-digit number.
- PlantName (Text): Name of the plant
- Biomass (number): Total biomass energy input of the plant in the reporting year (TJ)
- OtherSolidFuels (number): Total energy input of other solid fuels of the plant in the reporting year (TJ)
- LiquidFuels (number): Total liquid fuel energy input of the plant in the reporting year (TJ)
- NaturalGas (number): Total natural gas energy input of the plant in the reporting year (TJ)
- OtherGases (number): Total energy input of other gases of the plant in the reporting year (TJ)
- SO2 (number): Total of SO_2 emissions of the plant in the reporting year (t)
- NOx (number): Total of NO_X emissions of the plant in the reporting year (t)
- Dust (number): Total of dust emissions of the plant in the reporting year (t)

Fields in Table 5_OptOutsAndNERP

- ID (AutoValue, hidden field): Key for this table
- FK_Plant_ID (Text, hidden field): Foreign key, linking each entry in Table 5 to the corresponding plant in table 2_Plant
- Unique_Plant_ID (Text): Identifier of the plant which stays the same over time. It consists of the two-letter country code and a four-digit number.
- PlantName (Text): Name of the plant
- OptOutPlant (True/false): This entry is true where the plant is included in the opt-out regime under the LCP
- CapacityOptedOutMW (Number): Capacity (rated thermal input) covered by the opt-out regime (MWth)
- HoursOperated (number): Total time of operation from 1 January 2008 until the end of the reporting year (hours)
- PlantIncludedInNERP (True/false): This entry is true if the plant is included in a National Emissions Reduction Plan (NERP)

Fields in Table 6_LcpArt15

- ID (AutoValue, hidden field): Key for this table
- FK_Plant_ID (Text, hidden field): Foreign key, linking each entry in Table 6 to the corresponding plant in table 2_Plant
- Unique_Plant_ID (Text): Identifier of the plant which stays the same over time. It consists of the two-letter country code and a four-digit number.
- PlantName (Text): Name of the plant
- Art5_1 (True/false): This entry is true if the plant falls under a derogation according to Article 5(1) of the LCP Directive
- OperatingHours (Number): Time of operation in the reporting year (hours)
- ElvSO2 (Number): SO_2 emission limit value applied (mg/Nm^3)
- NotaBeneAnnexIII (True/false): This entry is true if the plant falls under the “nota bene” provision in Annex III of the LCP Directive

- NotaBeneElvSO2 (Number): SO_2 emission limit value applied under the "nota bene" provision (mg/Nm^3)
- DesulphurisationRate (Number): Desulphurisation rate of the plant (%)
- SInput (Number): Sulphur input into the plant in the reporting year (t)
- AnnexVI_A_Footnote2 (True/false): This entry is true if the plant falls under Annex VI(A), Footnote 2 of the LCP Directive
- AnnexVI_A_Footnote2_OperatingHours (Number): Time of operation in the reporting year (hours)
- ElvNOX (Number): NO_X emission limit value applied (mg/Nm^3)
- AnnexVI_A_Footnote3 (True/false): This entry is true if the plant falls under Annex VI(A), Footnote 3 of the LCP Directive
- AnnexVI_A_Footnote3_ELVNOx (Number): NO_X emission limit value applied (mg/Nm^3)
- Comments (Text): Comments by the reporting authority

Fields in Table 7_IED_Derogations

- ID (AutoValue, hidden field): Key for this table
- FK_Unique_Plant_ID (Text): Foreign key, linking each entry in Table 6 to the corresponding plant in table 2_Plant
- PlantName (Text): Name of the plant
- Art_32_TNP_derogation_for_SO2 (True/false): This entry is true if the plant is included in a Transitional National Plan according to Article 32 of the Industrial Emissions Directive 2010/75/EU for SO2
- Art_32_TNP_derogation_for_NOx (True/false): This entry is true if the plant is included in a Transitional National Plan according to Article 32 of the Industrial Emissions Directive 2010/75/EU for NOx
- Art_32_TNP_derogation_for_dust (True/false): This entry is true if the plant is included in a Transitional National Plan according to Article 32 of the Industrial Emissions Directive 2010/75/EU for dust
- Art_33_opt-out_plant (True/false): This entry is true if a limited lifetime derogation according to Article 33 of the Industrial Emissions Directive 2010/75/EU applies
- Art_33(3) (True/false): This entry is true if a limited lifetime derogation for plants in small isolated systems according to Article 33(3) of the Industrial Emissions Directive 2010/75/EU applies
- Art_34_small_isolated_system (True/false): This entry is true if an exemption from compliance with emission limit values for plants in small isolated systems according to Article 34 of the Industrial Emissions Directive 2010/75/EU applies
- Art_35_district_heating_plant (True/false): This entry is true if an exemption from compliance with emission limit values for districl heating plants according to Article 35 of the Industrial Emissions Directive 2010/75/EU applies
- Comment (Text): Comments by the reporting authority

Overview query

The database also contains a query which combines tables 1, 2, 3 and 4, in order to allow for a display of data from several tables.

The query can be found under "Queries" – "Overview". It combines the following fields: Member State – Reference year – Unique Plant ID – Plant Name – Rated Thermal Input ("MWth") – Energy inputs (biomass, other solid fuels, liquid fuels, natural gas, other gases) – Emissions (SO2, NOX, dust).

Metadata

Reporting obligation: Summary of emission inventory for large combustion plants (LCP), Art. 4.(4) and 15.(3) - http://rod.eionet.europa.eu/obligations/9

Temporal coverage: 2004 – 2015

Geographic coverage: Austria, Belgium, Bulgaria, Croatia (from 2010), Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom, Kosovo (UNSCR 1244/99; for 2014 and 2015).

Units:
Total energy input, related to net calorific value (TJ/year)
SO_2, NO_X and dust emissions (t/year)
Rated thermal input (MWth)