

Standard SIMS Report:

Business Energy Use



Single Integrated Metadata Structure (SIMS) Report

For

Business Energy Use

This documentation applies to the reporting period: **2019**

Last edited: 20/05/2022



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2. Introduction

The Business Energy Use (BEU) survey was first undertaken in 2009 and it has been conducted on an annual basis since then. The primary purpose of the survey is to provide estimates of the quantities and costs of energy products used by enterprises in the Industry and Services sectors to operate their businesses. The CSO Business Statistics Division is responsible for selecting the sample, obtaining returns, and conducting initial editing. In 2013 the CSO Environment and Climate Division was assigned responsibility for the questionnaire design, detailed processing, integration of other data sources, weighting, and publication.

3. Contact

Contact Organisation: Contact Organisation Unit: Contact Name: Contact person function: Contact Mail address: Contact email address: Contact Phone Number: Contact Fax Number: Central Statistics Office Environment and Climate Division Dympna Corry Statistician Central Statistics Office, Ardee Road, Rathmines, Dublin 6, D06 FX52 <u>environment@cso.ie</u> 01 498 4000

4. Metadata Update

4.1. Metadata last certified

20/05/2022

4.2. Metadata last posted

06/10/2021

4.3. Metadata last update

20/05/2022



5. Statistical Presentation

5.1. Data Description

The primary purpose of the survey is to provide estimates of the quantities and costs of energy products used by enterprises in the Industry and Services sectors to operate their businesses.

5.2. Classification System

The statistical classification of economic activities in the European Community, NACE Rev. 2, is used for the BEU survey. The relevant sectors from this classification are:

Section	Description
В	Mining and quarrying
С	Manufacturing
D	Electricity, gas, steam and air conditioning supply
Е	Water supply; sewerage, waste management and remediation activities
F	Construction
G	Wholesale and retail trade; repair of motor vehicles and motorcycles
Н	Transportation and Storage
Ι	Accommodation and food service activities
J	Information and communication
К	Financial and insurance activities
L	Real estate activities
М	Professional, scientific and technical activities
N	Administrative and support service activities
0	Public Administration and Defence; Compulsory Social Security
Р	Education
Q	Human Health and Social Work Activities
R	Arts, entertainment and recreation
S	Other service activities

Table A: NACE Rev. 2 sectors relevant for the BEU survey.

5.3. Sector Coverage

Industry and Services Sectors.

5.4. Statistical Concepts and definitions

Energy costs defined as the cost of energy products used by enterprises to operate their business.

Energy consumption defined as the quantity of energy consumed by enterprises to operate their business.

This release is based on the National Accounts residence principle. This means that energy used abroad by enterprises resident in Ireland is included. Energy used in Ireland by foreign resident enterprises is not included e.g. fuel purchased by foreign hauliers in Ireland.

The territory principle, which is used in Energy Balances and in the Greenhouse Gas Emission inventory, does not include energy used abroad by enterprises resident in Ireland but includes energy used in Ireland by enterprises that are not resident in Ireland e.g. road hauliers. This methodological difference is particularly important for aviation transport fuels.



5.5. Statistical Unit

The information published in this release is collected from enterprises.

5.6. Statistical Population

Enterprises in the Industry and Services Sectors.

5.7. Reference Area

State.

5.8. Time Coverage

2009 to 2019

5.9. Base period

Not applicable.

6. Unit of Measure

- (i) original consumption units (e.g. kilowatt hours, litres),
- (ii) kilotonnes of oil equivalent (ktoe) which is a common unit of measurement which enables quantities of different fuels to be compared and aggregated, and
- (iii) thousand euro.

7. Reference Period

2019

8. Institutional Mandate

8.1. Legal Acts and other agreements

The survey is carried out under Commission Regulation (EC) No. 1099/2008 of the European Parliament and of the Council of 22 October 2008 on energy statistics.

The 2019 survey was conducted under the Statistics (Business Energy Use Survey) Order 2018 (S.I. No. 509 of 2018) made under the Statistics Act, 1993.

8.2. Data Sharing

The CSO obtained access to the administrative microdata from Sustainable Energy Authority of Ireland (SEAI) under the Statistics Act, 1993 which allows such data to be used by the CSO for statistical purposes.

