

# **COUNTRY PRACTICE IN ENERGY STATISTICS**

**Topic/Statistics:** Energy balance

Institution/Organization: Central Statistical Office

Country: Poland

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## Abstract

Write a short abstract of the statistics, and try to limit it to one page. The purpose of the abstract is to give the reader a general overview of the statistics/topic. It should therefore include a brief overview of the background and the purpose of the statistics, the population, the sample (if relevant), the main data sources, and the main users of the statistics. The abstract should also mention what is the most important contribution or issue addressed in the country practice (e.g. the practice deals with challenges of using administrative data, using of estimation, quality control, etc.). If there are other elements that are considered important, please feel free to include them in the abstract.

Keep in mind that all relevant aspects of the statistical production will be covered in more detail under the different chapters in the template. Therefore, the abstract should be short and focused on the key elements. What the most important elements are can vary from statistics to statistics, but as a help to write an abstract you can use the table below. The table can either replace a text or can be filled out in addition to writing a short text.

The main purposes of energy balance compilation is to enhance the significance of energy statistics by providing complete information on energy situation on Polish territory - to give broad information on energy supply and demand of all energy carriers; to guarantee comparability between different years; to provide an input for forecast modelling; to understand energy security and to formulate energy policies.

To compile energy balance various data sources are used: energy questionnaires dedicated directly for this topic, foreign trade data, production data and others. Due to use of common classification standards, final data are coherent with statistics from other economical domains.

The organizational and methodological framework is universal enough to provide data also to other users, for example international organizations.

# 1. General information

## 1.1. Name of the statistics/topic

The statistics/topic could either be a specific energy statistics (e.g. electricity production) or a topic within energy statistics (e.g. energy balances). For more information, please see Section III of the Instructions.

Energy balances.

## 1.2. History and purpose

State when the statistics were first published.

The statistics were first published in 1964 with data from 1946 to 1963.

Describe briefly the main purpose of producing the statistics and why it is relevant.

The purpose of energy balance is to show total picture of energy economy. It is relevant as it is used for assessment of energy safety of the country, energy efficiency or emissions.

## 1.3. Reference period

State the time period the data are collected for.

The data are collected for a year.

## 1.4. Frequency

Specify how often the statistics are disseminated (e.g. annually, monthly, quarterly, etc.). If the statistics are not produced at regular intervals, state at what times they have been produced in the past and the main reasons behind the irregularities.

Energy balance is disseminated annually.

## 1.5. Dissemination

Describe how the statistics are published (e.g. printed publications, online publications, online databases, etc.). If applicable, include the web address to the main website of the statistics.

Statistics are available as printed publications and online publications  
[http://www.stat.gov.pl/gus/5840\\_3674\\_PLK\\_HTML.htm](http://www.stat.gov.pl/gus/5840_3674_PLK_HTML.htm).

## 1.6. Regional level

State the lowest geographical level (e.g. administrative regions, municipalities, etc.) for which the statistics are made available to the public.

Energy balance is prepared on the country level.

### 1.7. Main users

Identify the key users of the data and the main applications. Include both internal and external users, and if possible try to distinguish between end users and others.

Public administration, scientists.

### 1.8. Responsible authority

Write the name of the institution and department/office with the main responsibility for disseminating the statistics (e.g.: Statistics Norway, Department of Economics, Energy and the Environment).

Central Statistical Office, Production Department.

### 1.9. Legal basis and legally binding commitments

State the national legal basis for the data collection. Include a complete reference to the constitutional basis, and web address to an electronic version (e.g.: The Statistics Act of 16 June 1989 No. 54, §§2-2 and 2-3, [http://www.ssb.no/english/about\\_ssb/statlaw/forskrift\\_en.html](http://www.ssb.no/english/about_ssb/statlaw/forskrift_en.html)).

the Law of June 29<sup>th</sup>, 1995 on official statistics.

If the data collection is not based on a legal basis, give a short description of other agreements or volunteer arrangements.

If applicable, give reference to national and international commitments that are legally binding (e.g. EU statistical legal acts).

Regulation (EC) No 1099/2008 of the European Parliament and of the Council of 22 October 2008 on energy statistics.

