

INSTITUTO NACIONAL DE ESTADISTICA



Energy Consumption Survey (ECS)

Methodology

June 2023

Index

| | | |
|---|---|----|
| 1 | Introduction | 3 |
| 2 | Objective and theoretical framework of the statistical operation | 3 |
| 3 | Statistical units | 4 |
| 4 | Research scopes | 4 |
| 5 | Sample design | 5 |
| 6 | Data collection | 8 |
| 7 | Data processing | 9 |
| 8 | Dissemination of information | 10 |
| | Annex 1. CNAE-2009 activities included in the survey scope | 12 |
| | Annex 2 Subsectors in the extractive and manufacturing industries used up to the 2015 reference publication | 21 |

1 Introduction

The **Energy Consumption Survey (ECS)**, is a biennial long-term statistical operation intended for obtaining information on energetic consumption made by manufacturing and quarrying industries.

Since its implementation in reference year 2001, every two years the ECS is addressed to a sub-sample of the informant companies (legal units) of the *Structural Business Statistics (SBS): Industrial Sector* (extensive and detailed survey of the economic structure of the industrial sector, previously known as *Industrial Companies Survey*), therefore both statistical operations are coordinated and share many of their methodological aspects, collection procedures and treatment of information.

In 2009 the ECS was revised in order to adapt its sectorization to the new 2009 National Classification of Economic Activities (CNAE-2009).

The following sections describe the general methodological lines of the statistical operation, its units and research scopes, the sample design, the data collection system, the data processing, and the scheme for the dissemination of the results.

2 Objective and theoretical framework of the statistical operation

The essential objective of this operation is providing information on the consumption of the different types of energetic products in the industrial sector. Said products are those products acquired by the company intended for being used as fuel (energetic products used as a commodity or intended for resale without transformation are excluded). For this statistical operation, energetic consumption is quantified in monetary terms.

The ECS is designed, from a theoretical and conceptual perspective, on the bases of two essential principles: On the one hand, the need to increase, as little as possible, the statistical burden for the informant units, and on the other hand, the idea of reaching a coherence between the results obtained and those provided by the Structural Business Statistics: Industrial Sector. The entire methodological development of the survey has been based on this starting point, whose approaches directly affect the different components of its implementation.

The integration of this operation within the framework of the structural statistics has been carried out using the following elements:

- a) Methodological integration: Common nomenclature, unit correspondence (legal units), coincidence of definitions and of assessment criteria.
- b) Integration of the sample design: Use of two-phase sampling. Use of a common directory-framework and collection of the ECS as a subsample of the previous sample of the ICSS: *Industrial Sector*.

- c) Integration of the collection methods: Simultaneous collection and collection by the same teams of both surveys, for the purpose of attaining a greater efficiency in the management of the whole process, rationalising and limiting the necessary contacts with the informant units..
- d) Integrated filtering processes: Integration of the processes of error detection and correction, and formulation of joint validation standards "edits" between the two surveys, for the purpose of optimising the processing and achieving the greatest coherence possible between the primary data of each survey.
- e) Estimation procedure: Use of composite estimators. Exploitation of the auxiliary information generated by the *Structural Business Statistics: Industrial Sector* for the calculation of the ECS estimators, for the purpose of obtaining coherent information on a sample stratum level.

3 Statical units

The basic unit used for the survey is the industrial company carrying out as its main economic activity one of those included in the population scope.

A company is considered to be any organisational entity that produces goods and services, enjoying a certain autonomy in decision-making, mainly at the time of using the available current resources. The company may carry out one or more activities in one or more places.

Note: ECS considers each Legal Unit that produces goods or services an enterprise. Its results are integrated with the *Structural Business Statistics: Industrial Sector* under the traditional approach based on Legal Units.

In the survey unit scheme, the company simultaneously assumes the roles of informant unit, which facilitates the information requested in the survey, and of observation unit, that to which the data requested on the questionnaire refers.

4 Research scopes

The target population of study of the survey is the group of companies (legal units) with 20 or more employees, and whose main activity is included in Sections B (mining and quarrying industries) or C (manufacturing industry) of CNAE-2009. Not forming a part of the research scope of the survey are those industrial activities belonging to Sections D (supply of electrical energy, gas, steam and air conditioning belonging) and E (water supply, waste management and decontamination activities).

In Annex 1 the activities included in the scope of the survey are listed and detailed.

Until 2012, the survey covered the whole national territory, except for Ceuta and Melilla. Since 2013, both Autonomous Cities are included too in the scope of the survey.