9. Confidentiality

9.1. Confidentiality - policy

All information supplied to the CSO is treated as strictly confidential. The Statistics Act, 1993 sets stringent confidentiality standards: Information collected may be used only for statistical purposes, and no details that might be related to an identifiable person or business undertaking may be divulged to any other government department or body.



These national statistical confidentiality provisions are reinforced by the following EU legislation: Council Regulation (EC) No. 223/2009 on European statistics for data collected for EU statistical purposes. Further details are outlined in the CSO's Code of Practice on Statistical Confidentiality.

For more information on the CSO confidentiality policy please visit: <u>https://www.cso.ie/en/aboutus/lgdp/csodatapolicies/statisticalconfidentiality/</u>

9.2. Confidentiality – data treatment

All confidential data are treated in accordance with Part V of the Statistics Act, 1993.

10. Release Policy

10.1. Release Calendar

The date of dissemination of all statistics released by the CSO can be found in the Release Calendar published by the CSO. This calendar is regularly updated.

10.2. Release calendar access

The release calendar can be accessed via the CSO website, www.cso.ie, or directly from this link: <u>https://www.cso.ie/en/csolatestnews/releasecalendar/</u>

10.3. User access

In accordance with Principle 6 of the European Statistics Code of Practice all users of CSO statistics have equal access via the CSO website at the same time of 11 am. Any privileged pre-release access to any outside user is limited, controlled and publicised. In the event that leaks occur, pre-release arrangements are revised so as to ensure impartiality.

The CSO recognises that in very limited circumstances a business need for pre-release access may be substantiated. Any form of pre-release access is a privilege and a strict CSO pre-release access policy is adhered to for these special requests. The full pre-release access policy can be accessed at https://www.cso.ie/en/aboutus/lgdp/csodatapolicies/csopolicyonpre-releaseaccess/

The various results are published nationally in statistical release format on the CSO website (www.cso.ie). Selected extracts from the results are posted on the CSO's data dissemination database, PxStat.

11. Frequency of Dissemination

Annual.

12. Accessibility and clarity

12.1.News release

Not applicable.

12.2. Publications

The information is disseminated in the form of a Statistical Release on the CSO website and available through this link: <u>https://www.cso.ie/en/statistics/climateandenergy/businessenergyuse/</u>



12.3. On-line database

BEU data are also accessible from the CSO dissemination database, PxStat via the link: <u>https://data.cso.ie/product/BEU</u>

12.3.1. AC 1. Data tables - consultations

Not calculated.

12.4. Micro-data Access

Not applicable.

12.5. Other

Specific user requests are acceded to where possible, and where confidentiality issues do not arise.

SEAI Energy Balances: https://www.seai.ie/data-and-insights/seai-statistics/key-statistics/energy-data/

12.5.1. AC2. Metadata consultations

Not calculated.

12.6. Documentation on Methodology

Further information on the methodology used for this release can be found in the CSO methods page: <u>https://www.cso.ie/en/methods/climateandenergy/businessenergyuse/</u>

12.6.1. AC3 - Metadata completeness - rate

Not calculated.

12.7. Quality Documentation

Metadata information on the quality of this release is available from the CSO methods page <u>https://www.cso.ie/en/methods/climateandenergy/businessenergyuse/</u>

13. Quality Management

13.1.Quality Assurance

Quality Management Framework

The CSO avails of an office wide Quality Management Framework (QMF). This framework allows all CSO processes and outputs to meet the required standard as set out in the European Statistics Code of Practice (ESCOP). The QMF foundations are based on establishing the UNECE's Generic Statistical Business Process Model (GSBPM) as the operating statistical production model to achieve a standardised approach to Quality Management. All and any changes implemented to CSO processes and outputs require adherence to the QMF.

The sample is selected from the latest version of the CSO's Business Register. Duplicate enterprises and companies that had ceased trading before the survey year were removed from the sample.



13.2. Quality Assessment

A Quality Management Self-Assessment (QMSA) was carried out in 2021. The areas for further investigation or action mainly related the transition from eForm to eQ.

14. Relevance

14.1. User Needs

Fuel purchases are a substantial portion of enterprise costs and are a cause of pollution. Hence there is a large policy interest in understanding the amount of energy used by different enterprise sectors and in monitoring take-up on more energy efficient and less polluting fuels.

14.1.1. Main National Users

Sustainable Energy Authority of Ireland (SEAI), Environmental Protection Agency (EPA), Department of the Environment, Climate and Communications (DECC)

14.1.2. Principal External Users

Eurostat.

