

Manual for the European Environment Agency's Air Pollutant Emissions Data Viewer (LRTAP Convention)

This manual provides details on the scope, content and features of the European Environment Agency's (EEA) [Air pollutant emissions data viewer \(LRTAP Convention\)](#).

This viewer is a user-friendly tool which allows visualising and downloading of data submitted by EEA member countries and cooperating countries to the UNECE Convention on Long-range Transboundary Air Pollution (LRTAP Convention) for the period 1990 – 2010.

For the EU-27 Member States and EU-27 totals, the data and information reflected are fully consistent with the data reported by the European Union to the LRTAP Convention as documented in the EEA Technical Report [European Union emission inventory report 1990-2010 under the UNECE Convention on Long-range Transboundary Air Pollution \(LRTAP\)](#).

Where gaps exist in the data supplied by the EU Member States to the EEA, the emissions of air pollutants (SO_x, NO_x, CO, NMVOC and NH₃) officially reported by Member States under the National Emissions Ceilings Directive (2001/81/EC) and/or the EU Greenhouse Gas Monitoring Mechanism (280/2004/EC) have been used to fill gaps where possible. Remaining gaps are filled using a combination of extrapolation and interpolation techniques – further details are provided in the aforementioned inventory report.

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1 General data viewer navigation

The diagram below represents some main elements and functionalities of the data viewer.

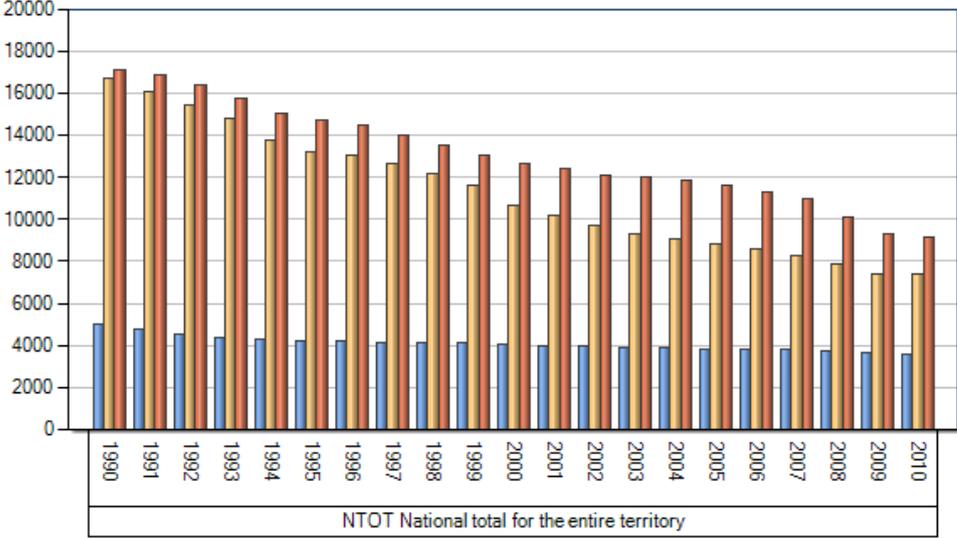
The toolbar includes the list of predefined views and different export, layout

Predefined views:
 Total emissions in the EU, 1990-2009, NFR09 : 

Slicer :
 Geographic entity : EU27 

Chart & Grid tabs


Series :
 Measures 
 Air pollutant 
 Emission unit 
 ✓ Year: Year 



Dimension "Drag & Drop"
 Categorical :
 Emission source  Year 

- **Predefined views:**

The “Predefined views” drop down menu allows switching between defaults predefined views. Six “Predefined views” are available from the menu.

- **Dimensions:**

The data viewer counts six different dimensions: “Air pollutant”, “Emission unit”, “Year”, “Measures”, “Emission source” and “Geographic entity”. Each dimension can be arranged within each axis (drag and drop).

- **Axis:** three distinct axis “Slicer”, “Series” and “Categorical”.