### 1.10. Resource requirements

Specify how the production of the statistics is financed (e.g. over the ordinary budget, project based support, financial support from other institutions or organization). If applicable, state the contracting entity (e.g.: Ministry, EU Commission, OECD). A contracting entity is any entity which is ordering a survey or the compilation of a statistics, and paying for it

Budget of Central Statistical Office, Ministry of Economy and Energy Regulatory Office.

Specify the resource requirements for producing the statistics (e.g. man-labour days, number of workers involved in the statistical production process of the statistics/topic in question).

Statistical production process last one year. There are 20 people involved in statistical production process in The Energy Market Agency and 12 people in Central Statistical Office.

### 1.11. International reporting

List any international organizations and names of reporting schemes that the statistics are reported to. If available, also include the website where the reported data are published (e.g. International Energy Agency, Monthly Oil Statistics, UNSD, etc.).

Eurostat, International Energy Agency, UN – Annual Joint Questionnaires.

## 2. Statistical concepts, methodology, variables and classifications

### 2.1. Scope

Describe the scope of the statistics (e.g. the statistics cover supply and use of all energy products in Norway, classified according to International Standard Industrial Classification of All Economic Activities – ISIC).

Supply and consumption of all energy products in Poland with breakdown into selected groups, divisions, sections according to NACE Rev. 2. Detailed statistic of transformation processes, autoproducers and prices.

### 2.2. Definitions of main concepts and variables

Describe the main concepts (e.g.: territory principle, resident principle, net calorific value, gross calorific value).

Energy statistic bases on territory principle and net calorific value.

Describe the main variables (e.g. how are the different energy products defined in the statistics? How are production, intermediate consumption, final consumption, transformation, feed stock, the energy sector, etc. defined?).

Primary energy is a sum of energy contents of the naturally existing primary fuels and energy forms.

Derived energy is a sum of energy contents of derived (secondary) energy commodities, i.e. the energy forms obtained through the transformation processes.

Indigenous production means the domestic exploitation of primary energy resources. In case of nitrified natural gas it does not include gas burnt in torches and released to atmosphere.

Import is a sum of all energy commodities imported to Polish internal market by all public and private importers. Import contains also so-called „Bunker” which means the fuels purchased abroad by Polish shipping fleet (including fishing fleet), aircraft and other transport vehicles. Electricity imports include barter transactions.

Export is a sum of all primary fuels, derived energy commodities and non-energy products (e.g. tar, motor oils) exported to the foreign markets. Export includes also the sales of fuels in Polish harbours to the foreign shipping fleet and in Polish airports to the foreign aircraft. Electricity exports include also barter transactions.

Stock change is a difference between the closing stocks (on the last day of the year) and opening stocks (on the first day of the year). Therefore the positive (+) stock change means stocks increase, and the negative (-) stock change means stocks decrease. Stocks are surveyed at all energy producers, distributors and consumers which return questionnaire.

Global consumption means the supplies of all energy commodities to the domestic market (or its sector), corrected (up or down) with the stock change figure. This corresponds closely to the international concept of „Total Primary Energy Supply”.

Transformations output means the quantities of derived energy commodities and non-energy products obtained through the energy transformation processes.

Total consumption is a sum of direct consumption and transformation inputs of all energy commodities extended/reduced by losses and statistical difference.

Transformations input means the quantities of energy commodities which are subject to transformation into other (derived) energy commodities in the technological processes of energy transformation. Transformation input does not include own consumption in energy

sector (the quantities of energy used as fuel or for auxiliary purposes in energy transformation processes). Own consumption is in the present publication included in direct consumption. Direct consumption is a sum of all energy commodities, finally consumed without the further transformation. Direct consumption includes the non-energy consumption of fuels as raw materials (e.g. natural gas consumed as raw material to manufacture ammonia). Consumption for non - energy purposes is shown in the synthetic energy balance in the column „Among which Non- Energy Use”, as an appropriate part of direct consumption. Direct consumption includes also the losses which took place at the consumers, but excludes the distribution losses of electricity and natural gas.

Losses and statistical difference means losses of energy commodities in transport and storage as well as statistical differences which occur because of some inconsistencies in statistical data. Statistical difference is the difference between the total national energy Supply (global consumption + transformations output) and the total national energy consumption. This item includes also the distribution losses of electricity and natural gas. Transport and storage losses occurring at the consumers are included in their direct consumption.