14.2. User Satisfaction

Not measured.

14.3. Data Completeness

The BEU release is one of the inputs into the SEAI Energy Balances.

14.3.1. Data Completeness rate

Not measured.

15. Accuracy and reliability

15.1. Overall accuracy

The main sources of random or systematic errors will arise from sampling, non-response and measurement errors. These are explained more in depth in the following sub-sections.

15.2. Sampling Error

A representative sample is taken of all enterprises with 3 to 249 persons engaged and a full census of enterprises with 250 or more persons engaged is also taken. Some editing of the sample takes place to remove duplicates or enterprises that have ceased trading.

The core NACE Rev. 2 sections generally remain consistent across each survey. The BEU 2013 was the fifth survey and the sample for enterprises with 10 to 249 persons engaged was selected to exclude companies that had been included regularly in earlier surveys. Every effort was made to ensure that there were enough responses in each cell to be representative of the sample and to ensure that confidentiality was maintained.

15.2.1. A1. Sampling error indicator

Not calculated.



15.3. Non-sampling Error

The CSO uses standard energy factors to convert quantities in different physical units to a common unit. These factors were obtained from the SEAI. The questionnaire has been updated over time to take account of the increased use and variety of renewable energy products.

15.3.1. Coverage error

From the 2017 survey onwards, the sample was amended to include enterprises with 3-9 employees as the survey results were being weighted to include these.

15.3.1.1. A2. Over coverage rate

Not calculated.

15.3.1.2. A3. Common units - proportion

Not applicable.

15.3.2. Measurement error

- a) Questionnaire We ensured that the questionnaire was clear with definitions provided as appropriate.
- b) Data collection method postal form and electronic form (e-Form). Neither method was likely to be a source of measurement error.
- c) Interviewer Field interviewers were not used by the survey.
- d) Respondent Survey data can contain sensitive and confidential information. The introduction on the form referred to Section 33 of the Statistics Act, 1993 guaranteeing confidentiality.

15.3.3. Non-Response Error

Non-response is corrected through higher weighting factors. Survey returns with no energy purchases are included with the survey returns e.g. a business that was temporarily closed for the survey year.

The response rate at unit level for the BEU 2019 was approximately 45%. The main reasons for unit non-response were as follows:

- 1. Company Gone-Away from the address on the survey form
- 2. Duplicate company received 2 forms with different reference numbers
- 3. Company has ceased trading
- 4. Form was returned blank
- 5. There was a query about the survey form
- 6. Company refused to respond

The Business Statistics Data Collection Unit (BS DCU) staff investigated these issues and resolved them as appropriate, e.g. Ringing the company for confirmation of information, removing the company from the survey, etc.

The nature of the questions were such that many respondents will not have used many of the energy products, e.g. wood waste. Hence the main method of identifying item non-response is by comparing the return with previous returns for the same enterprise.

Where a part of the form is not completed the following is done:

- 1. An attempt is made to automatically update the form using edit checks
- 2. A manual check to see if the variable was captured in the previous survey iteration for the enterprise in question and if the answer can be reused
- 3. Enterprise contacted to confirm the details on the survey form.

Z

15.3.3.1. Unit non-response rate

Approximately 45% in 2019

15.3.3.2. Item non-response rate

Not calculated.

15.3.4. Processing error

Data Edits are run to check for the following:

- That all the relevant questions have been answered
- There is internal consistency in answers within the form
- There is consistency with returns for previous years

If the edit cannot be resolved locally, then the enterprise is contacted to confirm the returned data. The return is manually changed by BS DCU staff if required.

15.3.5. Model assumption error

Modelling is not used to estimate survey results.

16. Timeliness and punctuality

16.1.Timeliness

The target timeliness is within 27 months of the end of the survey period. The BEU survey data is supplemented with data from non-CSO administrative data sources and CSO structural business surveys. The processing and publication of the BEU data is dependent on the publication of the CSO structural business surveys which become available within 21 months of the end of the survey period.

16.1.1. TP1. Time lag – First results

Not applicable.

16.1.2. TP2. Time lag - Final results

The results were disseminated 29 months after the end of the reference period.

16.2. Punctuality

This release was published on time in accordance with the time frame specified in the CSO release calendar.

16.2.1. TP3. Punctuality - Punctuality - delivery and publication

0 days.

17. Comparability

17.1.Comparability - Geographical

Not applicable.

