STATISTICS DENMARK

Documentation of statistics for Energy Accounts for Denmark 2013

Statistics Denmark
Sejrøgade 11
DK 2100 København Ø

STATISTICS DENMARK

1 Introduction

The energy accounts link data on energy with the national accounts. The energy accounts are based on the same definitions and classifications as the national accounts. This implies that the use of energy as described in the energy accounts is fully consistent with the description of the economic activity as described in the national accounts. In 1974, the first energy accounts for Denmark were made as a reaction to the first oil crisis. At the same time the accounts were made for the years back to 1966. In 1996, the Danish Energy Agency and Statistics Denmark entered into a cooperation agreement concerning the extension and improved coordination of the Danish energy statistics.

2 Statistical presentation

The energy accounts account for 46 different energy commodities. The energy accounts are made up in both physical quantities (tonnes, m3, GWh), heating values (joule) and net energy consumption as well as monetary values. The monetary values are calculated at basic prices, trade margins, energy-, CO2-, SO2-taxes, VAT and purchasers prices (market prices).

2.1 Data description

The energy accounts are for each energy commodity made up in both physical quantities as well as in monetary values. The system is based on the identity that the supply must equal the use. The supply is made up as the total of Danish production etc. and imports. The use is the total exports, waste and cable losses, changes in inventories, input in 117 industries as well as private consumption broken down by five groups of private consumption. The monetary values are calculated at basic prices, trade margins, taxes, VAT and purchasers prices (market prices)

The following 46 energy products are included in the Energy Accounts. Energy products are grouped according to 8 energy types.

Oil Products

1. Crude oil (tonnes)
2. Refinery feedstocks (tonnes)
3. Refinery gas (tonnes)
4. LPG (tonnes)
5. LPG for transport (tonnes)
6. LVN (tonnes)
7. Motor gasoline, colored (tonnes)
8. Motor gasoline, unleaded (tonnes)
9. Motor gasoline, leaded (tonnes)
10. JP4 (tonnes)
11. Kerosene (tonnes)
12. Aviation gasoline (tonnes)
13. Jet petroleum (tonnes)
14. Jet petroleum bunkered by Danish operated planes abroad (tonnes)
15. Gasoil (tonnes)
16. Diesel bunkered by Danish operated vehicles abroad (tonnes)
17. Diesel oil (tonnes)
18. Fuel oil (tonnes)
19. Fuel oil bunkered by Danish operated ships abroad (tonnes)
20. Waste oil (tonnes)
21. Petroleum coke (tonnes)
22. Orimulsion (tonnes)

Natural Gas

1. Natural gas 1, North Sea and imports (1000 Nm3)
2. Natural gas 2, large-scale consumers and exports (1000 Nm3)
3. Natural gas 3 to industries and households (1000 Nm3)

Coal and Coke

1. Coal (tonnes)
2. Coke (tonnes)
3. Brown coal briquettes (tonnes)

Waste

1. Waste, non renewable (tonnes)

Renewable energy

1. Waste, renewable (tonnes)
2. Wind power (GWh)
3. Hydro power (GWh)
4. Solar power (GWh)
5. Solar heat (TJ)
6. Geothermal (TJ)
7. Straw (tonnes)
8. Firewood (1000 m3)
9. Wood chips (tonnes)
10. Wood pellets (tonnes)
11. Wood waste (tonnes)
12. Biogas (1000 Nm3)
13. Bio oil (tonnes)
14. Heat pumps (TJ)

Converted types of energy

1. Electricity (GWh)
2. District heat (TJ)
3. Gas works gas (1000 Nm3)

Information in physical quantities (specific units) is referred to as use of fuels whereas the consumption of energy measured in the energy unit joule is referred to as consumption of energy in heating values.

2.2 Classification system

The consumption of energy is broken down by the national accounts industry classification, which is based on the Danish industry classification from 2007. The Danish industry classification is based on NACE rev. 2.

2.3 Sector coverage

All sectors in the economy are covered by the statistics.

2.4 Statistical concepts and definitions

Basic Price: Basic prices are for domestic production defined as the price ex factory, excl. of product taxes, net. For imports, they are the c.i.f. prices, i.e. the prices of the products at their arrival in Denmark, incl. transport and insurance expenses.

Net Energy Consumption: The production of electricity, district heat and town gas is based on inputs of other types of energy and are named converted types of energy. A direct aggregation of each energy commodity calculated into joule would therefore result in a double counting, because the content of energy in the converted types of energy already is represented in the power plants use of first and foremost coal, oil and natural gas.