The survey is carried out biennially. As to the information reference period, the data requested refers to the target calendar year of the survey. Exceptionally, companies that function by season or campaign, that include two different years and have their data accounted for as such, must refer the information to the season or campaign that finished in the survey reference year.

5 Sample design

A two-phase sampling is used. In the first phase the sample of legal units is obtained for the *SBS: industrial Sector* and in the second phase the sample is obtained for the ECS, which is subsample of the first. In both phases a stratified random sampling is applied. In this methodology the stages of the design of the second phase will be presented. The details of the first phase can be found in the methodology of the *SBS: Industrial Sector*.

5.1 SAMPLING FRAME

The sample frame is obtained from the DIRCE (Central Companies Directory), a list of legal units that is updated once a year with administrative sources, primarily of a tax and social security nature. It is also updated with information from the statistical operations of INE.

The DIRCE contains information on the main economic activity, the number of employees, turnover, and about the identification and location data, which are necessary for the correct information collection.

5.2 STRATIFICATION

The population object of the study, that is, a group of industrial legal units with 20 or more employees, is divided in groups named strata, defined as of the main economic activity and size, measured in number of employees of the legal unit.

The main economic activity is determined by the CNAE-2009. In the stratification, the Class of activity is considered, which corresponds to the CNAE-2009 to 4 digits. The employees are distributed in 4 groups, according to the following size intervals.

| Group | Employees |
|--------------|--------------------|
| 1 | 20 to 49 employees |
| 2 | From 50 to 99 |
| 3 | 100 to 249 |
| 4 | 250 or more |

Legal units with 250 or more employed persons have been studied comprehensively, whilst units with fewer than 249 employed persons have been studied by sampling.

5.3 SIZE OF THE SAMPLE. ALLOCATION

For the calculation of the sample size by stratum, the following sampling fractions are set.

| Company size bracket | Sampling fraction |
|------------------------------|---|
| 20 to 49 employees | 1/3 (with a minimum of 4 units and a maximum of 30) |
| 50 to 99 employees | 2/5 (with a minimum of 4 units and a maximum of 30) |
| 100 to 249 employees | 1/2 (with a minimum of 4 units and a maximum of 30) |
| 250 or more employed persons | 1 |

The total size of the sample is 5,600 legal units.

5.4 SELECTION OF THE SAMPLE

Given the objective of the survey is to obtain disaggregated information on the different types of energy consumptions made by manufacturing and quarrying industries and that in the *SBS: Industrial Sector* there is information regarding the total of those consumptions, the sample is randomly selected within each stratum, as a subsample of the sample of the *SBS: Industrial Sector*. This means that the sample for the ECS is selected with negative coordination with the rest of the surveys, as does the SBS, with the objective of distributing equitably the surveys carried out by the INE for a given year.

5.5 ESTIMATORS

Compound estimators are used, consisting of a weighted linear combination of a direct estimator and a synthetic one.

The following are the variables and subindex:

N = Number of active persons in the directory

n = Number of companies in the theoretical sample

n' = Number of companies in the effective sample (collected questionnaires).

\hat{Y} = Total estimation of the energetic consumptions obtained from the SBS: Industrial Sector

X = Variable to estimate from the ECS

$y_i ; x_i$ = Previous data variables referring to the company i

i = Company

t = Group of company size within the frame

r = Sector of economic activity within the frame

v = Sector of real economic activity (according to the questionnaire)

c = Autonomous Community

The compound estimator for the total of a variable X is given by the following expression:

$$\hat{X}_{vc} = a_{vc} \cdot \hat{XP}_{vc} + (1 - a_{vc}) \cdot \hat{XS}_{vc}$$

Where:

\hat{X}_{vc} = Estimator composed of the total of X of sector v in the Autonomous Community c .

\hat{XP}_{vc} = Post-stratified ratio estimator of X in v, c .

\hat{XS}_{vc} = Synthetic estimator of X v, c .

a_{vc} = Parameter ($0 \leq a_{vc} \leq 1$) fixed in each v, c .

The post-stratified estimator is given as follows:

$$\hat{XP}_{vc} = \frac{\sum_{i=1}^{n'_{vc}} w_i \frac{f_i}{f_i} \frac{x_i}{y_i}}{\sum_{i=1}^{n'_{vc}} w_i \frac{f_i}{f_i} \frac{y_i}{y_i}} \hat{Y}_{vc}$$

Where:

n'_{vc} = Number of companies in the effective sample of sector v in the Autonomous Community c .

w_i = Elevation factor of the company i in the first phase, in the SBS: Industrial Sector

f_i = Elevation factor of the company i in the second phase, in the Energetic Consumption Survey, which is given by the following quotient.

$$f_i = \frac{N_{rt}}{n_{rt}} ; i \in rt$$

\hat{Y}_{vc} = Total estimation of energetic consumption obtained from the SBS. Industrial Sector in v, c.