Note: the “Filter/Slicer” allows multiple member selection, and therefore offers many possibilities in terms of aggregation.

Example: The screen shot below can be read: “Emissions of NOX in France, Germany, Italy, Spain and United Kingdom accounts for 59.5% of total emissions in the EU-27 in 2010”.

	% of EU27
	NOx
	Gg (1000 tonnes)
	2010
NTOT National total for the entire territory	59.5%

Chart/Grid tabs: the “Chart/Grid” tabs allow easy switch between chart view and grid view.

2 Scope of the viewer

2.1 Air pollutants

The table below lists the air pollutants for which emissions data are available in the dataviewer.

Air pollutants	
Ammonia	NH ₃
Non-methane volatile organic compounds	NM VOC
Nitrogen oxides	NO _x
Sulphur dioxide	SO ₂
Particulate matter <= 10 µm	PM ₁₀
Particulate matter <= 2.5 µm	PM _{2.5}
Carbon monoxide	CO
Cadmium	Cd
Lead	Pb
Mercury	Hg
Dioxins and furans	Dioxins & furans
Hexachlorobenzene	HCB
Hexachlorocyclohexane	HCH
Polychlorinated biphenyls	PCB
Total polycyclic aromatic hydrocarbons	Total PAHs
Arsenic	As
Benzo(a)pyrene (BaP)	benzo(a)
Benzo(b)fluoranthene	benzo(b)
Benzo(k)fluoranthene	benzo(k)
Chromium	Cr
Copper	Cu
Indeno(1,2,3-cd)pyrene	Indeno
Nickel	Ni
Selenium	Se
Total suspended particulate	TSP
Zinc	Zn

2.2 Geographic entities

Data are available for the EEA-32 member countries of EEA. In addition to the EU-27 grouping of Member States (Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Spain, Slovak Republic, Slovenia, Sweden and the United Kingdom), data are also made available for the other member countries of the EEA: Iceland, Liechtenstein, Norway, Switzerland and Turkey where this has been reported.

2.3 Emission source - NFR09 sectors

The Nomenclature for Reporting (NFR09) reporting format agreed by UNECE/EMEP is documented in the 2009 UNECE/EMEP Emission Reporting Guidelines ([ECE/EB.AIR/97](#)). Countries report emissions data using this NFR classification system. The NFR format uses around 100 source categories to describe emission sources, and is consistent with the common reporting format (CRF) sector classification system developed by the UNFCCC/IPCCC for the reporting of greenhouse gases. For countries that only provided data in an older NFR02 format, a conversion to NFR09 has been done. Details of the mapping used to convert NFR02 to NFR09 are provided in the 2012 report [European Union emission inventory report 1990-2010 under the UNECE Convention on Long-range Transboundary Air Pollution \(LRTAP\)](#).

To simplify use of the data for assessment, NFR09 data can also be converted in the viewer into a simpler sector format (EEA sectors). The EEA sectors represent an aggregation of the ca. 100 NFR09 source categories into around 10 aggregated sectors. Details of the mapping used to convert NFR09 to the aggregated EEA sectors is provided in the EEA Technical Report [European Union emission inventory report 1990-2010 under the UNECE Convention on Long-range Transboundary Air Pollution \(LRTAP\)](#). The easiest way to change between the different sector codes (i.e. between NFR09 and the EEA sectors) is to select the desired choice using the 'predefined view' selection box.

2.4 Total emissions

The "National Total for the entire territory" presented in the Data viewer comprises the aggregated NFR09 sectors (excluding memo items) reported by countries corresponding to anthropogenic (man-made) emissions. Natural emission sources (e.g. wind-blown dust) and re-suspension (e.g. the re-suspension of road-side particulates) are not included in the reported national totals.

According to the UNECE/EMEP reporting guidelines ([ECE/EB.AIR/97](#)), all countries must report transport emissions on the basis of *fuel sold* within each country. This is the official national total used in the viewer (NTOT). In addition, countries can also choose to provide a separate national total calculated on the basis of *fuel used* within the national borders. This second optional national total is also available in the viewer, as a memo item in the list of NFR09 sector codes.

