National Reference Metadata in Single Integrated Metadata Structure (SIMS)

Country: Greece

Air Emissions Accounts (AEA)

ELSTAT metadata

Reference metadata

1. Contact

1.1. Contact organisation	Hellenic Statistical Authority (ELSTAT)
1.2. Contact organisation unit	Energy & Environment Statistics Section Agriculture, Livestock, Fisheries and Environmental Statistics Division
1.5. Contact mail address	46 Pireos St. & Eponiton St. 185 10, Piraeus, Greece

2. Metadata update

2.1. Metadata last certified	15/09/2022
2.2. Metadata last posted	15/09/2022
2.3. Metadata last update	15/09/2022

3. Statistical presentation

3.1. Data description

Air emissions accounts (AEA) record flows of gaseous and particulate materials emitted into the atmosphere because of economic activity.

AEA are a subset of environmental-economic accounts. They offer a detailed breakdown for 64 emitting economic activities (NACE), plus households, as defined in the national accounts of EU countries. They are aligned with economic statistics and GDP. These features make them suitable for integrated environmental-economic analyses and modelling – for example of 'carbon footprints' and climate-change modelling scenarios.

National Statistical Institutes (NSIs) submit Air Emission Accounts to Eurostat through a mandatory annual data collection. The data collection includes an electronic questionnaire and this quality report.

3.2. Classification system

The AEA dataset has the following dimensions:

1) **Air pollutant**: Emissions to air of the following gaseous and particulate substances are collected (greenhouse gases, air pollutants):

Carbon dioxide without emissions from biomass (CO_2),
Carbon dioxide from biomass (Biomass CO_2),
Nitrous oxide (N_2O), Methane (CH_4),
Perfluorocarbons (PFCs),
Hydrofluorocarbons (HFCs),
Sulphur hexafluoride (SF_6) including nitrogen trifluoride (NF_3),
Nitrogen oxides (NOx),
Non-methane volatile organic compounds, (NMVOC),
Carbon monoxide (CO),
Particulate matter < 10µm (PM10),
Particulate matter < 2,5µm (PM2.5),
Sulphur dioxide (SO_2),
Ammonia (NH_3)

2) **Geopolitical entity**: Greece, National Economy.

3) **Economic activities**: 64 production activities (NACE rev.2 A*64 classification), and households' consumption (3 sub-categories).

4) **Time**: Reference year for which air emissions are reported.

5) **Unit**: tonnes (Mg) and thousand tonnes (Gg).

3.3. Coverage - sector

The data refer to national economies as defined in the system of national accounts. Greenhouse gases and air pollutants emitted by resident units representing the national economy are covered.

3.4. Statistical concepts and definitions

Conceptually AEA belong to the international system of environmental economic accounting (SEEA-Central Framework). Furthermore, AEA is one of several physical modules of Eurostat's programme on European environmental economic accounts. It is covered by Regulation (EU) No.691/2011 on European environmental economic accounts.

AEA are closely related to concepts and definitions of national accounts. Further methodological guidelines are provided in various publications by Eurostat (see Eurostat website > Environment > Methodology, heading: "Air emissions accounts").

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.
3.8. Coverage - Time
Period 2008 – 2020.
3.9. Base period
Not applicable because AEA are not reported as indices.

4. Unit of measure

The unit of measure is tonnes (Mg) or thousand tonnes (Gg). In particular
- CO_2 is measured in thousand tonnes (Gg)
- N_2O and CH_4 are measured in tonnes (Mg)
- F-gases (HFC, PFC, SF_6 and NF_3) are reported in tonnes (Mg) of CO_2 equivalents.
- SO_X are reported in tonnes (Mg) of SO_2 equivalents, and NO_X are reported in tonnes (Mg) of NO_2 equivalents
- NMVOCs, CO, NH_3, PM10 and PM2.5 particles are measured in tonnes (Mg)
- Total GHG are reported in thousand tonnes (Gg) of CO_2 equivalents

5. Reference Period

The data refer to calendar years. Last reported reference period is 2020.

6. Institutional Mandate

6.1. Institutional Mandate - legal acts and other agreements
At National level: The legal framework concerning the organization and operation of ELSTAT is available at the following link: https://www.statistics.gr/en/legal-framework At European level: Air emissions accounts (AEA) are legally covered by Regulation (EU) 691/2011 on European Environmental Economic Accounts.
6.2. Institutional Mandate - data sharing
Not applicable at national level.