In practice, the calculation of the net energy consumption is carried out by dividing the use of primary energy (e.g. coal, crude oil and natural gas) used in the production process at the electricity plants and district heat plants proportionately on the users of the individual converted energy commodities. Simultaneously, the use of primary energy in the conversion industries is reset to zero.

The conversion process involves a considerably loss of energy (the conversion loss). Therefore, the total energy content used in the production process is allocated to the final users of energy in the calculation of the net energy consumption

Furthermore, the electricity power plants consumption of energy is adjusted for the net imports of electricity, implying that this is also converted into primary energy.

Energy Taxes: The energy taxes include taxes on petrol, electricity, certain oil products, coal and natural gas. In addition to this, the CO2-tax, the SO2-tax and the NOx-tax is also accounted for. The SO2-tax is also paid for the use of straw and waste used as fuel at larger power plants.

Purchasers' Prices: The purchasers' prices are the price actually paid by the purchaser for a product, i.e. the market price. Consequently, this price may, in addition to the factory price of the product, include costs for transportation, trade margins, commodity tax and VAT.

2.5 Statistical unit

The statistical unit is the local kind-of-activity unit, enterprise.

2.6 Statistical population

All the units engaged in Danish economic activity.

2.7 Reference area

Denmark.

2.8 Time coverage

1966-2012

2.9 Base period

Not relevant for these statistics.

2.10 Unit of measure

Energy accounts in quantities are measured in tons, m3, GWh. In common units the measurement is done in joule. Monetary energy accounts are measure in mio. kr.

2.11 Reference period

The reference period of the figures in the energy accounts is the calendar year.

2.12 Frequency of dissemination

Annually.

2.13 Legal acts and other agreements

Necessary for the calculations in the National Account, Council Regulation 2223/96.

2.14 Cost and burden

There is no direct response burden as the data are collected by others (see sources).

2.15 Comment

A general documentation of the Danish national accounts is available in "Danish National Accounts - Sources and Methods 2003", June 2007.

3 Statistical processing

Energy accounts are compiled using a method of product balancing. Supply and use of each energy product are compiled in a way to ensure their equality and are balanced by utilizing all the relevant information from the available sources.

3.1 Source data

The energy accounts are compiled on the basis of a number of sources.

Statistics Denmark's external trade statistics are used to decide the imports and exports of energy commodities. Statistics Denmark's' production statistics are used to decide the production of certain energy commodities, e.g. petrol, gas oil and fuel oil.

Statistics Denmark's census of the manufacturing industries consumption of energy is used as the source for the manufacturing industries consumption of energy.

The calculation of the consumption of fuel oil bunkered by Danish operated ships abroad as well as jet petroleum bunkered by Danish planes abroad is based on information obtained from the balance of payments on the companies' expenses for fuel oil and jet petroleum. The physical quantities are calculated by using information from the external trade statistics on the relevant unit price. The Danish operated fleet includes ships and planes owned by foreign companies Danish subsidiary companies. On the other hand, ships and planes owned by Danish companies foreign subsidiary companies are not included, because they are included in other countries energy accounts.

Information about the industrial companies' reimbursement of energy taxes is used as a source in the calculation of the consumption of electricity, natural gas, gas oil and fuel oil within parts of the commercial and service sector.

Data from the Danish Energy Authority is used to decide the different inputs of energy in the energy sectors, i.e. production of electricity and heat. The statistics include input at the large-scale and small-scale power units and district heating plants. Furthermore, information from the Energy Authority on the consumption of energy in agriculture, horticulture, fisheries, and construction as well as private consumption (the households) is used as a source to the physical use of energy. In addition to this, a series of other sources is used to determine the specific values.

Information about the production of crude oil and natural gas in volumes as well as monetary values is also obtained from the Danish Energy Authority.

The trade margins are calculated as a percentage of the basic price. The trade margins are based on the trade margins in the national accounts.

The calculation of the taxes is based on the consumption of energy commodities in physical quantities as well as commodity specific tax rates. This is a natural consequence of the fact that the energy taxes as well as the CO_2- and SO_2-taxes are taxes on the actual physical quantities used. In the breakdown of the taxes, the existing law on reimbursement as well as other specific legal exceptions are taken into account. Finally, the system is balanced to the actual net revenue for the individual tax.