### 2.3. Measurement units

Describe in what unit the data is collected (e.g. physical unit (m<sup>3</sup>, metric tons), monetary unit (basic prices, market prices)). Describe in what unit the data is presented. Describe if the calorific values are collected (e.g. on a net vs. gross basis) and how they are used.

If applicable, describe the density of the energy product(s) and the estimated *thermal efficiency coefficients* of different energy products and consumer groups or by appliance. Thermal efficiency coefficient indicates the share of the energy products which is actually usable for end consumption. Descriptions of density and thermal efficiency coefficient could alternatively be put in an annex.

Data are collected and presented in physical units (if applicable), Joules and monetary units (purchasing price).

### 2.4. Classification scheme

Include references to relevant international and national standard classifications. If national, give a brief description of the standards. If available, include web addresses to the electronic version of the standards).

PKWiU 2008 – classification of goods and services correspondent with CPA 2008, PKD 2007 – classification of activities correspondent with NACE Rev. 2.

### 2.5. Data sources

Give an overview of the different data sources used in the collection and compilation of the statistics/topic (e.g. household survey, enterprise/establishment survey, administrative data/registers, foreign trade statistics, production statistics and other primary/secondary data sources).

Examples of administrative sources/registers are: business register for enterprises and establishments, population register, land register, housing and building registers, tax registers, international trade registers, etc.

Following surveys are used as primary data sources: energy flow dedicated enterprise surveys and household survey. Secondary data sources are foreign trade statistics, production statistics.

## 2.6. Population

Describe the entire group of units which is the focus of the statistics (the population).

There are over 16600 reporting units. Some of them fill in various questionnaires. Reporting unit – energy sector, importers and exporters of energy carriers, large and medium enterprises according to NACE Rev. 2 (PKD 2007).

Observational unit – energy consumers and producers according to NACE Rev. 2 (PKD 2007), households.

Analytical unit – selected groups, divisions, sections according to NACE Rev. 2, households, transport, agriculture.

Specify the following statistical units:

- Reporting unit
- Observational unit
- Analytical unit

Examples of different kind of statistical units include: enterprise, enterprise group, kind-of-activity unit (KAU), local unit, establishment, homogeneous unit of production.

In most cases the reporting unit, observational unit and analytical unit are identical, but there are examples where this is not the case. In electricity statistics, you may find that energy companies (the reporting unit) provide data about different consumers like the individual household or manufacturing company (the observational unit). The analytical unit may be a group of energy consumers, defined by the ISIC.

## 2.7. Sampling frame and sample characteristics

Describe the type of *sampling frame* used in the collection and compilation of the statistics (e.g. list, area or multiple frames). A sampling frame is the source material or device from which a sample is drawn. Note that the sampling frame might differ from the population.

Purposeful selection method: all producers and distributors of energy carriers. From population of large and medium (employing more than 9 employees) enterprises, energy intensive branches are selected. In case of construction, transport, trade and services large units are selected.

For each survey(s) used for the compilation of the statistics, specify the *sampling design* (e.g. random, stratified, etc.). Describe the routines employed for updating the sample. Include information about the sample size, and discuss to what extent the sample covers the population (e.g. energy consumption in the sample compared to total energy use by the population).

Note that chapter 2.7: *Sample frame and sample characteristics* may overlap with chapter 3.4: *Grossing up procedures*.



## 2.8. Collection method

For each survey used for the compilation of the statistics/topic, describe how the data are collected (e.g. face-to-face, telephone, self-administered, paper and internet-based questionnaires, or administrative data and registers).

All questionnaires used for compilation of the statistics have the form of internet-based questionnaires, in some cases paper questionnaires are also in use.

## 2.9. Survey participation/response rate

For each survey used for the compilation of the statistics/topic, specify the average response rate, or refer to response rates for specific surveys conducted.

The average response rate is about 90 %, in some groups (energy sector) it amounts to 100%.

# 3. The statistical production process

## 3.1. Data capture and storage

Describe how the data is captured and stored (e.g. if the respondent replies using Internet-based questionnaire, the received data are electronically transferred to the production database. Paper questionnaire responses are keyed manually to the production database).