7. Confidentiality

7.1. Confidentiality - policy

The issues concerning the observance of statistical confidentiality by the Hellenic Statistical Authority (ELSTAT) are arranged by articles 7, 8 and 9 of the Law 3832/2010 as in force, by Articles 8, 10 and 11(2) of the Regulation on Statistical Obligations of the agencies of the Hellenic Statistical System and by Articles 10 and 15 of the Regulation on the Operation and Administration of ELSTAT.

Furthermore, ELSTAT disseminates the statistics in compliance with the statistical principles of the European Statistics Code of Practice and in particular with the principle of statistical confidentiality.

https://www.statistics.gr/en/statistical-confidentiality

7.2. Confidentiality - data treatment

ELSTAT protects and does not disseminate data it has obtained, or it has access to, which enable the direct or indirect identification of the statistical units that have provided them by the disclosure of individual information directly received for statistical purposes or indirectly supplied from administrative or other sources. ELSTAT takes all appropriate preventive measures so as to render impossible the identification of individual statistical units by technical or other means that might reasonably be used by a third party. Statistical data that could potentially enable the identification of the statistical unit are disseminated by ELSTAT if and only if:

a) these data have been treated, as it is specifically set out in the Regulation on Statistical Obligations of the agencies of the Hellenic Statistical System (ELSS), in such a way that their dissemination does not prejudice statistical confidentiality or

b) the statistical unit has given its consent, without any reservations, for the disclosure of data.

The confidential data that are transmitted by ELSS agencies to ELSTAT are used exclusively for statistical purposes and the only persons who have the right to have access to these data are the personnel engaged in this task and appointed by an act of the President of ELSTAT.

ELSTAT may grant researchers conducting statistical analyses for scientific purposes access to data that enable the indirect identification of the statistical units concerned. The access is granted provided the following conditions are satisfied:

a) an appropriate request together with a detailed research proposal in conformity with current scientific standards have been submitted

b) the research proposal indicates in sufficient detail the set of data to be accessed, the methods of analyzing them, and the time needed for the research

c) a contract specifying the conditions for access, the obligations of the researchers, the measures for respecting the confidentiality of statistical data and the sanctions in case of breach of these obligations has been signed by the individual researcher, by his/her institution, or by the organization commissioning the research, as the case may be, and by ELSTAT.

Issues referring to the observance of statistical confidentiality are examined by the Statistical Confidentiality Committee (SCC) operating in ELSTAT. The responsibilities of this Committee are to make recommendations to the President of ELSTAT on:

- the level of detail at which statistical data can be disseminated, so as the identification, either directly or indirectly, of the surveyed statistical unit is not possible
- the anonymization criteria for the microdata provided to users
- the granting to researchers to access to confidential data for scientific purposes.

The staff of ELSTAT, under any employment status, as well as the temporary survey workers who are employed for the collection of statistical data in statistical surveys

conducted by ELSTAT, who acquire access by any means to confidential data, are bound by the principle of confidentiality and must use these data exclusively for the statistical purposes of ELSTAT. After the termination of their term of office, they are not allowed to use these data for any purpose.

Violation of data confidentiality and/or statistical confidentiality by any civil servant or employee of ELSTAT constitutes the disciplinary offence of violation of duty and may be punished with the penalty of final dismissal.

ELSTAT, by its decision, may impose a penalty amounting from ten thousand (10,000) up to two hundred thousand (200,000) euros to anyone who violates the confidentiality of data and/or statistical confidentiality. The penalty is always imposed after the hearing of the defense of the person liable for the breach, depending on the gravity and the repercussions of the violation. Any relapse constitutes an aggravating factor for the assessment of the administrative sanction.

8. Release policy

8.1. Release calendar

AEA are disseminated through a press release. A pre - announced release calendar is available on ELSTAT's website.

8.2. Release calendar access

The release calendar is available on Elstat's website (https://www.statistics.gr/en/calendar).

8.3. Release policy - user access

In compliance with Community legislation and the European Statistics Code of Practice, ELSTAT releases all national statistical data on its webpage, fully observing professional independence and with a view to ensuring the simultaneous, equal and timely access of all users to statistical data.