VAT is calculated as the last price level before aggregation into purchasers' prices. As with the calculation of the taxes, the calculation of VAT is net, because VAT-registered companies have the right to deduct VAT whereas households and non-VAT registered industries in the end pay VAT. It is the same industry specific basis for the distribution used in the calculation of the breakdown of the taxes, which is used in the calculation of the breakdown of the payment of VAT.

3.2 Frequency of data collection

Annually.

3.3 Data collection

Data is obtained from the different primary sources in form of spreadsheets.

3.4 Data validation

A variety of sources are involved in the compilation of energy accounts. Verification of the external consistency of data between the data sources is part of the quality control in the process of compilation of the energy accounts.

3.5 Data compilation

Not relevant for these statistics.

3.6 Adjustment

No corrections, apart from the already mentioned under the validity and data processing, is undertaken.

4 Relevance

The energy accounts are used by ministries, governmental agencies and organizations as a part of the surveillance of measures in the field of energy policy. Within Statistics Denmark, the energy accounts are used as basis for the supply use tables of the national accounts and as basis for the compilation of the air emissions accounts. The energy accounts are furthermore used as basis for input-output model based analyses.

4.1 User Needs

The energy accounts are used by ministries, governmental agencies and organizations as a part of the surveillance of measures in the field of energy policy, including the surveillance of the development in the level of energy taxes. In addition to this, the energy accounts are used as a part of the basis for the macro economic model EMMA, which is a satellite model to the ADAM model. Within Statistics Denmark, the energy accounts are used as basis for a part of the supply use tables of the national accounts and as basis for the compilation of the air emissions accounts (e.g. CO_2), which are published as a part of Statistics Denmarks environmental accounts. Finally, the energy accounts are used as basis for input-output model based analyses.

4.2 User Satisfaction

User satisfaction surveys have not been conducted for this statistics.

4.3 Data completeness rate

Data is complete.

STATISTICS DENMARK

5 Accuracy and reliability

The calculation of energy consumption in some industries is very accurate thanks to censuses, whereas the figures for industries that are not part of the various censuses are calculated and are thus less accurate.

Statistical inaccuracy estimates do not exist.

5.1 Overall accuracy

The overall accuracy can be regarded as good as far as the information on overall supply and use of energy products is concerned. Generally the uncertainty is bigger when it comes to information on the energy use of specific energy products by the individual industries. For some industries observations of the the energy use are available, while for others the information on energy use is based on estimations. In the latter case the accuracy is generally lower.

5.2 Sampling error

Not relevant for these statistics.

5.3 Non-sampling error

Generally the uncertainty is bigger when it comes to information on the energy use of specific energy products by the individual industries. For some industries observations of the energy use are available, while for others the information on energy use is based on estimations. In the latter case the accuracy is generally lower. This is the case for service industries, where the distribution of energy consumption by industries is based on a combination of information from employment and reimbursement statistics.

There is a further uncertainty connected to the estimation of the energy and environmental taxes paid by the individual industries. As the detailed information on the reimbursement is not available, there is a high level of uncertainty connected to incorporation of the currently valid reimbursement rules and tax exemptions. The uncertainty is higher for the more recent years.

5.4 Quality management

Statistics Denmark follows the recommendations on organisation and management of quality given in the Code of Practice for European Statistics (CoP) and the implementation guidelines given in the Quality Assurance Framework of the European Statistical System (QAF). A Working Group on Quality and a central quality assurance function have been established to continuously carry through control of products and processes.

5.5 Quality assurance

Statistics Denmark follows the principles in the Code of Practice for European Statistics (CoP) and uses the Quality Assurance Framework of the European Statistical System (QAF) for the implementation of the principles. This involves continuous decentralized and central control of products and processes based on documentation following international standards. The central quality assurance function reports to the Working Group on Quality. Reports include suggestions for improvement that are assessed, decided and subsequently implemented.

5.6 Quality assessment

The primary sources used for the compilation of energy accounts have undergone quality control in the respective institutions, where they have been produced. Compilation of energy accounts includes various consistency checks of data. Energy accounts follow the same definitions and classifications as national accounts and are compiled in accordance with international standards. All this ensures the high quality of the resulting energy accounts.

5.7 Data revision - policy

Statistics Denmark revises published figures in accordance with the Revision Policy for Statistics Denmark. The common procedures and principles of the Revision Policy are for some statistics supplemented by a specific revision practice.

5.8 Data revision practice

Most of the data do not change, but differences can be seen between the provisional and final data.

6 Timeliness and punctuality

High punctuality. Energy accounts are published annually approx. one year after reference period. Statistics is normally published without delays on the announced date.

