# Single Integrated Metadata Structure (SIMS v2.0)
# Country: Greece
# Domain name: Physical energy flow accounts

## Elstat metadata

**Reference metadata**



| 1. Contact | |
|---|---|
| **1.1. Contact organisation** | Hellenic Statistical Authority (ELSTAT) |
| **1.2. Contact organisation unit** | Energy & Environment Statistics Section<br>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** | 07/03/2025 |
| **2.2. Metadata last posted** | 07/03/2025 |
| **2.3. Metadata last update** | 07/03/2025 |

## 3. Statistical presentation

### 3.1. Data description

Physical energy flow accounts (PEFA) is one module of the European environmental-economic accounts - Regulation (EU) 691/2011 Annex VI. PEFA record the flows of energy (in terajoules) from the environment to the economy (natural inputs), within the economy (products), and from the economy back to the environment (residuals), using the accounting framework of physical supply and use tables.

PEFA provide information on energy flows arranged in a way fully compatible with concepts, principles, and classifications of national accounts – thus enabling integrated analyses of environmental, energy and economic issues e.g. through environmental-economic modelling. PEFA complement the traditional energy statistics, balances and derived indicators which are the main reference data source for EU energy policies.

This national metadata refers to the PEFA questionnaire delivered to Eurostat:

- data on supply (table A), use (table B), transformation use (table B1), end use (table B2) and emission-relevant use (table C),
- key indicators of physical energy flow accounts by NACE Rev. 2 activity (table D),
- physical energy flow accounts totals bridging to energy balances totals (table E).

The PEFA questionnaire is available on Eurostat's website: https://ec.europa.eu/eurostat/web/environment/methodology

### 3.2. Classification system

Physical energy flow accounts (PEFA) datasets have the following dimensions:

1. Supply and use tables (STK_FLOW): the elements of this dimension are the five tables detailing energy supply (questionnaire table A) and use; the total energy use (table B) is the sum of transformation use (table B1) and end use (table B2), and a certain part of it is emission relevant (table C).
2. Energy product (PROD_NRG): (not relevant for questionnaire table D and E) The flows of energy recorded in PEFA are broadly grouped into natural energy inputs (flows from environment to economy), energy products (flows within economy), and energy residuals (flows from economy to environment mainly). Each of these generic groups is further broken down. In total this dimension distinguishes 31 items which are regulated in Commission Delegated Regulation (EU) 2016/172.
3. Classification of economic activities - NACE Rev.2 (NACE_R2): (not relevant for questionnaire table E) The supply and use of energy flows is broken down by NACE classification of economic activities. The aggregation level used is A*64 (i.e. 64 branches), fully compatible with ESA supply and use tables. Furthermore, this dimension includes private households, accumulation (e.g. product inventories), the rest of the world economy for imports and exports, and the environment.
4. Indicators (INDIC_PEFA): (only relevant for questionnaire tables D and E): Various key indicators that can be derived from the physical supply and use tables and so-called 'bridging-items' which present the various elements explaining the differences between the national totals as reported by PEFA vis-a-vis the national totals as reported by Eurostat's energy balances.
5. Geopolitical entity (GEO): Greece, national economy.
6. Period of time (TIME): Reference year for which PEFA are reported. Energy flow data are annual.
7. Unit (UNIT): Energy flows are reported in Terajoules.

### 3.3. Coverage - sector

The data set covers the entire national economy as defined in national accounts (ESA 2010,

paragraph 2.04), as well as its physical relation to economies in the rest of the world and the environment.

### 3.4. Statistical concepts and definitions

Physical energy flow accounts (PEFA) are conceptually rooted in the System of Environmental-Economic Accounting (SEEA) which is an international statistical standard. The SEEA central framework provides standard concepts, definitions, classifications, accounting rules and tables for the provision of statistics on the environment and its relationship with the economy.
PEFA constitute satellite accounts to the National Accounts (NA). Hence, the statistical concepts and definitions of PEFA are derived from those of NA.

