

# 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 – 2012.

For the EU-28 Member States and EU-28 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 1990–2012 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<sub>x</sub>, NO<sub>x</sub>, CO, NMVOC and NH<sub>3</sub>) 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.

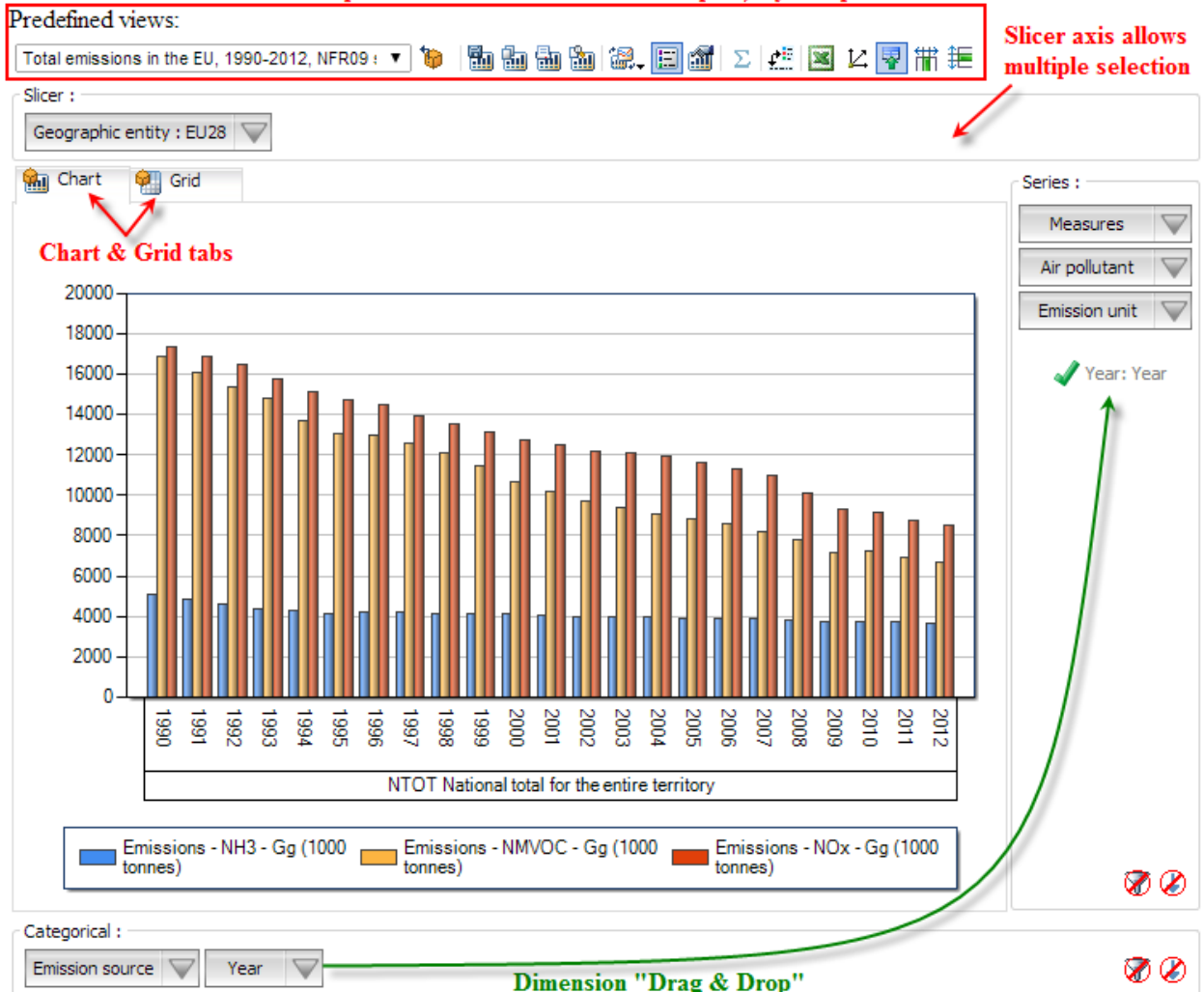
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## 1 General data viewer navigation

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 options**



- **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:

