

COUNTRY PRACTICE IN ENERGY STATISTICS

Topic/Statistics: Energy Balance

Institution/Organization: Swiss Federal Office of Energy SFOE

Country: Switzerland

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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.

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Key elements	
Name of the statistics	Energy balance for Switzerland
Background and purpose of the statistics	Show production, foreign trade, transformation sector and final consumption of energy in one table. The energy balance is the basic table for the Swiss overall energy statistics.
Population, sample and data sources	Data from different surveys and models enter the energy balance at its different stages. For more detailed information see points 2.5, 2.6 and 2.7.
Main users	Administration staff, politicians, energy suppliers, companies and the population in general.
Important contribution or issue addressed	
Other remarks	

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 balance for Switzerland

1.2. History and purpose

State when the statistics were first published.

1975 (For the years 1970 -1975)

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

Basic table of the Swiss overall energy statistics. Its purpose is to show production, foreign trade, the transformation sector and final consumption of energy in one table.

1.3. Reference period

State the time period the data are collected for.

Data refer to the time period of a year. Reference period is the calendar 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.

Data are collected on an annual basis.

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.

Data are published in a printed publication (Swiss overall energy statistics) as well as in pdf format online. The energy balance can be found on page 7, table 4.

http://www.bfe.admin.ch/themen/00526/00541/00542/00631/index.html?lang=de&dossier_id=00763

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.

National 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.

Internal: administration staff.
External: administration staff, politicians, energy suppliers, companies and the population in general. All of them are end users, except for administration staff who may use the data to establish their own statistics (e.g. federal office for statistics to establish NAMEA, federal office of the environment to determine GHG-Emissions).

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).

Swiss Federal Office of Energy, Analyses and Perspectives Section.

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).

Federal Statistics Act of 9 October 1992 (FStatA) and the corresponding Ordinance of 30 June 1993 on the Organisation of Federal Statistics (p. 179 and 180 of the German version of the ordinance which is more detailed than the English version that doesn't include the annex of all the statistics in question).

Statistics Act: <http://www.admin.ch/ch/e/rs/4/431.01.en.pdf>
Ordinance (English version) <http://www.admin.ch/ch/e/rs/4/431.011.en.pdf>
Ordinance (German version) <http://www.admin.ch/ch/d/sr/4/431.012.1.de.pdf>

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).

As a member of the International Energy Agency we are required to report data to this organisation (joint questionnaire IEA and UNO).

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

The energy balance as a part of our overall energy statistics is financed over the ordinary budget of the SFOE).

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).

There are 2.5 full time equivalents for all of Swiss energy statistics. For an overview of Swiss energy statistics see:

<http://www.bfe.admin.ch/themen/00526/00541/00542/index.html?lang=en>

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.).

International Energy Agency, EUROSTAT and UNSD (via joint annual questionnaires)

IEA:

<http://www.iea.org/stats/index.asp>

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).

The energy balance covers domestic production (line (a)), gross energy consumption (line(e)) and final consumption (line (n)) of wood, coal, waste and industrial waste, oil, oil products, natural gas, hydro power, nuclear power and other renewable energies.

The transformation sector (lines (f) – (k)) shows transformation of energy into electricity and heat in the following categories: hydro power plants, nuclear power plants, conventional thermal power plants, and district heating plants. It further shows the transformation of energy in gas works, refineries and the transformation of other renewable energy (the feed in of biogas into the natural gas network).

In the energy balance, own use of the energy sector, distribution losses and the use of energy for hydro pumped storage plants are deducted from gross energy consumption (line (l)).

Further, non-energy use is deducted from gross energy consumption (line (m)). As a result, final energy consumption is shown in the energy balance in line (n).

Final energy consumption is then split into the different sectors: households, industry, services, traffic and the statistical difference that includes agriculture (lines (o) – (s)).

Please see table 4 of the Swiss overall energy statistics:

http://www.bfe.admin.ch/themen/00526/00541/00542/00631/index.html?lang=de&dossier_id=00763

2.2. Definitions of main concepts and variables

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

Statistics based on territory principle, Liechtenstein is included in oil data.

Natural gas is published using net calorific values.

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?).

Domestic production consists of primary and secondary energy commodities that are produced in Switzerland. Gross energy consumption equals domestic production plus/minus import/export and stock changes. Final consumption equals gross consumption minus the transformation sector, minus own use of the energy sector, minus distribution losses minus energy used for pumped storage minus non-energy use.

