

Air emissions accounts and intensities

Reference Metadata in Euro SDMX Metadata Structure (ESMS)

Compiling agency: Eurostat, the statistical office of the European Union.

Eurostat metadata

Reference metadata

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For any question on data and metadata, please contact: [EUROPEAN STATISTICAL DATA SUPPORT](#)[Download](#)

1. Contact

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1.1. Contact organisation	Eurostat, the statistical office of the European Union.
1.2. Contact organisation unit	E2: Environmental statistics and accounts; sustainable development
1.5. Contact mail address	2920 Luxembourg, LUXEMBOURG

2. Metadata update

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2.1. Metadata last certified	19/12/2018
2.2. Metadata last posted	19/12/2018
2.3. Metadata last update	19/12/2018

3. Statistical presentation

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3.1. Data description

This metadata refers to three datasets based on the data collection on air emissions accounts (AEA):

1. Air emissions accounts by NACE Rev. 2 activity [env_ac_ainah_r2]

This data set reports the emissions of greenhouse gases and air pollutants broken down by 64 industries (classified by NACE Rev. 2) plus households. Concepts and principles are the same as in national accounts. Complete data starts from reference year 2008.

2. Air emissions intensities by NACE Rev. 2 activity [env_ac_aeint_r2]

This data set presents intensity-ratios relating AEA emissions (see previous) to economic parameters (value added, production output) for 64 industries (classified by NACE Rev. 2).

3. Air emissions accounts totals bridging to emission inventory totals [env_ac_aibrid_r2]

This data set includes so-called bridging items showing the differences between the national totals as derived from two internationally established approaches/methods for reporting emissions of greenhouse gases and air pollutants:

a) Air emissions accounts (AEA), i.e. the dataset mentioned above under 1. The AEA national totals refer to the residents of the reporting country (so-called residence principle as established in national accounts).

b) National emission inventories, i.e. greenhouse gas inventories (providing emission data under the United Nations Framework Convention on Climate Change (UNFCCC)) and air pollutant inventories (providing emission data under the United Nations Economic Commission for Europe (UNECE), Convention on Long-range Transboundary Air Pollution (CLRTAP) and the EU National Emission Ceilings Directive (NEC). The national totals refer widely to the territory of the reporting country. The European Environment Agency (EEA) collects national inventories for greenhouse gases and other air pollutants and compiles the EU aggregates. Eurostat republishes the most relevant data from these inventories in [env_air_emis] and [env_air_gge].

The two methodologies are based on slightly different concepts and principles and the totals at national and EU level correspondingly differ.