The synthetic estimator is given as follows:

$$\hat{X}_{vc} = \frac{\sum_{i=1}^{n'_v} w_i f_i x_i}{\sum_{i=1}^{n'_v} w_i f_i y_i} \hat{Y}_{vc}$$

Where:

n'_v = Number of companies in the effective sample of sector v.

The parameter a_{vc} takes the following values:

$$a_{vc} = \begin{cases} 0 & ; \text{ Si } n'_{vc} = 0 \quad \text{ó} \quad N_{vc} = 0 \\ \frac{n'_{vc} \cdot N_v}{n'_v \cdot N_{vc}} & ; \text{ Si } 0 < n'_{vc} \cdot N_v \leq n'_v \cdot N_{vc} \\ 1 & ; \text{ Si } n'_{vc} \cdot N_v > n'_v \cdot N_{vc} \end{cases}$$

6 Data collection

The information collection is carried out every two years, at the same time than that of the Structural Business Statistics, through the INE Collection Unit. We foster the online submission of the questionnaire, however, other response means are available to informants (fax, regular post, telephone).

Collection units are also responsible for the phone service, whose aim is to solve informants' doubts, as well as for the recording and filtering of questionnaires. In case there is no response within the established deadline, or the response is considered to be insufficient or incoherent, we contact companies by phone.

The collection process of data regarding the t reference year is carried out from the second quarter of the t+1 year on.

The management of the file of legal units in the sample, both to control the collection, and to update the data on informant companies, is carried out by means of a computerised application established for this purpose, which enables guaranteeing the control and organisation of the entire process. The system facilitates supervising the collection continuously, integrating the collection and filtering processes, guaranteeing an efficient control of the process from the beginning of the survey, as systematic errors in filling in and interpreting the questionnaires may be detected in the initial phases of the survey, thereby facilitating their correction.

7 Data processing

The initial stage of the survey information processing is carried out in parallel to the data collection itself, during the entire duration thereof. The established system allows for carrying out a continuous updating process, as well as a first control of questionnaire content filtering. Its objective is to establish sufficient levels of quality that will permit a significant simplification of the subsequent information processing.

The questionnaires, both those submitted online and those recorded by the collection units, are subject to the control norms necessary to guarantee an adequate level of quality for the entire process. This facilitates controlling, already in this phase, the errors that may affect the data obtained from the informant units.

During the collection phase of the questionnaires, a first purification and codification process of them is carried out. Both the electronic questionnaires that the informers fill out on the Internet, as the application of management, recording and debugging of the collection used by the collection units of the INE, have systems programmed for the detection of errors to validating the data as they are introduced by the user. It distinguishes between serious type errors (which must be necessarily corrected) and anomalies of a second level (which, after confirmation, must be justified). Also, during data collection and debugging, measures are also taken to reduce the lack of response.

The registers recorded by the recollection units proceed to form and feed, at least every fifteen days, the complete recording files on which the subsequent phases of the joint processing of the information are made. This files are processed in the Central Services where information coverage is controlled in order to guarantee completeness of the recorded data, detect duplicates and coverage errors and at the same time carry out an initial assessment on the quality of the variables collected.

Once the collection and the first filtering of the questionnaires is carried out, and the information is available in a file, the process of detection and filtering of errors and inconsistencies continues in the Central Services. During the micro-filtering process, the detection and filtering of errors and inconsistencies in the identification variables of each register as well as the filtering and imputation of content errors are carried out. Depending on the characteristics of each type of error, automatic imputation procedures and corrections of the errors detected are carried out. The microfiltering phase is carried out in an integrated manner, with the error detection of the Structural Business Statistics, enabling a more effective control of the correction process and higher levels of global quality, on exploiting the information from two different statistical sources. Likewise, the systematic errors detected in the studies and analyses carried out previously on the recorded data are corrected. Once the micro-filtering phase is finished, the next step is to proceed with the elevation factors to determine the estimates of different variables. The last stage, before the tabulation and dissemination of results, is obtaining analysis tables to eliminate the errors and inconsistencies detected in this phase by means of macro-processing techniques.