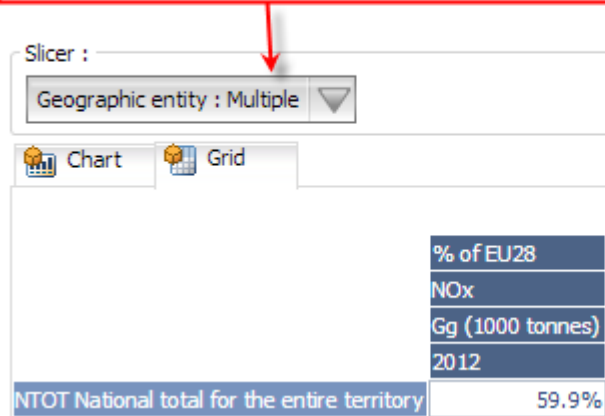
"Air pollutant", "Emission unit", "Year", "Measures", "Emission source" and "Geographic entity". Each dimension can be arranged within each axis (drag and drop).

- **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 59.9% of total emissions in the EU-28 in 2012”.

**France, Germany, Italy, Spain and United Kingdom are selected**



**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 <sub>3</sub>   |
| Non-methane volatile organic compounds | NMVOC             |
| Nitrogen oxides                        | NO <sub>x</sub>   |
| Sulphur dioxide                        | SO <sub>2</sub>   |
| Particulate matter ≤ 10 µm             | PM <sub>10</sub>  |
| Particulate matter ≤ 2.5 µm            | PM <sub>2.5</sub> |
| 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 PAH         |
| 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-33 member countries of EEA. As well as for EU-28 and EEA-33 country aggregates.

EU-28: Austria, Belgium, Bulgaria, Croatia, 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.  
 EEA-33: EU-28 Member States + Iceland, Liechtenstein, Norway, Switzerland and Turkey.

## 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 EEA Technical Report [European Union emission inventory report 1990–2012 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 1990–2012 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 30 years (from 1980 to 2012) for the main pollutants (CO, NH<sub>3</sub>, NO<sub>x</sub>, NMVOC, SO<sub>2</sub>), 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-28 Member States, where gaps existed in the LRTAP data supplied by the Member States to the EEA, the emissions of air pollutants (SO<sub>x</sub>, NO<sub>x</sub>, CO, NMVOC and NH<sub>3</sub>) 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 1990–2012 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<sub>x</sub>, NMVOC, SO<sub>x</sub> and NH<sub>3</sub>) 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           | <b>Included elsewhere:</b> for emissions by sources of compounds that are estimated but included elsewhere in the inventory instead of in the expected source category.                                      |
| NA           | <b>Not applicable:</b> is used for activities in a given source category which are believed not to result in significant emissions of a specific compound.                                                   |
| NE           | <b>Not estimated:</b> for existing emissions by sources of compounds that have not been estimated.                                                                                                           |
| NO           | <b>Not occurring:</b> for emissions by sources of compounds that do not occur for a particular compound or source category within a country.                                                                 |
| NR           | <b>Not reported:</b> is introduced to ease the reporting where emissions for a specific Party are not strictly required by the different Protocols.                                                          |
| C            | <b>Confidential:</b> 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,  $E_{\text{year}}$  represents the selected year emission.

| Statistic                          | Definition                                                                                                                                                                                                                                                         | Formula<br>( $E_{\text{year}}$ = selected year emission)                  |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| % change compared to 1990          | Percentage change between 1990 and selected year emissions                                                                                                                                                                                                         | $(E_{\text{year}} - E_{1990}) / E_{1990} * 100$                           |
| % emission reduction for 2010      | Percentage change required to $E_{\text{year}}$ in order that the 2010 ceilings are met (for $\text{NO}_x$ , NMVOC, $\text{SO}_2$ and $\text{NH}_3$ only).<br><b>Note:</b> a positive value implies that $E_{\text{year}}$ is already below the respective ceiling | $(E_{\text{ceiling 2010}} - E_{\text{year}}) / E_{\text{year}} * 100$     |
| Annual % change<br>(Y vs. Y – 1)   | Percentage change between previous year and selected year emissions                                                                                                                                                                                                | $((E_{\text{year}} - E_{\text{year} - 1}) / E_{\text{year} - 1}) * 100$   |
| 5-year % change<br>(Y vs. Y – 5)   | Percentage change in emissions during the 5-year period preceding the selected year                                                                                                                                                                                | $((E_{\text{year}} - E_{\text{year} - 5}) / E_{\text{year} - 5}) * 100$   |
| 10-year % change<br>(Y vs. Y – 10) | Percentage change in emissions during the 10-year period preceding the selected year                                                                                                                                                                               | $((E_{\text{year}} - E_{\text{year} - 10}) / E_{\text{year} - 10}) * 100$ |