6.1 Timeliness and time lag - final results

The statistics are published annually approx. one year after reference period.

6.2 Punctuality

The statistics are usually published according to the schedule.

7 Comparability

The energy accounts are available in a comparable form back to 1966, which allows for consistent time series analysis.

7.1 Comparability - geographical

The statistics follows international standards and has a high degree of comparability with other international statistics that follow the same acknowledge international principles.

7.2 Comparability over time

The energy accounts are available in a comparable form back to 1966, which allows for consistent time series analysis. The energy accounts from 2008 and onwards are based on data sources based on the Danish Industry Classification of All Economic Activities 2007 (DB07), whereas the accounts for the years from 1966-2007 are based on calculations on an older set of accounts. In the calculations it has been attempted to make the necessary adjustments in order to comply with new industry classifications. In relation to the publication of the energy accounts 20 November 2013 the energy accounts have been revised. During the revision process emphasis has been put on ensuring comparability and consistency over time.

7.3 Coherence - cross domain

The energy accounts are based on the same definitions and classifications as the national accounts.

With the revision of the energy accounts a new allocation of the production of electricity and district heat has been introduced. Electricity is now produced by 350010 Production and distribution of electricity and by 383900 Sewerage; waste collection, treatment and disposal activities etc. District heat is produced by 350010 Production and distribution of electricity, 350030 Steam and hot water supply, and by 383900 Waste management and materials recovery.

Other energy statistics, for instance the Danish Energy Authoritys energy statistics accounts for the consumption of energy, which can be classified by both Danish residents as well as by non-residents within the Danish territory. The Danish Energy Authoritys energy statistics is based on the guidelines from the International Energy Agency (IEA).

Compared to other energy statistics this implies that the energy accounts based on the national accounts principles also include the consumption of energy caused by international transport activities carried out by Danish residents. That is, transport activities carried out by Danish residents between a Danish (air)port and a foreign (air)port and the transport activities carried out by Danish residents between foreign (air)ports. Also diesel refueled abroad by Danish companies for land transport are included in the energy accounts.

In other words, the energy accounts include the consumption of energy bought by Danish operated ships and planes in foreign ports and airports.

7.4 Coherence - internal

Internal data consistency is good.

8 Accessibility and clarity

Statistics are always published at 9:00 a.m. at the day announced in the release calendar. Theme publications etc. may be published at other times of the day. Each publishing of data is followed by a news release. Energy accounts are part of the annual publications. The data is simultaneously published on the webpage, where it is available in a variety of electronic formats.

8.1 Release calendar

The publication date appears in the release calendar. The date is confirmed in the weeks before.

STATISTICS DENMARK

8.2 Release calendar access

The Release Calender can be accessed on our English website: Release Calender.

8.3 User access

Statistics are always published at 8:00 a.m. at the day announced in the release calendar. No one outside of Statistics Denmark can access the statistics before they are published.

8.4 News release

NYT

8.5 Publications

The following publications are available in Danish:

- Statistiske Efterretninger
- Statistisk Årbog

8.6 On-line database

- ENE1HO
- ENE1HT
- ENE1HA
- ENE2HO
- ENE2HT
- ENE2HA
- ENE3H
- ENE4HO
- ENE4HT
- ENE4HA

8.7 Micro-data access

Data is published at the most detailed level available.

8.8 Other

Not relevant for these statistics.

8.9 Confidentiality - policy

Not relevant for these statistics.

8.10 Confidentiality - data treatment

Not relevant for these statistics.

8.11 Documentation on methodology

A general description of environmental accounts and national accounts is available in the "System of Environmental-Economic Accounting Central Framework". (White cover publication). United Nations et. al. 2012".

8.12 Quality documentation

Results from the quality evaluation of products and selected processes are available in detail for each statistics and in summary reports for the Working Group on Quality.

9 Contact

The administrative placement of these statistics are in the division of National Accounts. The person responsible is Anna Andriianets, tel. +45 39 17 30 66, e-mail: ana@dst.dk

9.1 Contact organisation

Statistics Denmark

9.2 Contact organisation unit

National Accounts, Economic Statistics

9.3 Contact name

Anna Andriianets

9.4 Contact person function

Responsible for the statistics

9.5 Contact mail address

Sejrøgade 11, 2100 Copenhagen

9.6 Contact email address

ana@dst.dk

9.7 Contact phone number

+45 39 17 30 66

9.8 Contact fax number

+45 39 17 39 99