Neither users nor any government bodies have access to data before their official release.

9. Frequency of dissemination

Data are disseminated annually.

10. Accessibility and clarity

10.1. Dissemination format - News release

Press release is published for Air Emission dates.

Release dates are available on the press release calendar (https://www.statistics.gr/en/calendar)

10.2. Dissemination format - Publications

Air Emission Accounts are published nationally with a press release and related data files.

AEA data are available at ELSTAT's website (https://www.statistics.gr/en/statistics/-/publication/SOP08/-)

10.3. Dissemination format - online database

AEA data are disseminated with data files at ELSTAT's website (https://www.statistics.gr/en/statistics/-/publication/SOP08/-)

10.3.1. Data tables - consultations
This information is not currently available.
10.4. Dissemination format - microdata access
Microdata are made available to users after their submitting a request to the: Division of Statistical Information and Publications 46, Peiraios and Eponiton Str., 18510 Piraeus Tel: +30 213 135 2173 Fax: +30 213 135 2022 e-mail: data.dissem@statistics.gr
10.5. Dissemination format - other
Data can be provided to users (provided that restrictions on statistical confidentiality are fully met) usually by e-mail, by submitting a relevant data request. Users have to submit their request, describing in detail the requested data, to the Division of Statistical Information and Publications. The requests must be submitted electronically to the following e-mail address: data.dissem@statistics.gr.
10.5.1. Metadata - consultations
This information is not currently available.
10.6. Documentation on methodology
No additional methodological document is currently disseminated.
10.6.1. Metadata completeness - rate
Metadata completeness is 100%.
10.7. Quality management - documentation
There is not currently available documentation on quality management practices.

11. Quality management

11.1. Quality assurance
Primary data for the compilation of Air Emissions Accounts derive from the annual national emission inventories as provided from the Ministry of Environment and Energy of Greece. Data collection and estimation methods in emission inventories are subject to the control of the UN, on a yearly basis. This control validates and ensures, at a satisfactory level, the quality of data.
11.2. Quality management - assessment
The quality of the data is considered satisfactory.

12. Relevance

12.1. Relevance - User Needs
The data on air emissions accounts by Nace Rev.2 industry are relevant to users' needs. Data on environmental accounts and air emissions are an important source of information for national and international organizations, government agencies, research institutes and enterprises.
12.2. Relevance - User Satisfaction

The Statistical Information Dissemination Section of ELSTAT conducts a survey on user satisfaction, the results of which are available at the link: http://www.statistics.gr/en/user-satisfaction-survey.

12.3. Completeness

The requirements of the Regulation 691/2011 are fully met.

12.3.1. Data completeness - rate

Not applicable.

13. Accuracy

13.1. Accuracy - overall

Primary data on air emissions are the national inventories on greenhouse gases (GHG) and air pollutants as provided by the Ministry of Environment and Energy. The estimation methods and data used for the compilation of emission inventories are validated by the UN – UNFCCC (United Nations Framework on Convention on Climate Change) and by the UNECE – CLRTAP (Convention on Long-range Trans-boundary Air Pollution). Overall accuracy relies, to a great extent, on the quality and completeness of the aforementioned validated data on emission inventories.

Additionally, AEA final data are thoroughly validated by Eurostat including analytical checks on data coherence, extreme values, annual rates, revisions, etc.

13.2. Sampling error

Not applicable because data are not based on a sample survey.

13.2.1. Sampling error - indicators

Not applicable because data are not based on a sample survey.

13.3. Non-sampling error

Not applicable.

13.3.1. Coverage error

No coverage error is identified.

13.3.1.1. Over-coverage - rate

Not applicable.

13.3.1.2. Common units - proportion

Not applicable.

13.3.2. Measurement error

Not applicable.

13.3.3. Non response error

Not applicable.

13.3.3.1. Unit non-response - rate

Not applicable.

13.3.3.2. Item non-response - rate

Not applicable.

13.3.4. Processing error

Not applicable.