The bridging items explicitly present these differences.																													
3.2. Classification system																													
<p>The dataset air emissions accounts by NACE Rev. 2 activity [<i>env_ac_ainah_r2</i>] has five dimensions:</p> <p>1) Air pollutant (AIRPOL): Data are collected on the emissions of the following pollutants: Carbon dioxide without emissions from biomass (CO2), Carbon dioxide from biomass (Biomass CO2)*, Nitroux oxide (N2O), Methane (CH4), Perfluorocarbons (PFCs), Hydrofluorocarbons (HFCs), Sulphur hexafluoride (SF6) including nitrogen trifluoride (NF3), Nitrogen oxides (NOx), Non-methane volatile organic compounds, (NMVOC), Carbon monoxide (CO), Particulate matter < 10µm (PM10), Particulate matter < 2,5µm (PM2,5), Sulphur dioxide (SO2), Ammonia (NH3).</p> <p>Various air pollutants are expressed in equivalents of another air pollutant:</p> <table> <tr> <td>CH4 in CO2 equivalents (CH4_CO2E)</td><td>NH3 in SO2 equivalents (NH3_SO2E)</td><td>CO in NMVOC equivalents (CO_NMVOCE)</td></tr> <tr> <td>N2O in CO2 equivalentes (N2O_CO2E)</td><td>SOX in SO2 equivalents (SOX_SO2E)</td><td>CH4 in NMVOC equivalents (CH4_NMVOCE)</td></tr> <tr> <td>HFC in CO2 equivalents (HFC_CO2E)</td><td>NOX in SO2 equivalents (NOX_SO2E)</td><td>NOx in NMVOC equivalents (NOX_NMVOCE)</td></tr> <tr> <td>PFC in CO2 equivalents (PFC_CO2E)</td><td>NOX in NO2 equivalents (NOX_NO2E)</td><td></td></tr> <tr> <td>SF6 and NF3 in CO2 equivalents (NF3_SF6_CO2E)</td><td></td><td></td></tr> </table> <p>The air pollutants expressed in equivalents of other air pollutants allow for computation of the following environmental pressures:</p> <table> <tr> <th>Environmental pressure</th><th>Code</th><th>Calculation</th></tr> <tr> <td>Global warming potential** Applied factors: N2O: 298; CH4: 25</td><td>CO2_N2O_CH4_CO2E</td><td>CO2 + N2O in CO2 eq. + CH4 in CO2 eq.</td></tr> <tr> <td>Acidifying gases Applied factors: NH3:1.9; NOx:0.7</td><td>ACG</td><td>SOX in SO2 eq. + NOX in SO2 eq. + NH3 in SO2 eq.</td></tr> <tr> <td>Tropospheric ozone precursors Applied factors: NOx:1.22; CO: 0.11; CH4:0.014</td><td>O3PR</td><td>NMVOC + NOX in NMVOC eq + CO in NMVOC eq. + CH4 in NMVOC eq.</td></tr> </table> <p>*CO2 emissions from biomass combustion are treated as a separate substance. Hence the AEA totals for the ordinary CO2 emissions do not include any CO2 emissions from biomass combustion.</p> <p>**Due to data availability fluorinated gases are currently excluded from the global warming potential aggregate.</p> <p>2) Geopolitical entity (GEO): EU Member States, EFTA Countries, Candidate Countries.</p> <p>3) Classification of economic activities - NACE rev.2 (NACE_R2): Data are collected and published broken down by NACE classification of economic activities. The aggregation level used is A*64 (i.e. 64 branches), fully compatible with ESA supply, use and input-output tables. Emissions by households are also included.</p> <p>4) Period of time (TIME): Data are annual.</p> <p>5) Unit (UNIT): The air emissions are measured in tonnes and thousand tonnes, as well as grams per capita, and kilograms per capita.</p> <p>The data set air emissions intensities by NACE Rev. 2 activity [<i>env_ac_aeint_r2</i>] has six dimensions:</p> <p>1) Air pollutant (AIRPOL): see above.</p> <p>2) Geopolitical entity (GEO): see above.</p> <p>3) Classification of economic activities - NACE rev.2 (NACE_R2): see above; note that households are not included.</p> <p>4) Period of time (TIME): see above.</p> <p>5) Unit (UNIT): The intensity-ratios are presented in four units, namely 'grams per euro in current prices', 'grams per euro in chain linked volumes (2010)', 'kilograms per euro in current prices', and 'kilogram per euro in chain linked volumes (2010)'.</p> <p>6) National accounts indicator (ESA 2010) (NA_ITEM): Specifies the economic parameter to calculate the intensity-ratio, either gross value added or production output.</p> <p>The data set air emissions accounts totals bridging to emission inventory totals [<i>env_ac_aibrid_r2</i>] has 5 dimensions:</p> <p>1) Air pollutant (AIRPOL): see above.</p> <p>2) Geopolitical entity (GEO): see above.</p> <p>3) Environment indicator (INDIC_NV): this dimension accommodates the bridging items reconciling the differences between the air emissions accounts totals and those totals reported in national emission inventories for greenhouse gases (UNFCCC) and air pollutants (CLRTAP).</p> <p>4) Period of time (TIME): see above.</p> <p>5) Unit (UNIT): the national totals and the bridging items are presented in tonnes and thousand tonnes as well as grams per capita, and kilograms per capita.</p>			CH4 in CO2 equivalents (CH4_CO2E)	NH3 in SO2 equivalents (NH3_SO2E)	CO in NMVOC equivalents (CO_NMVOCE)	N2O in CO2 equivalentes (N2O_CO2E)	SOX in SO2 equivalents (SOX_SO2E)	CH4 in NMVOC equivalents (CH4_NMVOCE)	HFC in CO2 equivalents (HFC_CO2E)	NOX in SO2 equivalents (NOX_SO2E)	NOx in NMVOC equivalents (NOX_NMVOCE)	PFC in CO2 equivalents (PFC_CO2E)	NOX in NO2 equivalents (NOX_NO2E)		SF6 and NF3 in CO2 equivalents (NF3_SF6_CO2E)			Environmental pressure	Code	Calculation	Global warming potential** Applied factors: N2O: 298; CH4: 25	CO2_N2O_CH4_CO2E	CO2 + N2O in CO2 eq. + CH4 in CO2 eq.	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3.3. Coverage - sector																													
Greenhouse gases and air pollutants emitted by the entire national economy are covered.																													
3.4. Statistical concepts and definitions																													
<p>Air Emissions Accounts record the flows of residual gaseous and particulate materials emitted by resident units and flowing into the atmosphere.</p> <p>Residual gaseous and particulate materials are the physical flows of gaseous or particulate materials ('air emissions').</p> <p>Air emissions accounts record emissions arising from the activities of all resident units (=economic activities), regardless of where these</p>																													