2.5 Years

Emission data are reported annually. Data are in principle available for 29 years (from 1980 to 2010) for the main pollutants (CO, NH₃, NO_x, NMVOC, SO₂), although not every country has reported emissions of each pollutant for all these years. In general the most complete data are available from 1990 for the pollutants and these are therefore presented in the data viewer. For the EU-27 Member States, where gaps existed in the LRTAP data supplied by the Member States to the EEA, the emissions of air pollutants (SO_x, NO_x, CO, NMVOC and NH₃) officially reported by Member States under the National Emissions Ceilings Directive (2001/81/EC) and/or the EU Greenhouse Gas Monitoring Mechanism (280/2004/EC) have been used to fill gaps where possible. Further details are provided in the EEA Technical Report [European Union emission inventory report 1990-2010 under the UNECE Convention on Long-range Transboundary Air Pollution \(LRTAP\)](#).

2.6 Emissions ceiling for 2010

The viewer also shows the 2010 emissions ceilings for national totals (for NO_x, NMVOC, SO_x and NH₃) where these are defined for Parties that have ratified the Gothenburg Protocol of the UNCE LRTAP Convention to abate acidification, eutrophication and ground-level ozone. The text of the Gothenburg Protocol provides further information concerning the ceilings, for details please refer [here](#).

2.7 Emission unit

Emissions can be visualized in 4 distinct scales:

- in gram (g);
- in kilograms (kg);
- in megagrams (Mg) 1 Mg = 1 tonne = 1 000 kg;
- in gigagrams (Gg) 1 Gg = 1 000 tonnes = 1 000 000 kg;

This allows the user to adjust the unit relevant to displayed emission data. For example, the unit *Gg* is most relevant to view "National Total for the entire territory" emissions, while selecting the unit *kg* might be more relevant to view emissions for a specific sub-sector or pollutant (e.g. dioxins and furans).

Note: As "Emission unit" entries are linked with the emissions data, selecting any measure other than absolute emissions statistics (for example: % change or index...) is independent of the unit selected.

2.8 Statistics

The viewer can display data of different types including emission trends (expressed in absolute values or indexed to 1990 emissions levels), and the absolute or relative change from one year to another (expressed as a percentage).

2.8.1 Emissions: air pollutants emissions and notation keys

Emissions can be displayed in 4 units, according to the "emission unit" selected (see **2.7 Emission unit**). When an emission for a certain sector has not been reported for various reasons, Member States use notation keys (see table below).

Notation key	Definition
IE	Included elsewhere: for emissions by sources of compounds that are estimated but included elsewhere in the inventory instead of in the expected source category.
NA	Not applicable: is used for activities in a given source category which are believed not to result in significant emissions of a specific compound.
NE	Not estimated: for existing emissions by sources of compounds that have not been estimated.
NO	Not occurring: for emissions by sources of compounds that do not occur for a particular compound or source category within a country.
NR	Not reported: is introduced to ease the reporting where emissions for a specific Party are not strictly required by the different Protocols.
C	Confidential: is used for emissions that are aggregated and included elsewhere in the inventory, because reporting at a disaggregated level could lead to the disclosure of confidential information.

2.8.2 Percentage change

Five different percentage change statistics are available. In the formulas below, E_{year} represents the selected year emission.