As far as applicable PEFA is also compliant with the statistical concepts and definitions internationally established for energy statistics: the International Recommendations for Energy Statistics (IRES).
Three concepts are essential to PEFA:

- the concept of three generic types of energy flows as established in SEEA, namely:
  - natural energy inputs: flows from the natural environment into the economy such as fossil energy carriers in solid, liquid and gaseous form, biomass, solar radiation, kinetic energy in form of hydro and wind, geothermal heat etc.
  - energy products: output flows from production processes as defined in national accounts (ESA); typically, products produced by extractive industries, refineries, power plants etc.;
  - energy residuals: mainly energy in form of dissipative heat arising from the end use of energy products, flowing from the economy into the natural environment.
- the accounting framework of (physical) supply and use tables as established in NA and SEEA.
- the residence principle as established in NA and SEEA, i.e. PEFA records energy flows related to resident unit's activities, regardless where those occur geographically.

The PEFA manual provides more details on the conceptual foundations of PEFA and includes all relevant definitions.

### 3.5. Statistical unit

Data refer to activities of 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 (see ESA 2010, paragraph 2.04). 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.

### 3.7. Reference area

The reference area is the economic territory as defined in SEEA CF 2012 and national accounts (ESA). At national level data refer to Greece total.

### 3.8. Coverage - Time

Data cover the period 2014 -2022.

### 3.9. Base period

Not applicable because PEFA are not reported as indices.

## 4. Unit of measure

The unit of measure is terajoule (TJ).

## 5. Reference Period

The data refer to the calendar years. Last reported reference year is 2022.

## 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:
PEFA are legally covered by Regulation (EC) No. 691/2011 on European environmental economic accounts (EEEA) as amended by Regulation (EU) No. 538/2014.

### 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:

- 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
- 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:

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

At present time, a press release for the dissemination of PEFA data is not published. PEFA data are disseminated through ELSTAT's website according to Annual Statistical Work Program https://www.statistics.gr/en/programmes-and-reports

### 8.2. Release calendar access

PEFA data are disseminated on ELSTAT's web site (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 web site, 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

At present time, a press release for the dissemination of PEFA data is not published.

### 10.2. Dissemination format - Publications

PEFA data are available at ELSTAT's website (https://www.statistics.gr/el/statistics/-/publication/SOP11/- )

### 10.3. Dissemination format - online database

PEFA data are disseminated on ELSTAT's website
https://www.statistics.gr/en/statistics/-/publication/SOP11/-
Data are also disseminated on the Eurostat database at the following link:
https://ec.europa.eu/eurostat/web/main/data/database

#### 10.3.1. Data tables - consultations

This information is not currently available.

### 10.4. Dissemination format - microdata access

Not applicable.

### 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. The PEFA manual and other methodological information can be downloaded from Eurostat's website.

#### 10.6.1. Metadata completeness - rate

Metadata completeness is 100%.

### 10.7. Quality management - documentation

Currently, there is no additional documentation on quality management practices.

## 11. Quality management

### 11.1. Quality assurance

Quality of the data Eurostat is ensured by following the following procedures:

- Implementation of methodological guidelines provided by the Eurostat PEFA manual or addition guideline documents.
- Use of the PEFA-builder, an IT tool provided by Eurostat that allows the population of PEFA questionnaire based on available national energy statistics (IEA/ESTAT Annual Questionnaires) and additional information from ELSTAT.
- Extensive validation procedure of the data by Eurostat. The validation tools checks for inappropriate symbols, consistency and plausibility (e.g. comparison with Eurostat's energy balances; changes in time series)

### 11.2. Quality management – assessment

Quality assessment is characterized by a series of logical checks, comparability over time and internal and cross domain coherence as described below in subject 15.

## 12. Relevance

### 12.1. Relevance - User Needs

Data on PEFA are relevant to users' needs since they 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/el/user-satisfaction-survey.

### 12.3. Completeness

The requirements of the Regulations 691/2011 and 538/2014 are fully met.

#### 12.3.1. Data completeness - rate

Rate of data completeness is 100%.

## 13. Accuracy

### 13.1. Accuracy - overall

Primary data on PEFA derive from the IEA/Eurostat/UNECE National Annual Questionnaires on Energy Statistics as provided from the Ministry of Environment and Energy of Greece. The estimation methods and data used for the compilation of energy questionnaires are validated by Eurostat. Overall accuracy relies, to a great extent, on the quality and completeness of the aforementioned validated data in energy questionnaires.