emissions actually occur geographically. Air emissions accounts have the same system boundaries as ESA and are also based on the residence principle.

Natural flows of residual gaseous and particulate materials are excluded e.g. volcanos, forest fires. Also excluded are air emissions arising from land use, land use changes and forestry as well as any indirect emissions.

The concepts and definitions used in the Air Emissions Accounts are set out in the SEEA CF 2012, see annex.

Annexes:

[Methodology \(including SEEA CF 2012\)](#)

3.5. Statistical unit

Data refer to emissions by resident economic units in the sense of SEEA CF 2012 and National Accounts (ESA), including households.

3.6. Statistical population

The national economy is as defined in SEEA CF 2012 and National Accounts (ESA), i.e. all economic activities undertaken by resident units.

3.7. Reference area

The reference area is the economic territory as defined in SEEA CF 2012 and National Accounts (ESA). A unit is said to be a resident unit of a country when it has a centre of economic interest in the economic territory of that country, that is, when it engages for an extended period (1 year or more) in economic activities in that territory.

By following this residence principle, the Air Emission Accounts record emissions from resident units' activities, regardless where they occur. This is the main conceptual difference to emission inventories for greenhouse gases (UNFCCC) and air pollutants (CLRTAP).

3.8. Coverage - Time

Data are annual. In NACE rev. 2 breakdown complete time series are available since 2008. For some countries longer time series are available. For greenhouse gases (GHG) Eurostat has started to estimate AEA for one additional year beyond the mandatory reporting (year n-1, being n the year of the AEA data collection) for EU Member States and the aggregated EU. For the detailed methodology see the Note on Eurostat's procedure for early estimates of greenhouse gases (GHG) in Annex.

Annexes:

[Eurostat's procedure for early estimates of greenhouse gases \(GHG\)](#)

3.9. Base period

Not applicable.

4. Unit of measure

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The air emissions [*env_ac_ainah_r2*] and the bridging items [*env_ac_aibrid_r2*] are presented in tonnes and thousand tonnes, as well as grams per capita and kilograms per capita.

Air emissions intensities [*env_ac_aeint_r2*] are presented in grams per euro and kilograms per euro.

5. Reference Period

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The data refer to the calendar year.

6. Institutional Mandate

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6.1. Institutional Mandate - legal acts and other agreements

AEA are legally covered by [Regulation \(EC\) No. 691/2011](#) on European environmental economic accounts (EEEE). EEEA currently include six modules (air emissions accounts, environmentally related taxes by economic activity, economy-wide material flow accounts, environmental protection expenditure accounts, environmental goods and services sector accounts, and physical energy flow accounts).

The EEEA are fully in accordance with internationally agreed concepts and definitions set out in the system of environmental economic accounting 2012 – central framework (SEEA CF 2012, see annex). The SEEA CF is a multi-purpose conceptual framework to report the interactions between the environment and the economy.

EEEEA present environmental information in a way that is fully compatible with National Accounts.

6.2. Institutional Mandate - data sharing

Not applicable.