Statistic	Definition	Formula (E_{year} = selected year emission)
% change compared to 1990	Percentage change between 1990 and selected year emissions	$(E_{year} - E_{1990}) / E_{1990} * 100$
% emission reduction for 2010	Percentage change required to E_{year} in order that the 2010 ceilings are met (for NO_x , NMVOC, SO_2 and NH_3 only). Note: a positive value implies that E_{year} is already below the respective ceiling	$(E_{ceiling\ 2010} - E_{year}) / E_{year} * 100$
Annual % change (Y vs. Y - 1)	Percentage change between previous year and selected year emissions	$((E_{year} - E_{year - 1}) / E_{year - 1}) * 100$
5-year % change (Y vs. Y - 5)	Percentage change in emissions during the 5-year period preceding the selected year	$((E_{year} - E_{year - 5}) / E_{year - 5}) * 100$
10-year % change (Y vs. Y - 10)	Percentage change in emissions during the 10-year period preceding the selected year	$((E_{year} - E_{year - 10}) / E_{year - 10}) * 100$

Examples: The screen shot below can be interpreted: “In 2010, total NH_3 emissions in the EU-27 were 11.1% lower than 10 years before (in 2000)”.

10-year % change (Y vs. Y-10)	
NH3	
EU27	
NTOT National total for the entire territory	2010 -11.1%

The screen shot below can be interpreted: “French Total emissions of NO_x in 2010 should have been reduced by at least 20.4% in order to be compliant with the 2010 ceiling”.

% emission reduction for 2010	
NOx	
France	
NTOT National total for the entire territory	2010 -20.4%

2.8.3 Index

One index measure.

Statistic	Definition	Formula (E_{year} = selected year emission)
Index (1990=100)	Index of current year emissions, with index 100 = 1990 emissions	$(E_{\text{year}} / E_{1990}) * 100$

Example: The screen shot below can be interpreted: “For EU-27 in 2010, the index of total NO_x emissions with 100 being emissions for 1990 stands at 53.4, this represents an decrease of 46.6% compared to 1990”.

Index (1990=100)	
NO _x	
EU27	
NTOT National total for the entire territory	2010 53.4

2.8.4 Emission change

Four different calculations of emissions change in absolute terms are available. In the formulas below, E_{year} represents current year emission. See also **2.7 Emission unit**.

Statistic	Definition	Formula (E_{year} = selected year emission)
Absolute change compared to 1990	Change in absolute emissions between 1990 and current year displayed	$E_{\text{year}} - E_{1990}$
Annual absolute change (Y vs. Y-1)	Change in absolute emissions between previous year and current year displayed	$E_{\text{year}} - E_{\text{year}-1}$
5-year absolute change (Y vs. Y-5)	Change in absolute emissions during the 5-year period preceding the selected year	$E_{\text{year}} - E_{\text{year}-5}$
10-year absolute change (Y vs. Y-10)	Change in absolute emissions during the 10-year period preceding the selected year	$E_{\text{year}} - E_{\text{year}-10}$

Example: The screen shot below can be interpreted: “For EU-27, Total NO_x emissions decreased by 3482.178 Gg between 2000 and 2010”.

10-year absolute change (Y vs. Y-10)	
NO _x	
EU27	
Gg (1000 tonnes)	
NTOT National total for the entire territory	2010 -3482.178

Note: The "Emission unit" dimension is relevant for the “emission change statistics” - switching between the “Emission unit” options (g, Kg, Mg, Gg) will change the unit of the displayed emissions.

2.8.5 Percentage share

Two different percentage share statistics are available.

Statistic	Definition	Formula (E_{sector} = selected sector emission) (E_{country} = selected national total emission)
Share of National Total emissions (%)	Percentage share of sector emission in National Total emissions for the selected years(s)	$(E_{\text{sector}} / \text{National Total emissions}) * 100$
% of EU-27	percentage share of selected country emission in the EU-27 for the selected years(s)	$(E_{\text{country}} / E_{\text{EU-27}}) * 100$

Examples:

The screen shot below can be interpreted: “Denmark accounts for 1.6% of all EU-27 Total Particulate Formation PM_{10} emissions in 2010”.

		% of EU27
		PM10
		Denmark
NTOT National total for the entire territory	2010	1.6%

The screen shot below can be interpreted: “The sector 1A1a Public Electricity and Heat Production represents 47.2% of SO_x emissions in the EU-27 in 2010”.

		Share of National Total emissions (%)
		SO_x
		EU27
1 A 1 a Public Electricity and Heat Production	2010	47.2%