Data used for compilation of energy balance come from different sources. They all are stored in Energy Database which is used to produce, among others, energy balances.

## 3.2. Data editing

Describe the regular routines employed for detecting and correcting errors. This may include:

- Manual routines for detecting and correcting errors
- Automatic error-detection (and correction)
- Micro- and macro editing procedures
- Data validation procedures
- Outlier identification
- Processes and sources used for quality controls

There are few levels of detecting and correcting errors. First, there is an automatic error-detection built in electronic questionnaires, which signals exceeding critical values of some parameters. Second there is manual routine for detecting and correcting errors based on staff experience. It is used to correct mainly methodological errors. Additional level of control is comparison of final data with data from other surveys.

## 3.3. Imputation

Describe the principles for imputation and the assumptions that these principles are based on. Note that this chapter may overlap with chapter 3.2: *Data editing* and chapter 5.2: *Accuracy*

The imputation of some data is based on balancing.

### 3.4. Grossing up procedures

Describe how the population is divided into strata and what statistical models the estimations in the strata are based on. Describe how sub-indices are combined into aggregate indices and how uncertainty is estimated.

Data on energy consumption in industrial sectors are not generalized. Data on energy consumption in households are prepared on a basis of a survey conducted in randomly selected representative sample of entities in the scope of the most important features of the study population: location, surface of dwellings, access to different fuels and energy carriers, etc. Small industrial, construction and service enterprises not covered by statistical surveys are included in "other customers" as balancing value.

### 3.5. Analytical methods

Give a description of any analytical methods used to adjust the data (e.g.: seasonal adjustment and temperature adjustment). A more detailed description of the analytical method can also be included as an annex.

Generalization of households data is conducted using Rao-Shao method with the use of appropriately constructed weights.

## 4. Dissemination

### 4.1. Publications and additional documentation

Describe the form of dissemination of the statistics/topics in question (e.g. printed publications, website, etc.). Please provide relevant website link(s) if available.

Statistics are available as printed publications and online publications  
[http://www.stat.gov.pl/gus/5840\\_3674\\_PLK\\_HTML.htm](http://www.stat.gov.pl/gus/5840_3674_PLK_HTML.htm).

Give a complete reference to publicly available statistics databases where data from the statistics can be extracted. Include web addresses if available online.

There is no public access to the available statistics databases.

Indicate whether you charge users for access to the statistics at any level of aggregation.

Preparation of not published data aggregations is payable.

### 4.2. Revisions

Describe the current revision policies. E.g.: Is historical data revised when new methodology, new definitions, new classifications etc. are taken into use? Is the data continuously revised, or is the data revised at certain points in times (e.g. every third year, annually, etc.)?

It depends on the legal regulations, usually data are not revised when new classifications are introduced.  
Data for year in which change of classification or methodology occurs are presented according to both old and new rules.

If applicable, describe any major conceptual or methodological revisions that have been carried out for this statistic/topic in the past.

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### 4.3. Microdata

Describe how microdata are stored.

Microdata are stored in database (e.g. file type.dbf).
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Specify if microdata are available for scientific and/or public use. If so, describe under what conditions these are made available.

Microdata are not available because of their confidentiality.
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### 4.4. Confidentiality

Describe the legal authority that regulates confidentiality, and what restrictions are applied to the publication of the statistics.

Confidentiality is defined in the Law of June 29 <sup>th</sup> , 1995 on official statistics.
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Describe the criteria used to suppress sensitive data in statistical tables (cell suppression).

The data are not available when there are less than 3 units in group or one of the unit has more than 75% participation in a group.
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Describe how confidential data are handled.

Confidential data are presented in statistical tables with a symbol “#”.
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Describe any confidentiality standards that go beyond what is legally required.

There are no such standards in energy statistics.
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## 5. Quality

### 5.1. Relevance

State to which degree the statistical information meet the real needs of clients/users.

Statistical information meet majority of users needs. They are raised and considered regularly during annual updating of surveys and occasionally in case of more specific needs.
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### 5.2. Accuracy

State the closeness of computations or estimates to the exact or true values that the statistics were intended to measure.