7. Confidentiality

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7.1. Confidentiality - policy

[Regulation \(EC\) No 223/2009 on European statistics](#) (recital 24 and Article 20(4)) of 11 March 2009 (OJ L 87, p. 164), stipulates the need to establish common principles and guidelines ensuring the confidentiality of data used for the production of European statistics and the access to those confidential data with due account for technical developments and the requirements of users in a democratic society.

7.2. Confidentiality - data treatment

Confidential data are flagged "confidential" and not published. Aggregates of confidential data respect Eurostat confidentiality rules.

8. Release policy Top
8.1. Release calendar
Data are not bound by an advance release calendar.
8.2. Release calendar access
Not applicable.
8.3. Release policy - user access
In line with the Community legal framework and the European Statistics Code of Practice Eurostat disseminates European statistics on Eurostat's website (see item 10 - 'Accessibility and clarity') respecting professional independence and in an objective, professional and transparent manner in which all users are treated equitably. The detailed arrangements are governed by the Eurostat protocol on impartial access to Eurostat data for users .
Data are disseminated simultaneously to all interested parties through a database update and on Eurostat's website.

9. Frequency of dissemination Top
Data are disseminated annually.

10. Accessibility and clarity Top
10.1. Dissemination format - News release
There are no news releases on-line.
10.2. Dissemination format - Publications
Statistics Explained articles: http://ec.europa.eu/eurostat/statistics-explained/index.php/Greenhouse_gas_emissions_by_industries_and_households http://ec.europa.eu/eurostat/statistics-explained/index.php/Air_pollution_by_industries_and_households Statistical book "Energy, Transport and Environment Indicators"
10.3. Dissemination format - online database
The online database is available free of charge here: http://ec.europa.eu/eurostat/data/database
10.4. Dissemination format - microdata access
Not applicable.
10.5. Dissemination format - other
Not applicable.
10.6. Documentation on methodology
Information is available on Eurostat's website (http://ec.europa.eu/eurostat/web/environment/emissions-of-greenhouse-gases-and-air-pollutants/air-emissions-accounts) For methodology please refer to the annex at the bottom of this page.
10.7. Quality management - documentation
Member States provide quality reports, according to Regulation 691/2011, article 7. Eurostat publishes these quality reports on CIRCABC .

11. Quality management Top
11.1. Quality assurance
To ensure quality of the data Eurostat implements the following procedures/guidelines: 1) Methodological guidelines to assist countries in compiling AEA. 2) Extensive validation procedure of the data received. The validation tools check: - Consistency (several cells check, validation level 1); - Plausibility with an extra check for fluctuations >10% between two consecutive years for each pollutant total (2 subsequent cells check, validation level 1); - Illegal symbols (cell by cell check, validation level 1); - Illegal footnotes. The validation procedure offers a gap overview, the response rate and an annual plausibility that enables the comparison of data for common reporting years between the previous and the current questionnaire which constitutes a validation check at level 2. 3) Gap-filling of missing statistical information (see also point 18.5).
11.2. Quality management - assessment
Quality management is good. Validation procedures, estimation of missing statistical data (gap-filling) and quality reporting are in place. The Environmental Accounts Working Group, encompassing representatives of all Member States, Eurostat and other stakeholders, discusses quality improvements. Because Air Emission Accounts are a relatively recent data collection (started in 2013 according to Regulation 691/2011) improvements in the next years are realistic. Areas for improvement include reporting of bridging items, coverage of certain pollutants and industries, etc.

12. Relevance	Top
12.1. Relevance - User Needs	
Air emissions are relevant for monitoring the interaction between the economy and the environment, in particular in a context of global climate change. Air emission accounts data are also used in modelling, including carbon footprint. The relevance of air emission accounts is enhanced by using a conceptual framework consistent with National Accounts, which allows, e.g. to put in relation with estimates of production, value added, employment, GDP, etc. The users include policy makers in environmental ministries, environmental organisations, students and interested citizens. The policy context is set here: http://ec.europa.eu/eurostat/web/environment/overview/policy-context	
12.2. Relevance - User Satisfaction	
There are no systematic studies of user satisfaction. Eurostat has regular hearings with European policymakers and contacts with the research community and other stakeholders to monitor the relevance of the statistics produced and identify new priorities.	
12.3. Completeness	
Data are complete, meaning they encompass all the sectors of the economy. Data for all Member States are available, as well as some EFTA countries and EU candidate countries. In case of missing data (pollutants, years, NACE sectors), Eurostat gap-fills the missing information for 13 pollutants and for years starting with 2008.	