2.3. Measurement units

Describe in what unit the data is collected (e.g. physical unit (m³, 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.

Measurement units of data collection:

Wood: m³/tonnes (input)

Coal: 1000t

Waste/industrial waste: TJ

Oil/oil products: 1000t

Natural gas: GWh

Hydro power: GWh

Nuclear power: GWh

Other renewable energy: TJ

Measurement units of data publication (table 4): TJ

For calorific values see the Swiss overall energy statistics, last page:

http://www.bfe.admin.ch/themen/00526/00541/00542/00631/index.html?lang=de&dossier_id=00763

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).

Definition of sectors (industry, services, traffic, agriculture) is based on the Swiss NACE classification (named NOGA General Classification of Economic Activities). The first four levels of the NOGA structure are compatible with the NACE. Level five (“type”) takes into account details that reflect the Swiss reality.

http://www.bfs.admin.ch/bfs/portal/en/index/infothek/nomenklaturen/blank/blank/noga0/vue_d_ensemble.html

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.

In general: Import/Export data stem from the Swiss foreign trade statistics.
Wood: Collection of number of new plants and stock of plants with corresponding specific demand of wood. Control of shutdowns. Modelling of energy production and breakdown of energy consumption into different sectors.
Coal: household consumption stems from the household model based on Swiss building statistics.
Waste/industrial waste: District heating survey.
Oil/oil products: Sales data come from Carbura, the Swiss organisation for the compulsory stockpiling of oil products und the Swiss Petroleum Union.
Natural gas: Data on imports of natural gas stem from the Association of the Swiss Gas Industry (VSG). Inputs in the transformation sector are collected in the context of the Swiss CHP statistics.
Final consumption of different sectors originates from different statistics and models based on building statistics.
Hydro power and nuclear power: Data source are the Swiss Electricity Statistics. Data are collected on production, foreign trade, distribution losses, inland consumption of electricity, as well as final consumption of the different sectors. Data supplier is the energy sector.
Other renewable energy: Data originate from the Swiss renewable Energy Statistics that are based on different surveys in the areas of biogas, solar power, renewable waste, wind power,. Heat production of heat pumps is modelled in a cohort model based on sales figures.

2.6. Population

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

Depending on type of energy and on disaggregation level

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.

Reporting:
Individual consumer, companies of the energy sector, other statistics

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.

No samples used in the surveys that underlie the energy balance.

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).

In general: Import/Export data are administrative data.

Wood: administrative data, models and paper questionnaire on sales figures.

Waste/industrial waste: Paper questionnaire

Oil/oil products: administrative data.

Natural gas: imports: administrative data; Inputs in the transformation sector: e-mail questionnaire.

Final consumption of different sectors originates from questionnaires and models based on statistics like the building statistic.

Hydro power and nuclear power: paper questionnaire.

Other renewable energy: Paper and e-mail questionnaires.

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.

Depending on statistical topic

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).

Responses are keyed manually

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

Manual routines for detecting and correcting errors.

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*

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.

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.

No adjustment.

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.

See point 1.5.

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

Statistics can be downloaded from our webpage:

<http://www.bfe.admin.ch/themen/00526/00541/00542/index.html?lang=en>

Tables in excel format:

http://www.bfe.admin.ch/themen/00526/00541/00542/00631/index.html?lang=en&dossier_id=05071

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

The Swiss Federal Statistical Office has published following tariffs that also apply for queries to the Swiss Federal Office of Energy:

http://www.bfs.admin.ch/bfs/portal/en/index/dienstleistungen/informationszentrum/statistische_auskuefnfte/organisation.html

There is no charge for data per se but for the work of the employees if a specific amount of time is exceeded.

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.)?

Data/time series are revised when new methodologies, new classifications are taken into use. No regular time intervals foreseen for revisions.

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

Energy used in CHP plants has been transferred from final consumption to the transformation sector starting with the 2010 publication of the Swiss overall energy statistics.

4.3. Microdata

Describe how microdata are stored.

Excel files stored in content management system. SPSS database for certain statistics.

Specify if microdata are available for scientific and/or public use. If so, describe under what conditions these are made available.