Additionally, PEFA final data are thoroughly validated by Eurostat including analytical checks on data coherence, extreme values, annual rates, revisions, e.t.c.

### 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 to statistical accounts

#### 13.3.1. Coverage error

Not applicable to statistical accounts.

##### 13.3.1.1. Over-coverage - rate

Not applicable to statistical accounts.

##### 13.3.1.2. Common units - proportion

Not applicable to statistical accounts.

#### 13.3.2. Measurement error

Not applicable to statistical accounts.

**13.3.3. Non response error**

Not applicable to statistical accounts.

**13.3.3.1. Unit non-response - rate**

Not applicable to statistical accounts.

**13.3.3.2. Item non-response - rate**

Not applicable to statistical accounts.

**13.3.4. Processing error**

Not applicable to statistical accounts.

**13.3.5. Model assumption error**

Not applicable to statistical accounts.

## 14. Timeliness and punctuality

### 14.1. Timeliness

The data are submitted to Eurostat 21 months after the end of the reference year.
After validation data are published by the second quarter of the following year according to the release schedule of the Statistical Program of ELSTAT.

**14.1.1. Time lag - first result**

t+26 months

**14.1.2. Time lag - final result**

t+26 months

### 14.2. Punctuality

PEFA 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

Data on PEFA are compiled according to harmonised international guidelines provided by Eurostat and hence are comparable across European countries that report PEFA to Eurostat.

**15.1.1. Asymmetry for mirror flow statistics - coefficient**

Not applicable.

### 15.2. Comparability - over time

Please see section 15.2.1.1.

### 15.2.1. Length of comparable time series

Data are comparable from 2017 due to a break in product P08-Hard coal for NACE Rev.2 industries [B] and [C24] in Tables B, B2 and C. This results also to a break in residual R30 (Table A) for the same industries.

#### 15.2.1.1. Comparability - over time detailed

| Year (of the break in series) | Questionnaire table(s) | Columns (NACE Rev. 2 activity, households etc.) | Rows (natural energy inputs, energy products, energy residuals) | Reason for' break in time series' |
|---|---|---|---|---|
| 2017 | B, B2, C | B and C24 | P08 - Hard coal | Change of NACE Rev.2 classification of a company with high contribution to the use of product "Other bituminous coal". |
| 2017 | A | B and C24 | R30 - Energy losses all kinds of (during extraction, distribution, storage and transformation, and dissipative heat from end use) | Change of NACE Rev.2 classification of a company with high contribution to the use of product "Other bituminous coal". |

### 15.3. Coherence - cross domain

Data are coherent with principles, definitions and concepts in National Accounts (ESA - European System of Accounts), energy statistics (IRES - International Recommendations for Energy Statistics), and Environmental Accounting (SEEA - System of Environmental-Economic Accounting).
Air emissions accounts (AEA) and physical energy flow accounts (PEFA) are also consistent as they apply exactly the same productive activities (NACE Rev. 2 activities) as employed for the compilation of the monetary supply and use tables under the ESA transmission programme.

Additionally, cross domain coherence is established by applying all relative rules reported in "Validation rules for physical energy flow accounts(PEFA)-Technical note"

### 15.3.1. Coherence - sub annual and annual statistics

Not applicable, because PEFA data are compiled only on annual basis.

### 15.3.2. Coherence - National Accounts

PEFA and NA are coherent to the extent that NA data are used as auxiliary data for the distribution of energy quantities to certain NACE Rev.2 industries.

### 15.3.3. Do you cooperate with national colleagues compiling AEA?

Both PEFA and AEA are compiled from the Energy and Environmental Statistics section of ELSTAT.

**15.3.4. Are there compilation elements that PEFA compilers jointly undertake with AEA compilers (e.g. distribution of road transport fuel use and emissions by NACE)?**

PEFA and AEA compilers jointly undertake the following compilation elements:

- Allocation of energy/emissions from road transport fuel use to NACE 64
- Adjustments for residence principle (land, water and air transport)

**15.3.5. Do you report in PEFA imports and exports according to the SEEA-CF concepts for trade in goods (see SEEA-CF section 3.3.3, paras. 3.121 ff., and para. 1.46)?**

PEFA imports and exports are reported according to the SEEA-CF concepts for trade in goods and the residence principle as defined in ESA 2010.