13.3.5. Model assumption error
Not applicable.

14. Timeliness and punctuality

14.1. Timeliness
The data are submitted to Eurostat 21 months after the end of the reference year.
14.1.1. Time lag - first result
Not applicable.
14.1.2. Time lag - final result
Not applicable.
14.2. Punctuality
AEA are transmitted within the deadlines set out by the European Regulation.
14.2.1. Punctuality - delivery and publication
The data are submitted to Eurostat 21 months after the end of the reference year.

15. Coherence and comparability

15.1. Comparability - geographical
AEA are compiled according to harmonised guidelines provided by Eurostat and hence are comparable across European countries that report AEA to Eurostat.
15.1.1. Asymmetry for mirror flow statistics - coefficient
Not applicable.
15.2. Comparability - over time
Data are comparable from 2008, when the NACE Rev.2 classification for economic activities was implemented.
15.2.1. Length of comparable time series
Not applicable.
15.3. Coherence - cross domain
Coherence is mainly established with Air Emission Inventories of Greenhouse Gases and Air Pollutants under UNFCCC and CRLTAP conventions.
15.3.1. Coherence - sub annual and annual statistics
Not applicable, because AEA data are compiled only on annual basis.
15.3.2. Coherence - National Accounts
AEA and NA are coherent to the extent that NA data are used as auxiliary data for the distribution to certain NACE Rev.2 industries.
15.4. Coherence - internal
Internal coherence across NACE Rev.2 industries is established with the use of applicable methods and data sources as described in the "Manual for air emissions accounts" (Eurostat, 2015 edition).

16. Cost and Burden

Primary data sources are derived either by other government bodies (Ministry of Environment and Energy) or ELSTAT, therefore there is no burden for ELSTAT in terms of data collection. Full time equivalents (FTE) for this data transmission are estimated approximately at 0.3.

17. Data revision

17.1. Data revision - policy

According to the model used by the inventory compilation team, when estimating the values of air emissions of the reference year, data of previous years are accordingly revised. Therefore, each year, data are revised backwards, causing subsequent revisions for the whole reporting period of AEA, starting from 2008. The structure of this model is based on the principles of the International Panel on Climate Change (IPCC).

Distribution amongst certain industries in Manufacturing and Services sectors are revised due to National Accounts revision of the SUT data for the period 2012-2020. NA data have been revised (base year and data revision) from year 2012 (https://www.statistics.gr/en/statistics/-/publication/SEL15/2020).

17.2. Data revision - practice

Air Emission Accounts follow the revision processes of Air Emission Inventories.

17.2.1. Data revision - average size

Average size of Air Emission Inventories revisions is not yet calculated.

18. Statistical processing

18.1. Source data

The main data source used for the compilation of Air Emissions Accounts is the Annual Inventory Submission Report of Greece provided by the Ministry of Environment and Energy. This Report is under the convention of the Kyoto protocol for the emissions of Greenhouse Gases and other Air Pollutants.

Data of the above report is the official data on the air pollution in Greece and is transmitted annually to the UNFCCC and to the CLRTAP.

For the distribution across multiple industries, services sectors, and households, auxiliary data from national accounts are used. These data refer mainly to the economic variable “intermediate consumption at purchasers’ prices” as provided from the Supply and Use Tables (SUT) of the National Accounts division.

18.2. Frequency of data collection

The frequency of data collection for Air Emissions Accounts is annual.

18.3. Data collection

Data Collection involves the following data sources:

1) Annual National Inventories of air emissions. These reports are submitted annually to the United Nations Framework Convention on Climate Change (UNFCCC) and the Convention on Long Range Transboundary Air Pollution (CLRTAP). Data files are collected from the respective convention web sites that publish them. For each annual

submission of inventories, published data for the reference year also includes revisions of previous years.

2) Economic variables collected from the National Accounts division of ELSTAT. These variables are used for air emissions reported into the inventories that cannot be attributed to a single NACE Rev.2 economic activity.

18.4. Data validation

Air Emission Inventories are validated by the relevant conventions that collect the data:
- the UN – UNFCCC (United Nations Framework on Convention on Climate Change)
- the UNECE – CLRTAP (Convention on Long-range Trans-boundary Air Pollution)

Air Emission Accounts by NACE Rev.2 Economic Activity is also validated by Eurostat.

18.5. Data compilation

Air Emissions by NACE Rev.2 sectors are compiled as follows:

1) The primary data source of annual national emission inventories derived from the Ministry of Environment and Energy provides emission data for certain economic activities e.g., energy industries, manufacturing industries, agriculture, and construction.