The specificity of energy balances does not allow for clear and precise statement of discrepancies between data calculated and actual. Statistical differences, that is the difference between supply (calculated) and demand (observed consumption) of energy carriers vary between 2 and 7%.
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### **Measurement and processing errors**

Discuss the measurement and processing errors that are relevant for the statistics. Try as far as possible to give an estimation of the size and scope of the errors.

Used methods of verification (setting border values, comparison of time series) allow for elimination of errors associated with measurements.

### **Non-response errors**

State the size of the unit non-response and the item non-response, distributed by important variables in the population (e.g. region, industry). Consider if the non-response errors are systematic, and if so, describe the methods used to correct it. Indicate whether the effects of correcting non-response errors on the results have been analysed, and, if so, describe them.

The size of these errors amounts to 10%.

### **Sampling errors**

Discuss the size of the sampling errors. Compare the population and sample with regards to important properties (e.g. coefficient of variance).

It concerns only households.

### **Other sources of error**

Discuss other sources of errors that might be relevant for the statistics. E.g.: Model assumption errors, coverage errors

Other kinds of errors do not occur.

## **5.3. Timeliness and punctuality**

Specify the time between the end of the reference period and publication.

If the statistics are published both as preliminary and final figures, specify the time between publication of preliminary and final figures. You should also point out whether the publication date is set according to certain rules (e.g. advance release calendar, a specific day or prior to other publications).

Energy balance is published 11 months after the end of reference year.

Point out if there have been any major discrepancies between the planned publication date and the actual publication date in recent years. If so, state the length of this discrepancy and its cause.

Delays, which sometimes occur do not exceed 2 weeks. They are caused by necessity of taking into account comments from international organizations.

## **5.4. Accessibility**

Describe how easily accessible the statistics are. In particular, is there an advance release calendar to inform the users about when and where the data will be available and how to access them?

Are metadata and other user support services easily available? Are there particular groups that don't have access to the published statistics (e.g.: visually disadvantaged)?

Energy balances are published according to "Publications Plan", which is commonly available. Publication contains definitions of basic concepts, other methodological issues are explained in publication entitled "Methodological rules of energy statistics and definitions of used concepts" available in print and electronically.

## 5.5. Comparability

Discuss the comparability of the statistics over time, geographical areas and other domains.

### Comparability over time

Discuss comparability over time and include information about whether there have been any breaks in the time series of the statistics and why. Also describe any major changes in the statistical methodology that may have had an impact on comparability over time.

Changes of activity classifications causes incomparability of data in some time periods.

### Comparability over region

Discuss comparability over geographical areas, and include information about whether the statistics are comparable to relevant statistics published by other countries and/or international organisations.

There are methodological differences in preparation of fuel and energy balances, which does not always allow for comparability of the data published by international organizations (eg the definition of a bunker, direct consumption).

### Comparability over other domains

Discuss comparability over domains, and include information about whether the statistics are comparable between different industries, different types of households etc.

All available in the country statistics information concerning fuel and energy are used to verify the official data (users of liquid gas, renewable energy sources).

## 5.6. Coherence and consistency

Discuss the coherence/consistency between preliminary and final figures.

There are no figures in energy statistics defined explicitly as preliminary. Publications contain always data from two consecutive years. Older data (for example year 2009) are “final”, while younger (for example year 2010) may be considered as “preliminary”. They will be checked again during preparation of new edition of publication. The differences between data from one year in two publications concern usually few items and are not significant.

Discuss the coherence/consistency between monthly, quarterly or yearly statistics within the same subject area. Can the results of different frequencies for the same reference period be combined in a reliable manner?

The full energy balance is published annually. The balances of different energy carriers are released more frequently. In some cases there may be small inconsistencies due to different objective scope.

Discuss the coherence/consistency with other related statistics (also those produced by other institutions/organisations on the same subject).

Individual data that are used to prepare national energy statistics are used to fill in international questionnaires. Therefore, the differences between those statistics, if occurred, stem from methodological issues.

## **6. Future plans**

Are there any current or emerging issues that will need to be addressed in the future? These could include gaps in collection, timeliness issues, data quality concerns, funding risks, confidentiality concerns, simplifications to reduce respondents' burden etc.?

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## **Annexes**