**15.3.6. Do you perform cross-domain plausibility checks between your PEFA data on air transport versus OECD's data on CO2-emissions of air transport?**

Cross domain plausibility between PEFA data on air transport and OECD's data on CO2-emissions of air transport is established by applying all relative rules reported in "Validation rules for physical energy flow accounts (PEFA) - Technical note" i.e. rules 33.a, 33.b and 33.c.

**15.3.7. Do you perform cross-domain plausibility checks between PEFA data points and corresponding data points in energy statistics (see PEFA validation rules)?**

Cross domain plausibility between data points of PEFA and energy statistics is established by applying all relative rules reported in "Validation rules for physical energy flow accounts (PEFA) - Technical note" i.e. rules from 34.a to 34.j.

**15.3.8. Do you perform cross-domain plausibility checks between PEFA data points and the corresponding data points in economy-wide material flow accounts (EW-MFA) (see PEFA validation rules)?**

Cross domain plausibility between data points of PEFA and EW-MFA is established by applying all relative rules reported in "Validation rules for physical energy flow accounts (PEFA) - Technical note" i.e. rule 35.

**15.4. Coherence - internal**

The internal coherence is very high, ensured by the accounting framework and the compilation tools.
Internal coherence across NACE Rev.2 industries is established with the use of PEFA builder. Moreover, internal consistency of datasets is checked using the internal consistency rules reported in "Validation rules for physical energy flow accounts (PEFA) - Technical note".

## 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 for the energy questionnaires compilation, when estimating the energy values 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 PEFA, starting from 2014.

Distribution amongst certain industries in Manufacturing and Services sectors are revised due to National Accounts revision of the SUT data for the period 2020-2021. NA data have been revised (base year and data revision) from year 2020. (https://www.statistics.gr/en/statistics/-/publication/SEL15/2021).

### 17.2. Data revision - practice

Physical Energy Flow Accounts follow the revision processes of National Annual Questionnaires on Energy Statistics.

#### 17.2.1. Data revision - average size

Average size of National Annual Questionnaires on Energy Statistics revisions is not yet calculated.

## 18. Statistical processing

### 18.1. Source data

The main data sources used for the compilation of PEFA are the following:

1. Energy Statistics
   IEA/Eurostat/UNECE National Annual Questionnaires on Energy Statistics (Coal/ Gas/ Oil/ Electricity and Heat/Renewables and Wastes Questionnaires), for reference year 2021
2. National Accounts data: mainly Use table data for specific products used for the breakbowns into NACE secotrs (as analyzed below)
3. Structural Business Survey (SBS) data: certain information on petroleum products
4. Information needed for the implementaion of the resident principle (as explained below) using various surveys and datasets:
   - OECD's dataset "Air Transport CO2 Emissions"
   - Freight Transport statistics from Eurostat database
   - Balance of Payments data for water transport
5. For road transport allocation the following data sources were used:
   - Air Emission Inventories

- "National and International Road Freight Transport" compiled by ELSTAT's Transport Statistics Section
- SUT tables from NA

6. For distribution keys concerning Household end-use categories, data were provided by the dataset "Disaggregated final energy consumption in households – quantities" (nrg_d_hhq), as published in Eurostat's online database.

**18.1.1. Which are the main data sources you employ for the use of natural energy inputs (i.e. who is extracting)?**

The main data sources for the use of natural energy inputs are the National Annual Questionnaires on energy statistics.

**18.1.2. Which are the main data sources you employ for supply of energy products (e.g. electricity, refinery products etc.)?**

The main data sources for the supply of energy products are the National Annual Questionnaires on energy statistics.

**18.1.3. Which are the main data sources you employ for the transformation use by energy transforming entities (NACE 2-digit divisions)?**

The main data sources for the transformation use by energy transforming entities are the National Annual Questionnaires on energy statistics.