8 Dissemination of information

The data that is disseminated online offers detailed information on the consumption of the different energy products in the manufacturing and mining industries, for the purpose of satisfying the demand for information of different users of the survey. Results are provided, both on a national level and broken down by Autonomous Community.

- The **national results** are presented at a level of section, division and group of activities of the CNAE-2009 belonging to the extractive and manufacturing industries. Information on the consumption of energetic products is offered in the following level of detail:
 - Electricity
 - Gas
 - Diesel
 - Fuel oil
 - Other petroleum products
 - Hard coal and coke
 - Biofuels
 - Heat and other energy consumption

It should be mentioned that as a consequence of the *Integration Project of the Structural Business Statistics*, starting in the reference year 2015 included, all the variables of study are classified in function of the main activity of the company. This signifies a change of criterion with respect to the previous exercises in which the treatment was based on the activity of the establishments.

As this change occurred, for the national results of the reference year 2015, an **additional table** calculated under the previous criterion was included, so that users could have a link for this year of change. This additional table presented the national statistical results for 2015 for each of the 96 subsectors considered by the ECS in previous years (see details in Annex 2)

- The **results by Autonomous Communities** classified in function of main activity of the establishments are presented in the same degree of detail that the national results in as far as the different energetic products:

It is advisable to notice that energetic consumption is measured in monetary terms, at current prices. Therefore, its evolution takes into account both the evolution of consumed quantities and the evolution of the prices of the different energetic products.

On the other hand, the annual variation rates obtained from the results of this survey might be due, sometimes – and to a greater or lesser extent –, to changes

in the structure of the corresponding reference populations (for instance, changes in the activity of certain companies that cause their assignation to an economic activity sector different to that of the previous year, etc.). So, but not in all cases, said variation rates shall be associated directly to a change (an increase or a decrease), in the same magnitude, in the production activity of the group of companies of a certain sector or subpopulation.

Finally, it is important to highlight that the dissemination of the survey does not only comprise the tables provided herein or included in the publication. Observing the restrictions derived from statistical secrecy, or from the sample nature of the survey, the existing computer procedures allow us to attend to aggregated data customised requests, which can be provided in the format chosen by the user.

Annex 1. CNAE-2009 activities included in the survey scope

The target population of study is comprised of the legal units with 20 or more employees, and whose main activity is included in Sections B (mining and quarrying industries) or C (manufacturing industry) of CNAE-2009, which includes the following divisions, groups and classes:

CNAE-2009 Activities

B Extractive industries

05 Extraction of anthracite, coal and lignite

051 Extraction of anthracite and coal

0510 Extraction of anthracite and coal

052 Extraction of lignite

0520 Extraction of lignite

06 Crude oil and natural gas extraction

061 Crude oil extraction

0610 Crude oil extraction

062 Extraction of natural gas

0620 Extraction of natural gas

07 Extraction of metal ores

071 Extraction of iron ores

0710 Extraction of iron ores

072 Extraction of non-ferrous metal ores

0721 Extraction of uranium and thorium ores

0729 Extraction of other non-ferrous metal ores

08 Other extractive industries

081 Extraction of stone, sand and clay

0811 Extraction of ornamental stone and for construction, limestone, gypsum, chalk and slate

0812 Extraction of gravels and sands; clay and kaolin extraction

089 Extractive industries n.e.c.

0891 Extraction of minerals for chemicals and fertilizers

0892 Extraction of peat

0893 Salt Extraction

0899 Other extractive industries n.e.c.

09 Activities to support the extractive industries

091 Activities to support the extraction of oil and natural gas

0910 Activities to support the extraction of oil and natural gas

099 Activities to support other extractive industries

0990 Activities to support other extractive industries

C Manufacturing Industry

10 Feed industry

101 Processing and conservation of meat and processing meat products

1011 Processing and conservation of meat

1012 Processing and conservation of poultry

1013 Elaboration of meat and poultry products

102 Processing and conservation of fish, crustaceans and molluscs

1021 Processing of fish, crustaceans and molluscs

1022 Manufacture of canned fish

- 103 Processing and conservation of fruits and vegetables
 - 1031 Processing and conservation of potatoes
 - 1032 Elaboration of fruit and vegetable juices
 - 1039 Other processing and conservation of fruits and vegetables
- 104 Manufacture of vegetable and animal oils and fats
 - 1042 Manufacture of margarine and similar edible fats
 - 1043 Manufacture of olive oil
 - 1044 Manufacture of other oils and fats
- 105 Manufacture of dairy products
 - 1052 Manufacture of ice creams
 - 1053 Manufacture of cheeses
 - 1054 Preparation of milk and other dairy products
- 106 Manufacture of milling products, starches and starch products
 - 1061 Manufacture of milling products
 - 1062 Manufacture of starches and starch products
- 107 Manufacture of bakery products and pasta
 - 1071 Manufacture of bread and fresh bakery and pastry products
 - 1072 Manufacture of biscuits and long-lasting bakery and pastry products
 - 1073 Manufacture of food pasta, couscous and similar products
- 108 Manufacture of other foodstuffs
 - 1081 Manufacture of sugar
 - 1082 Manufacture of cocoa, chocolate and confectionery products
 - 1083 Elaboration of coffee, tea and infusions
 - 1084 Elaboration of spices, sauces and condiments
 - 1085 Elaboration of prepared dishes and meals
 - 1086 Elaboration of homogenized food preparations and dietetic foods
 - 1089 Elaboration of other food products n.e.c.
- 109 Manufacture of products for animal feed
 - 1091 Manufacture of farm animal feed products
 - 1092 Manufacture of pet food products
- 11 Manufacture of beverages**
 - 110 Manufacture of beverages
 - 1101 Distillation, rectification and mixing of alcoholic beverages
 - 1102 Wine making
 - 1103 Elaboration of cider and other fermented beverages from fruits
 - 1104 Elaboration of other non-distilled beverages, from fermentation
 - 1105 Manufacture of beer
 - 1106 Manufacture of malt
 - 1107 Manufacture of non-alcoholic beverages; Production of mineral water and other bottled water
- 12 Tobacco industry**
 - 120 Tobacco industry
 - 1200 Tobacco industry
- 13 Textile industry**
 - 131 Preparation and spinning of textile fibres
 - 1310 Preparation and spinning of textile fibres
 - 132 Manufacture of textile fabrics
 - 1320 Manufacture of textile fabrics

- 133 Finishing of textiles
 - 1330 Finishing of textiles
- 139 Manufacture of other textile products
 - 1391 Manufacture of knitted fabrics
 - 1392 Manufacture of articles made with textiles, except garments
 - 1393 Manufacture of carpets and carpets
 - 1394 Manufacture of ropes, cords, twines and nets
 - 1395 Manufacture of non-woven fabrics and articles made with them, except apparel
 - 1396 Manufacture of other textile products for technical and industrial use
 - 1399 Manufacture of other textile products n.e.c.
- 14 Garment making**
 - 141 Garment-making, except for furriery
 - 1411 Manufacture of leather garments
 - 1412 Making work clothes
 - 1413 Manufacture of other outerwear
 - 1414 Manufacture of underwear
 - 1419 Manufacture other apparel and accessories
 - 142 Manufacture of fur products
 - 1420 Manufacture of fur products
 - 143 Manufacture knitted clothing garments
 - 1431 Manufacture of hosiery
 - 1439 Manufacture of other knitwear
- 15 Leather and footwear industry**
 - 151 Preparation, tanning and finishing of the leather; Manufacture of articles of leather goods, travel and saddlery; Preparation and dyeing of skins
 - 1511 Preparation, tanning and finishing of the leather; Preparation and dyeing of skins
 - 1512 Manufacture of leather goods, travel and saddlery
 - 152 Manufacture of footwear
 - 1520 Manufacture of footwear
- 16 Wood and cork industry, excluding furniture; basketry and plaiting**
 - 161 Sawmilling and planing of wood
 - 1610 Sawmilling and planing of wood
 - 162 Manufacture of wood products, cork, basketry and plaiting
 - 1621 Manufacture of veneers and wood panels
 - 1622 Manufacture of assembled wood floors
 - 1623 Manufacture of other timber structures and carpentry and woodworking parts for construction
 - 1624 Manufacture of packaging and packaging of wood
 - 1629 Manufacture of other wood products; Articles of Cork, basketry and plaiting
- 17 Paper industry**
 - 171 Manufacture of pulp bin, paper and cardboard
 - 1711 Manufacture of pulp bin
 - 1712 Manufacture of paper and cardboard
 - 172 Manufacture of paper and cardboard items
 - 1721 Manufacture of corrugated paper and paperboard; Manufacture of packaging and packaging of paper and cardboard
 - 1722 Manufacture of paper and cardboard articles for household, sanitary and hygienic use
 - 1723 Manufacture of stationery articles
 - 1724 Manufacture of wallpapers