2) Correspondence between Air Emissions Inventories and NACE Rev.2 classification is implemented with the use of respective Eurostat Correspondence Tables and Methodology (Annex I Correspondence between CRF/NFR - NACE Rev. 2 to Manual for Air Emissions Accounts).

3) The air emissions are duly allocated to corresponding NACE Rev.2 economic activities with the use of appropriate auxiliary data. These data are compiled on the basis of National Accounts (NA) economic variable "*intermediate consumption at purchasers' prices*" as provided from the Supply and Use Tables (SUT).

Final checks: Once all data are integrated and fully allocated, logical checks regarding mainly growth rates between consecutive years are performed.

Final data compilation: After this process is completed, relevant tables as reported in Eurostat's Questionnaire of Air Emissions Accounts are compiled separately for each greenhouse gas and air pollutant.

18.5.1. Imputation - rate

Not applicable.

18.5.2. Method used to allocate emissions to economic activities

For the distribution across certain industries/services sectors and households, auxiliary data from National Accounts and more specifically the Supply and Use Tables (SUT) were used. These data refer mainly to the economic variable "intermediate consumption at purchasers' prices".

18.5.3. Method used to determine and distribute road transport emissions

Information provided by annual emission inventories for consumption of transport fuels by type of vehicle (passengers cars, heavy duty vehicles, light duty vehicles, motorcycles), is the starting point for this distribution.

Emissions from passenger cars and motorcycles are exclusively attributed to Households-transport.

Regarding the commercial transport sector:

- Split between buses and heavy-duty vehicles (HDVs) emissions are made considering diesel consumption as recorded in National Inventory Report (NIR) of Greece for 2019. Buses emissions are allocated exclusively to sector H49, while HDVs emissions are allocated to all NACE Rev.2 sectors using tonne-km (TKM) data from the annual transport survey of "National and International Road Freight Transport" compiled by ELSTAT's Transport Statistics Section.

- Light duty vehicles emissions are allocated to all NACE Rev.2 sections using auxiliary data from Use Tables as provided by the National Accounts division.

18.5.4. Adjustments for residence principle

- Air transport

Calculation of bridging items (residents abroad & non-residents on territory) for CO_2 are based on OECD's dataset "Air Transport CO_2 Emissions". For the rest of greenhouse gases and air pollutants, emissions are calculated on a proportional basis using the available CO_2 data as a starting point.

- Water transport and national fishing vessels operating abroad

Bridging items in navigation are calculated using the memo item "international bunkers" as reported in the annual air emission inventories and the Balance of Payment data compiled by the Bank of Greece to estimate air emissions from residents outside the national territory. The used variable from BOP data for this calculation is "*Goods procured in ports by carriers*".

The contribution of fishing vessels operating abroad is negligible. Therefore, the corresponding emissions in this sector is assumed zero.

- Land transport

Land transport is divided in two major categories: freight transport and passenger transport.

Bridging items in freight transport are calculated following the methodology described in Eurostat's Manual for air emissions accounts (2015 edition). Relevant data is mainly provided from Eurostat's freight transport databases concerning freight transport of residents outside the national territory and freight transport of non-residents in the territory.

For passenger cars, the adjustments for residence principle are based on:

1) NA export and import adjustments for residents and non-residents: Monetary values for exports to non-residents in national territory and imports of residents abroad as provided from National Accounts data for cpa 19.

2) Transformation into emissions is performed using a) annual price information per fuel type derived from the Ministry of Development and Investments, b) households expenditure on different fuel types as reported in ELSTAT's "Household Budget Survey" (Population, Employment & Cost of Living Statistics division) and c) relevant emission factors per fuel type as reported in "EMEP/EEA air pollutant emission inventory guidebook 2019".

The aforementioned adjustments and all relevant calculations for residence principle are consistent with the procedures and methodologies described in Eurostat's Manual for Air Emissions Accounts.

18.6. Adjustment

Total Air Emissions for each air pollutant are allocated with the described methods to NACE Rev.2 economic sectors on an annual basis. No additional adjustments (such as seasonal adjustment) are performed.

18.6.1. Seasonal adjustment

Not applicable in annual Air Emission Accounts.

19. Comment