**18.1.4. Which are the main data sources you employ for the end use by end user entities (including non-energy use)?**

The main data sources for the end use by end user entities are the National Annual Questionnaires on energy statistics.

**18.1.5. Which auxiliary data do you use to develop 'distribution keys' to assign energy use to the detailed breakdown of production activities (NACE 2-digit divisions) and categories of household consumption?**

1. For the breakdown into production activities (NACE 2-digit divisions) the auxiliary data source used was:
   - Monetary use table to obtain the NACE A*64 distribution key. The National Accounts Division provides Use tables in a two-digit level with CPA_0100 "Crop and animal production, hunting and related service activities", CPA_0200 "Forestry and logging", CPA_05_09 "Mining and quarring", CPA_1000 " Manufacture of food products", CPA_1700 "Manufacture of paper and paper products", CPA_1900 "Coke and Refined petroleum products", CPA_2000 "Manufacture of chemical and chemical products", CPA_3500 "Electricity, gas, steam and air-conditioning supply" and CPA_37_39 "Sewerage,waste management and remediation activities" for internal use. These tables provide monetary values for individual NACE activities only for the aggregate product groups CPA_0100, CPA_0200, CPA_0500_0900, CPA_1000, CPA_1700, CPA_1900, CPA_2000, CPA_3500 and CPA_3700_3900. The last available reference year for these data from NA is 2022.
   - Variable V_20 11 0 Purchases of energy products (in value) of Structural Business Statistics (S.B.S), for the allocation of the energy use in the chemical and petrochemical industries (C20_C21) for reference year 2022.

2. For the distribution to private Households end use categories, the information was derived from the dataset "Disaggregated final energy consumption in households – quantities" (nrg_d_hhq), as published in Eurostat's online database.

**18.1.6. Do you use the PEFA builder? If yes: for populating the PEFA Tables, or for control only?**

The PEFA Builder tool is used for the population of the PEFA Tables.

**18.1.7. Which data sources do you use to make adjustments for the residence principle?**

Adjustment for the resident principle was performed according to the same methods applied for Air Emission Accounts as follows for each transport sector:

- Air transport:

  Calculation of bridging items are based on OECD's dataset "Air Transport CO2 Emissions" which provides the required data (residents abroad & non-residents on territory). Air Emissions are then converted to energy in TJ. Bridging items for air transport have been calculated for the period 2014-2022 using the methodology described in "Short PEFA guidelines on residence adjustments for water and air transport (visual schemes) 2021".

- Water transport and national fishing vessels operating abroad:

  Bridging items in navigation are calculated using mainly the memo item "international bunkers" as reported in the National Annual Questionnaires on energy statistics and the "Balance of Payment" data compiled by the Bank of Greece to estimate energy use of residents outside the national territory. The used variable from BOP data for this calculation is "Goods procured in ports by carriers". Bridging items for water transport have been calculated for the period 2014-2022 using the methodology described in "Short PEFA guidelines on residence adjustments for water and air transport 2021" The contribution of fishing vessels operating abroad is negligible. Therefore, the corresponding value of energy use in this sector is assumed zero.

- Land transport:

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

  Bridging items in freight transport are calculated following the methodology described in EUROSTAT's Manual for air emissions accounts (2015 edition). Relevant data are mainly provided from Eurostat's freight transport databases concerning freight transport (tonne km data) 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 monetary values related to "exports to non-residents in national territory" and "imports of residents abroad" as provided from National Accounts data for cpa 19 (NA export and import adjustments for residents and non-residents). Monetary values are transformed into physical amounts using: a) price information per fuel type and b) fuel type information on households as reported in ELSTAT's "Household Budget Survey" (Population, Employment & Cost of Living Statistics division).

**18.2. Frequency of data collection**

The frequency of data collection for Physical Energy Flow Accounts is annual.