1729 Manufacture of other paper and cardboard items

18 Graphic arts and reproduction of recorded media

181 Graphic arts and related services

1811 Graphic arts and related services

1812 Other printing and graphic arts activities

1813 Pre-press and media preparation services

1814 Bookbinding and related services

182 Reproduction of recorded media

1820 Reproduction of recorded media

19 Manufacture of coke and refined petroleum products

191 Coke oven products

1910 Coke oven products

192 Refining Oil

1920 Refining Oil

20 Chemical Industry

201 Manufacture of basic chemicals, nitrogen compounds, fertilizers, plastics and synthetic rubber in primary forms

2011 Manufacture of industrial gases

2012 Manufacture of dyes and pigments

2013 Manufacture of other basic inorganic chemical products

2014 Manufacture of other basic organic chemical products

2015 Manufacture of fertilisers and nitrogen compounds

2016 Manufacture of plastics in primary forms

2017 Manufacture of synthetic rubber in primary forms

202 Manufacture of pesticides and other agrochemical products

2020 Manufacture of pesticides and other agrochemical products

203 Manufacture of paints, varnishes and similar coatings; Printing inks and mastics

2030 Manufacture of paints, varnishes and similar coatings; Printing inks and mastics

204 Manufacture of soaps, detergents and other cleaning and polishing articles; Manufacture of perfumes and cosmetics

2041 Manufacture of soaps, detergents and other cleaning and polishing articles

2042 Manufacture of perfumes and cosmetics

205 Manufacture of other chemical products

2051 Manufacture of explosives

2052 Manufacture of glues

2053 Manufacture of essential oils

2059 Manufacture of other chemical products n.e.c.

206 Manufacture of artificial and synthetic fibres

2060 Manufacture of artificial and synthetic fibres

21 Manufacture of pharmaceutical products

211 Manufacture of basic pharmaceutical products

2110 Manufacture of basic pharmaceutical products

212 Manufacture of pharmaceutical specialities

2120 Manufacture of pharmaceutical specialities

22 Manufacture of rubber and plastic products

221 Manufacture of rubber products

2211 Manufacture of rubber tyres and tubes; retreading and rebuilding of rubber tyres

2219 Manufacture of other rubber products

- 222 Manufacture of plastic products
 - 2221 Manufacture of plates, sheets, tubes and plastic profiles
 - 2222 Manufacture of plastic containers and packaging
 - 2223 Manufacture of plastic products for construction
 - 2229 Manufacture of other plastic products
- 23 Manufacture of other non-metallic mineral products**
 - 231 Manufacture of glass and glass products
 - 2311 Manufacture of flat glass
 - 2312 Manipulation and transformation of flat glass
 - 2313 Manufacture of hollow glass
 - 2314 Manufacture of fibreglass
 - 2319 Manufacture and handling of other glass, including technical glass
 - 232 Manufacture of refractory ceramic products
 - 2320 Manufacture of refractory ceramic products
 - 233 Manufacture of ceramic products for construction
 - 2331 Manufacture of ceramic tile
 - 2332 Manufacture of bricks, tiles and construction products, in baked clay
 - 234 Manufacture of other ceramic products
 - 2341 Manufacture of ceramic products for home and ornamental use
 - 2342 Manufacture of ceramic sanitary fixtures
 - 2343 Manufacture of insulators and insulating parts of ceramic material
 - 2344 Manufacture of other ceramic products for technical use
 - 2349 Manufacture of other ceramic products
 - 235 Manufacture of cement, lime and gypsum
 - 2351 Manufacture of cement
 - 2352 Manufacture of lime and gypsum
 - 236 Manufacture of concrete, cement and gypsum elements
 - 2361 Manufacture of concrete elements for construction
 - 2362 Manufacture of gypsum elements for construction
 - 2363 Manufacture of fresh concrete
 - 2364 Manufacture of mortar
 - 2365 Manufacture of fibre cement
 - 2369 Manufacture of other concrete, gypsum and cement products
 - 237 Cutting, carving and finishing of the stone
 - 2370 Cutting, carving and finishing of the stone
 - 239 Manufacture of abrasive products and non-metallic mineral products n.e.c.
 - 2391 Manufacture of abrasive products
 - 2399 Manufacture of other non-metallic mineral products n.e.c.
- 24 Metallurgy; manufacture of iron, steel and ferro-alloy products**
 - 241 Manufacture of basic products in iron, steel and ferro-alloys
 - 2410 Manufacture of basic products in iron, steel and ferro-alloys
 - 242 Manufacture of steel pipes, pipes, hollow profiles and their accessories
 - 2420 Manufacture of steel pipes, pipes, hollow profiles and their accessories
 - 243 Manufacture of other first-processing steel products
 - 2431 Cold drawn
 - 2432 Cold rolling
 - 2433 Production of cold-forming profiles with folding
 - 2434 Cold drawn wire