**Examples:** The screen shot below can be interpreted: “In 2012, total  $\text{NH}_3$  emissions in the EU-28 were 8.0% lower than 10 years before (in 2002)”.

|                                              |      |                               |
|----------------------------------------------|------|-------------------------------|
|                                              |      | 10-year % change (Y vs. Y-10) |
|                                              |      | NH3                           |
|                                              |      | EU28                          |
| NTOT National total for the entire territory | 2012 | -8.0%                         |

The screen shot below can be interpreted: “French Total emissions of  $\text{NO}_x$  in 2012 should have been reduced by at least 12.5% in order to be compliant with the 2010 ceiling”.

|                                              |      |                               |
|----------------------------------------------|------|-------------------------------|
|                                              |      | % emission reduction for 2010 |
|                                              |      | $\text{NO}_x$                 |
|                                              |      | France                        |
| NTOT National total for the entire territory | 2012 | -12.5%                        |

### 2.8.3 Index

One index measure.

| Statistic        | Definition                                                       | Formula<br>( $E_{\text{year}}$ = 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-28 in 2012, the index of total NO<sub>x</sub> emissions with 100 being emissions for 1990 stands at 48.8, this represents an decrease of 51.2% compared to 1990”.

|                                              |      |                  |
|----------------------------------------------|------|------------------|
|                                              |      | Index (1990=100) |
|                                              |      | NO <sub>x</sub>  |
|                                              |      | EU28             |
| NTOT National total for the entire territory | 2012 | 48.8             |

### 2.8.4 Emission change

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

| Statistic                            | Definition                                                                         | Formula<br>( $E_{\text{year}}$ = 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-28, Total NO<sub>x</sub> emissions decreased by 3730.044 Gg between 2002 and 2012”.

|                                              |      |                                      |
|----------------------------------------------|------|--------------------------------------|
|                                              |      | 10-year absolute change (Y vs. Y-10) |
|                                              |      | NO <sub>x</sub>                      |
|                                              |      | EU28                                 |
|                                              |      | Gg (1000 tonnes)                     |
| NTOT National total for the entire territory | 2012 | -3730.044                            |

**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

Three different percentage share statistics are available.

| Statistic                             | Definition                                                                                | Formula<br>( $E_{\text{sector}}$ = selected sector emission)<br>( $E_{\text{country}}$ = 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 EEA-33                           | percentage share of selected country emission in the EEA-33 for the selected years(s)     | $(E_{\text{country}} / E_{\text{EEA-33}}) * 100$                                                                           |
| % of EU-28                            | percentage share of selected country emission in the EU-28 for the selected years(s)      | $(E_{\text{country}} / E_{\text{EU-28}}) * 100$                                                                            |

### Examples:

The screen shot below can be interpreted: “Denmark accounts for 1.6% of all EU-28 Total Particulate Formation  $PM_{10}$  emissions in 2012”.

|                                              |      |           |
|----------------------------------------------|------|-----------|
|                                              |      | % of EU28 |
|                                              |      | PM10      |
|                                              |      | Denmark   |
| NTOT National total for the entire territory | 2012 | 1.6%      |

The screen shot below can be interpreted: “The sector 1A1a Public Electricity and Heat Production represents 50.1% of  $SO_x$  emissions in the EU-28 in 2012”.

|                                                |      |                                       |
|------------------------------------------------|------|---------------------------------------|
|                                                |      | Share of National Total emissions (%) |
|                                                |      | $SO_x$                                |
|                                                |      | EU28                                  |
| 1 A 1 a Public Electricity and Heat Production | 2012 | 50.1%                                 |