13. Accuracy	Top
13.1. Accuracy - overall	
The overall accuracy is considered to be good.	
13.2. Sampling error	
Not applicable to statistical accounts.	
13.3. Non-sampling error	
Not applicable to statistical accounts.	

14. Timeliness and punctuality	Top
14.1. Timeliness	
Every year Member States transmit data to Eurostat about the previous reference year by 30 September i.e., with a timeliness of T+21 months. After validation Eurostat publishes the data around December (i.e. T+24m).	
14.2. Punctuality	
Not applicable because there is no release calendar.	

15. Coherence and comparability	Top
15.1. Comparability - geographical	
The comparability across countries is good due to clear statistical concepts and definitions.	
15.2. Comparability - over time	
The comparability over time is good due to clear statistical concepts and definitions.	
15.3. Coherence - cross domain	
The data are coherent with principles, definitions and concepts in National Accounts (ESA - European System of Accounts) and Environmental Accounting (SEEA - System of Environmental-Economic Accounting). It is important that air emissions accounts (AEA) and physical energy flow accounts (PEFA) employ the same groupings of elementary economic units (NACE Rev. 2 activities) as the ESA supply and use tables. This coherence is important with regards to integrated analyses – e.g. applying Leontief-type input-output analysis. As an overarching general rule AEA and PEFA must apply exactly the same demarcation of productive activities (NACE Rev. 2 activities) as employed for the compilation of the monetary supply and use tables delivered to Eurostat under the ESA transmission programme. Compilers of AEA and PEFA are advised to contact and align with compilers of ESA supply and use tables with the aim to ensure highest coherence between AEA, PEFA and ESA supply and use tables. However, it has to be noted that this coherence is not always fully provided.	
15.4. Coherence - internal	
The internal coherence is very high, ensured by the accounting framework.	

16. Cost and Burden	Top
Depending on the level of automatisisation the costs and burden range from 5 to 40 person-days per country and 40 person-days for Eurostat.	

17. Data revision	Top
17.1. Data revision - policy	

Every year Eurostat publishes the complete time series, which may lead to revisions of data previously published. Data are not revised in between annual releases. During first months after the first data release revisions may be possible. The datasets are frozen afterwards, usually in March.

17.2. Data revision - practice

Every year the AEA questionnaire requests the entire time series. If air emission data are revised by countries, it is done for the complete time series.

18. Statistical processing

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18.1. Source data

The main data sources are national emission inventories (UNFCCC/CLRTAP) and energy statistics/balances.

18.2. Frequency of data collection

Data are collected annually.

18.3. Data collection

AEA data collection is regulated by [Regulation \(EC\) No. 691/2011](#) on European environmental economic accounts.

18.4. Data validation

Data are extensively checked via comprehensive validation procedure using IT tools.

More about data validation can be found here: <http://ec.europa.eu/eurostat/data/data-validation> and in point 11.1.

18.5. Data compilation

Eurostat gap-fills missing data for 13 pollutants (CO₂, CH₄, N₂O, HFC, PFC, NF₃, SF₆, NO_x, SO_x, NH₃, NMVOC, CO, PM₁₀ and PM_{2.5}) starting from year 2008 in order to compile EU aggregates. EU aggregates are derived bottom-up by summing up country values.

For greenhouse gases (GHG) Eurostat estimates AEA for one additional year beyond the mandatory reporting (year n-1, being n the year of the AEA data collection) for EU Member States and the aggregated EU. For the detailed methodology see the Note on Eurostat's procedure for early estimates of greenhouse gases (GHG) in Annex.

18.6. Adjustment

Not applicable.

19. Comment

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Not applicable.

Related metadata

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Annexes

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[Eurostat's procedure for early estimates of greenhouse gases \(GHG\)](#)

[Methodology \(including SEEA CF 2012\)](#)

[Methodology \(including SEEA CF 2012\)](#)

[Eurostat's procedure for early estimates of greenhouse gases \(GHG\)](#)