- 244 Production of precious metals and other non-ferrous metals
 - 2441 Production of precious metals
 - 2442 Aluminium production
 - 2443 Production of lead, zinc and tin
 - 2444 Copper production
 - 2445 Production of other non-ferrous metals
 - 2446 Processing of nuclear fuels
- 245 Casting of metals
 - 2451 Casting of iron
 - 2452 Casting of steel
 - 2453 Casting of light metals
 - 2454 Casting of other non-ferrous metals
- 25 Manufacture of metal products, except machinery and equipment**
 - 251 Manufacture of metal elements for construction
 - 2511 Manufacture of metal structures and their components
 - 2512 Manufacture of metal carpentry
 - 252 Manufacture of tanks, reservoirs and containers of metal
 - 2521 Manufacture of radiators and boilers for central heating
 - 2529 Manufacture of other tanks, reservoirs and containers of metal
 - 253 Manufacture of steam generators, except central heating boilers
 - 2530 Manufacture of steam generators, except central heating boilers
 - 254 Manufacture of weapons and ammunition
 - 2540 Manufacture of weapons and ammunition
 - 255 Forging, stamping and drawing of metals; powder metallurgy
 - 2550 Forging, stamping and drawing of metals; powder metallurgy
 - 256 Treatment and coating of metals; Mechanical engineering on behalf of third parties
 - 2561 Treatment and coating of metals
 - 2562 Mechanical Engineering on behalf of third parties
 - 257 Manufacture of cutlery and silverware articles, tools and hardware
 - 2571 Manufacture of cutlery and silverware articles
 - 2572 Manufacture of locks and fittings
 - 2573 Manufacture of tools
 - 259 Manufacture of other metallic products
 - 2591 Manufacture of steel drums and similar containers
 - 2592 Manufacture of light metal packaging
 - 2593 Manufacture of wire, chain and spring products
 - 2594 Manufacture of bolts and hardware products
 - 2599 Manufacture of other metallic products n.e.c.
- 26 Manufacture of computer, electronic and optical products**
 - 261 Manufacture of electronic components and printed assembled circuits
 - 2611 Manufacture of electronic components
 - 2612 Manufacture of loaded electronic boards
 - 262 Manufacture of computers and peripheral equipment
 - 2620 Manufacture of computers and peripheral equipment
 - 263 Manufacture of telecommunications equipment
 - 2630 Manufacture of telecommunications equipment
 - 264 Manufacture of consumer electronics products
 - 2640 Manufacture of consumer electronics products

- 265 Manufacture of instruments and appliances for measuring, testing and navigation ; Clock manufacturing
 - 2651 Manufacture of instruments and appliances for measuring, testing and navigation
 - 2652 Manufacture of watches
- 266 Manufacture of radiation, electromedical and electro therapeutic equipment
 - 2660 Manufacture of radiation, electromedical and electro therapeutic equipment
- 267 Manufacture of optical instruments and photographic equipment
 - 2670 Manufacture of optical instruments and photographic equipment
- 268 Manufacture of magnetic and optical supports
 - 2680 Manufacture of magnetic and optical supports
- 27 Manufacture of electrical material and equipment**
 - 271 Manufacture of electric motors, generators and transformers, and of electrical control and distribution devices
 - 2711 Manufacture of electric motors, generators and transformers
 - 2712 Manufacture of electricity distribution and control apparatus
 - 272 Manufacture of batteries and electric accumulators
 - 2720 Manufacture of batteries and electric accumulators
 - 273 Manufacture of cables and wiring devices
 - 2731 Manufacture of fibre optic cables
 - 2732 Manufacture of other electronic and electrical wires and cables
 - 2733 Manufacture of wiring devices
 - 274 Manufacture of lamps and electrical lighting fixtures
 - 2740 Manufacture of lamps and electrical lighting fixtures
 - 275 Manufacture of household appliances
 - 2751 Manufacture of household appliances
 - 2752 Manufacture of non-electric household appliances
 - 279 Manufacture of other material and electrical equipment
 - 2790 Manufacture of other material and electrical equipment
- 28 Manufacture of machinery and equipment n.e.c.**
 - 281 Manufacture of machinery for general purposes
 - 2811 Manufacture of engines and turbines, except for aircraft, automobiles and mopeds
 - 2812 Manufacture of hydraulic and pneumatic transmission equipment
 - 2813 Manufacture of other pumps and compressors
 - 2814 Manufacture of other taps and valves
 - 2815 Manufacture of bearings, gears, gearing and driving elements
 - 282 Manufacture of other general purpose machinery
 - 2821 Manufacture of furnaces and burners
 - 2822 Manufacture of lifting and handling machinery
 - 2823 Manufacture of office machines and equipment, except computer equipment
 - 2824 Manufacture of manual power tools
 - 2825 Manufacture of non-domestic ventilation and refrigeration machinery
 - 2829 Manufacture of other general purpose machinery n.e.c.
 - 283 Manufacture of agricultural and forestry machinery
 - 2830 Manufacture of agricultural and forestry machinery
 - 284 Manufacture of machine tools to work metal and other machine tools
 - 2841 Manufacture of machine-tools for working metal
 - 2849 Manufacture of other machine tools
 - 289 Manufacture of other machinery for specific uses
 - 2891 Manufacture of machinery for metallurgical industry