**18.3. Data collection**

Data collection involves the following data sources:

1. Energy Statistics
   IEA/Eurostat/UNECE National Annual Questionnaires on Energy Statistics (Coal/ Gas/ Oil/ Electricity and Heat/Renewables and Wastes Questionnaires), for reference year 2022
2. National Accounts data: mainly Use table data for specific products used for the breakbowns into NACE secotrs (as analyzed below)
3. Structural Business Survey (SBS) data: certain information on petroleum products
4. Information needed for the implementation of the resident principle (as explained below) using various surveys and datasets:
   - OECD's dataset "Air Transport CO2 Emissions"
   - Freight Transport statistics from Eurostat database
   - Balance of Payments data for water transport
5. For road transport allocation the following data sources were used:
   - Air Emission Inventories "National and International Road
   - Freight Transport" compiled by ELSTAT's Transport Statistics Section
   - SUT tables from NA
6. For distribution keys concerning Household end-use categories, data were provided by the dataset "Disaggregated final energy consumption in households – quantities" (nrg_d_hhq), as published in Eurostat's online database.

**18.4. Data validation**

Data are validated by Eurostat. Before their publication the data undergo a series of logical checks as regards their variables and consistency checks over time.

**18.5. Data compilation**

PEFA are compiled using the recently released PEFA Builder v.5.7.1.

**18.5.1. Imputation - rate**

Not applicable.

**18.5.2. Do you assign all supply of electricity and heat to NACE D35, or do you assign some to other NACE divisions than D35? Is the assignment you did fully aligned to the ESA monetary supply table submitted by your country?**

All supply of elecricity and heat is exclusively assigned to NACE D35. This is not fully aligned to the ESA monetary table where NACE A01 also contributes to the supply of electricity and heat with a share of around 0.15% (in monetary values) in recent years. However, due to lack of consistent auxiliary data on autoproduction, the relevant values were not integrated to the respective CHP autoproduction section in the PEFA builder.

**18.5.3. Which method do you use for the allocation of road transport energy use to NACE industries and households?**

NACE allocation of road transport use was performed according to the same methods applied for Air Emission Accounts as follows:

Information provided by annual emission inventories for consumption of transport fuels by type of vehicle (passengers cars, heavy duty vehicles, light duty vehicles, motorcycles)

and type of fuel (Gasoline, diesel oil, LPG, Biomass), is the starting point for this distribution.
Information available in air emission inventories for passenger cars and motorcycles are exclusively applied to energy use from Households.

Regarding the transport sector:
- Heavy-duty vehicles (HDVs) energy use 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 (LDV's) energy use are allocated to all NACE Rev.2 sections (excluding H50, H51 and L68A) using auxiliary data from use tables as provided by national accounts.

**18.5.4. Which method do you use for the allocation of energy use to detailed service industries (i.e. NACE 2-digit divisions 55-98)?**

For the breakdown into service industries (NACE 2-digit divisions 55-98) the auxiliary data source used was the monetary use table to obtain the NACE A*64 distribution key. The National Accounts Division provides Use tables in a two-digit level with CPA_0100 "Crop and animal production, hunting and related service activities", CPA_0200 "Forestry and logging", CPA_05_09 "Mining and quarrying", CPA_1000 " Manufacture of food products", CPA_1700 "Manufacture of paper and paper products", CPA_1900 "Coke and Refined petroleum products", CPA_2000 "Manufacture of chemical and chemical products", CPA_3500 "Electricity, gas, steam and air-conditioning supply" and CPA_37_39 "Sewerage,waste management and remediation activities" for internal use. These tables provide monetary values for individual NACE activities only for the aggregate product groups CPA_0100, CPA_0200, CPA_0500_0900, CPA_1000, CPA_1700, CPA_1900, CPA_2000, CPA_3500 and CPA_3700_3900. The last available reference year for these data from NA is 2022.

**18.5.5. How do you ensure a coherent assignment of energy use to economic activities (i.e. the use of energy products by a given production activity (NACE A*64 division) reported in PEFA must be coherent with the emissions reported in AEA)?**

PEFA and AEA share the same distribution keys for the assignment of energy use/emissions among the economic activities (NACE Rev.2). This, ensures external coherence and comparability between the two accounts.

**18.6. Adjustment**

Energy quantities in PEFA are allocated with the described methods to NACE Rev.2 economic sectors on annual basis. No additional adjustments (such as seasonal adjustment) are performed.

## 19. Comment