17.1.1. CC1. Asymmetry for mirror flow statistics



Not applicable.

17.2. Comparability over time

The 2009-2019 results were calculated using a consistent methodology. There should be a broad consistency between energy use and the emissions inventory data.

17.2.1. Length of Comparable Time series

10 years

17.3. Coherence – cross domain

Not applicable.

17.3.1. Coherence - Sub annual and annual statistics

Not applicable.

17.3.2. Coherence with National Accounts

BEU data is one of the inputs into the Supply and Use Tables produced by National Accounts.

17.4. Coherence – internal

The results can be compared with SEAI Energy Balances and the cost of fuel purchases as estimated by the CSO Annual Services Inquiry (ASI) and Census of Industrial Production (CIP).

18. Cost and Burden

Estimates of Cost and Burden can be obtained from the Response Burden Barometer <u>https://www.cso.ie/en/statistics/multisectoral/responseburdenbarometer/</u>

Survey specific information is available via CSO's dissemination database PxStat. <u>https://data.cso.ie/product/RBB</u>

19. Data Revision

19.1.Data Revision Policy

Revisions refer to changes made to published statistical data when the information used in its production has been updated or corrected. This information includes all data used in compiling the statistic e.g. respondent data, administrative data, weights and factors, methodology, classifications, definitions, modifications to survey questionnaires, survey scope and data collection methods. The results are subject to revision.

The data revision policy that CSO statistics adheres to can be found via the following link: <u>https://www.cso.ie/en/methods/quality/treatmentofrevisions/</u>

19.2. Data Revision Practice

Some figures that were published in the BEU 2018 release have been revised in this release. Some 2009-2019 data may be revised when the 2020 results are published. Aviation, marine, and rail fuels were not asked as explicit questions in the 2009-2018 surveys. If possible a time series for marine fuels will be compiled for a future release.

19.2.1. Data Revision – Average size

Not calculated.

20. Statistical processing

20.1. Source Data

- CSO BEU survey
- CSO Business Register
- CSO CIP and ASI
- SEAI administrative data (Large Industry Energy Network (LIEN) and Public Sector Energy Program (PSEP))
- EPA administrative data (Emissions Trading Scheme (ETS))

Additional Data Sources

The survey returns were boosted with the inclusion of data from non-CSO administrative data sources and CSO structural business surveys. This was done to: maximise the use of existing data; to increase consistency with air emissions and Energy Balances data; and to increase the effective sample so that the survey could be weighted at NACE Rev.2 Division level. The additional data sources comprise a mixture of enterprise and local kind-of-activity unit. Some of the additional data sources only collect quantity data while others only collect data on fuel purchase costs. The CSO used average costs at NACE sector level to overcome these shortcomings.

To integrate the administrative data with the survey returns, the CSO matched the administrative registers with the CSO Business Register to obtain information on NACE sector and employment and to ensure that no company was included more than once from the different data sources. In some cases, a survey respondent was also included in an administrative data source. In these cases, the CSO compared and combined the responses as necessary e.g. the different data sources collected different energy product categories.

For further information on the additional data sources see the Background Notes of the release. <u>https://www.cso.ie/en/methods/surveybackgroundnotes/businessenergyuse/</u>

20.1.1. Population and sampling frame

The 2019 survey population was made up of all enterprises in NACE Rev. 2 sectors B-F (includes Industry & Construction) and G-N, R-S (Services) with 3 or more persons engaged. The sampling frame was the CSO's Business Register.

20.1.2. Sampling design

A full list of all relevant enterprises is generated for this coverage using the CSO Business Register. This population is subdivided into strata which were NACE Rev. 2 by seven employment size classes:

Sample	Employment Size Class	Number of persons engaged
Random Sample	1	3-9
Random Sample	2	10-19
Random Sample	3	20-29
Random Sample	4	30-39
Random Sample	5	40-49
Random Sample	6	50-249
Census	7	250 or more

Table B: Description of BEU survey sample



A census is conducted of all enterprises with 250+ persons engaged. A sample of enterprises is taken for those remaining enterprises with 3 to 249 persons engaged. Neyman allocation is used to select the sampling fraction in each of these remaining strata.

20.1.3. Survey size

Around 5,000 enterprises.

20.1.4. Survey technique

The data was available for completion by postal form or on the CSO website as an e-Form. This data was captured by the CSO's Data Management System, where it can be viewed and edited as required. SAS programs were used for the processing of the survey.