Aggregated micro data are available for scientific use/to the public free of charge. Individual micro data are available free of charge if a data protection contract is signed that limits the use of data to a specific purpose (project). Data protection of micro data is defined in the Federal Act of 19 June 1992 on Data Protection (FADP) and the Federal Statistics Act of 9 October 1992 (FStatA) (see point 4.4 below)-

4.4. Confidentiality

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

Confidentiality is regulated in two different federal laws by the Swiss Confederation:

Federal Statistics Act of 9 October 1992 (FStatA)

<http://www.admin.ch/ch/e/rs/4/431.01.en.pdf>

Federal Act of 19 June 1992 on Data Protection (FADP)

<http://www.admin.ch/ch/e/rs/2/235.1.en.pdf>

Describe the criteria used to suppress sensitive data in statistical tables (cell suppression).

Sensitive data is taken out of statistical tables altogether.

Describe how confidential data are handled.

Password protection of files in the context of data transfers per e-mail.

Describe any confidentiality standards that go beyond what is legally required.

5. Quality

5.1. Relevance

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

5.2. Accuracy

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

Data that are collected and not modelled should reflect the actual values.

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.

Administrative data/registers, foreign trade statistics, production statistics and other primary/secondary data sources and modelled data: no measurement possible,

Sample based surveys: depending on resources available

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.

Sampling errors

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

Other sources of error

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

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).

7 months. No preliminary data is published. Publication date is set to the beginning of August . Press release with most important results is scheduled for the beginning of July.

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.

No discrepancies.

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)?

Swiss overall energy statistics are accessible on our webpage (http://www.bfe.admin.ch/themen/00526/00541/00542/00631/index.html?lang=de&dossier_id=00763) and can also be ordered as a paper version.

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.

The consumption of waste to produce heat was moved from final consumption to the transformation sector starting with the 2005 data. Energy used in CHP plants has been transferred from final consumption to the transformation sector starting with the 2010 data. These changes have been made in order to better reflect international standards.

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.

The energy balance reflects all of Switzerland and is the starting point for the compilation of the joint questionnaires. Therefore, comparability to energy balances of countries using the IEA energy statistic manual should be ensured.

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.

Industry break down corresponds to IEA break down. There is no information on different types of households available.

5.6. Coherence and consistency

Discuss the coherence/consistency between preliminary and final figures.

Only final figures are published.

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?

Only annual data are published.

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

Data in the energy balance reflect the data published in the Swiss energy statistics.

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.?

Annexes (answers below – no separate documents)

Illustrations and flowcharts

Illustrations and flowcharts are useful to summarize information and to get a better overview of the statistical production process. Illustrations and flowcharts can either be placed in annexes or be included under relevant paragraphs in the template.

E.g.:

- A conceptual flowchart which illustrates the flow of data in the production of the statistics.
- A flowchart which illustrates the main tasks in the production process and the dependency between them.

First level: Collection of data of single energy sources in different surveys.

List of surveys see:

<http://www.bfe.admin.ch/themen/00526/00541/00543/index.html?lang=en>

Second level: Establishment of tables that reflect energy sources separately (Overall energy statistics page 32 ff), that further reflect foreign trade (tables 6 and 7), that show the transformation sector (table 11) and final consumption (table 17 ff).

http://www.bfe.admin.ch/php/modules/publikationen/stream.php?extlang=de&name=de_385997457.pdf

Third level: Aggregation of information gathered on the second level. Summary of the mentioned data in the energy balance (table 4).

Time schedule

Include a time schedule for the different phases of the statistical production process. The statistical production process *may* be divided into the following phases. Phase 1-3 may only be relevant for when a new statistics/survey is set up.

1. **Clarify needs** (e.g. map users needs, identify data sources)
2. **Plan and design** (e.g. plan and design population, sample size, how to analyze and edit data)
3. **Build** (e.g. build and maintain production system, test production system)
4. **Collect** (e.g. Establish a frame, draw the sample, collect data): **January to June**
5. **Edit** (e.g. identify and code micro data, edit data, imputation) **June to July**
6. **Analyse** (e.g. quality evaluation, interpret, analyse) **June to July**
7. **Disseminate** (e.g. publish data, user contact) **August**

Questionnaires

Include the complete questionnaire(s)/survey form(s) used

Example of publication tables

Include an example of a typical table published for the statistics. Include web addresses if available online. **See point 2.1**

Detailed description on analytical methods

If relevant, a detailed description of analytical methods used in the statistical production (like seasonal adjustment, temperature adjustment etc.) may be described in an annex. A short description can also be included in chapter 3.5: Analytical methods or under other suitable chapters.