20.2. Frequency of data collection

Annual.

20.3. Data Collection

Data collection method – postal form and electronic form (e-Form).

20.3.1. Type of Survey/Process

Multi-source process consisting of survey and administrative data.

20.3.2. Questionnaire (including explanations)

The survey form can be viewed at https://www.cso.ie/en/methods/surveyforms/businessenergyuse/

The survey collects information about energy usage by businesses in Ireland during a calendar year reference period. The principal variables collected relate to numerous energy products including:

- Electricity;
- Natural Gas;
- Petroleum products;
- Solid Fuels;
- Renewable Energy and Energy from Waste;
- Transport energy products; and
- Heating / Air Conditioning

20.3.3. Survey Participation

The 2019 survey was conducted under the Statistics (Business Energy Use Survey) Order 2018 (S.I. No. 509 of 2018) made under the Statistics Act, 1993 which imposed a legal obligation on enterprises to respond.

20.3.4. Data Capture

The 2009-2013 survey was available for completion as a postal form and on the CSO website as an e-Form. The data were captured in the CSO's Data Management System (DMS). SAS programs were used for processing the survey. More recent surveys have not included a paper questionnaire option.



20.4. Data Validation

The data received from the survey e-Form was uploaded into the CSO's Data Management System (DMS) and edited on-screen by CSO staff. Edit rules were set up on the DMS to check for inconsistencies in the returns. A listing of all the failed edits is examined. The image of the form is called up on the PC screen and the reason for the edit failure is identified on the form. Each failed edit is checked for any errors and for any comment on the form that may explain the failure.

If the edit failure cannot be resolved by CSO staff, then the enterprise is contacted to attempt to resolve the issue. Once all errors are amended a copy is made of the clean datasets. Reports are run during the survey period recording the number of forms returned by NACE group and employment size to monitor the response rate. In addition, reports are run to estimate the number of edits outstanding.

More detailed edit programs were run in SAS to perform checks on the consistency between questions and to check returns with other data including previous years' returns.

20.5. Data Compilation

By combining the survey returns with other data sources, it sometimes happened that an enterprise was in more than one data source. In these cases, the returns were compared, and an integrated return was constructed. While the survey collected both quantity and cost data, some of the other data sources did not have both. The survey returns were used to apply unit costs at energy product level. In this way, both quantity and cost data were calculated for all returns.

20.5.1. Imputation (for Non-Response or Incomplete Data Sets)

While the survey is enterprise focused, in some cases a fuel approach was needed to ensure that niche fuels were accurately included in the survey results e.g. wood waste. The CSO added a small number of imputed returns in cases where an annual survey return was not available for a company with very specialised energy use.

Some of the data sources had only quantity or monetary data and the CSO imputed the missing data using actual returns from other enterprises.

The fuels collected varied across each data source and in some cases the CSO imputed some data at fuel level as necessary to fill these gaps.

The breakdown of the ASI and CIP data by energy product was imputed using BEU survey 2009-2018 expenditure data and BEU unit costs. Some adjustments were made to reflect trends in the use of energy products since 2009.

Explicit questions were not included in the survey for road transport fuels for 2009-2012 and for other transport fuels for 2009-2018. The CSO used a variety of data sources to produce estimates for these fuels for those years.

The BEU sample excludes NACE sectors O (Public Administration), P (Education), and Q (Health and Residential Care). Hence data for these NACE sectors come from the Public Sector Energy Programme which has fuel quantities only. The CSO used BEU unit prices to estimate purchase costs for the PSEP returns.

The survey returns are weighted to the CSO's Business Register. Non-response is corrected through higher weighting factors. Survey returns with no energy purchases are included with the survey returns e.g. a business that was temporarily closed for the survey year.

20.5.1.1. A7. Imputation rate

Not calculated.



20.5.2. Grossing and Weighting

The CSO's Business Register provided the frame from which the annual BEU survey sample was selected. The register was used to weight sample data to the population by calculating factors based on the number of employees in the sample and in the Business Register at NACE Rev.2 Division level. Some non-typical returns were assigned a weight of one to prevent them having an influence on other returns.

The survey returns are combined with other survey and administrative data before weighting. The weights are calculated at NACE Rev.2 Division level.

20.6. Adjustment

Not applicable.

20.6.1. Seasonal Adjustment

Not applicable.

21. Comment