- 2892 Manufacture of machinery for extractive and construction industries
- 2893 Manufacture of machinery for the food, beverage and tobacco industry
- 2894 Manufacture of machinery for textile, garment and leather industries
- 2895 Manufacture of machinery for paper and paperboard industry
- 2896 Manufacture of machinery for the plastic and rubber industry
- 2899 Manufacture of other machinery for specific uses n.e.c.

29 Manufacture of motor vehicles, trailers and semi-trailers

291 Manufacture of motor vehicles

- 2910 Manufacture of motor vehicles

292 Manufacture of bodyworks for motor vehicles; Manufacture of trailers and semi-trailers

- 2920 Manufacture of bodyworks for motor vehicles; Manufacture of trailers and semi-trailers

293 Manufacture of components, parts and accessories for motor vehicles

- 2931 Manufacture of electrical and electronic equipment for motor vehicles
- 2932 Manufacture of other components, parts and accessories for motor vehicles

30 Manufacture of other transport material

301 Building of ships and boats

- 3011 Construction of ships and floating structures
- 3012 Construction of recreational and sport boats

302 Manufacture of railway and tramway locomotives and rolling stock

- 3020 Manufacture of railway and tramway locomotives and rolling stock

303 Manufacture of air and spacecraft and related machinery

- 3030 Manufacture of air and spacecraft and related machinery

304 Manufacture of military combat vehicles

- 3040 Manufacture of military combat vehicles

309 Manufacture of other transport material n.e.c.

- 3091 Manufacture of motorcycles
- 3092 Manufacture of bicycles and vehicles for disabled persons
- 3099 Manufacture of other transport material n.e.c.

31 Manufacture of furniture

310 Manufacture of furniture

- 3101 Manufacture of office and shop furniture
- 3102 Manufacture of kitchen furniture
- 3103 Manufacture of mattresses
- 3109 Manufacture of other furniture

32 Other manufacturing industries

321 Manufacture of jewellery, bijouterie and related articles

- 3211 Manufacture of coins
- 3212 Manufacture of jewellery and related articles
- 3213 Manufacture of bijouterie and similar articles

322 Manufacture of musical instruments

- 3220 Manufacture of musical instruments

323 Manufacture of sporting goods

- 3230 Manufacture of sporting goods

324 Manufacture of games and toys

- 3240 Manufacture of games and toys

325 Manufacture of medical and dental instruments and supplies

- 3250 Manufacture of medical and dental instruments and supplies

329 Manufacturing industries n.e.c.

3291 Manufacture of brooms and brushes

3299 Other Manufacturing industries n.e.c.

33 Repair and installation of machinery and equipment

331 Repair of metal products, machinery and equipment

3311 Repair of Metal Products

3312 Repair of machinery

3313 Repair of electronic and optical equipment

3314 Repair of electrical equipment

3315 Repair and maintenance of naval items

3316 Repair and maintenance of aircraft and spacecraft

3317 Repair and maintenance of other transport equipment

3319 Repair of other equipment

332 Installation of industrial machines and equipment

3320 Installation of industrial machines and equipment

Annex 2 Subsectors in the extractive and manufacturing industries used up to the 2015 reference publication

| SUBSECTOR | CNAE-2009 |
|--|---|
| 1: Mining of hard coal (coal and lignite) | |
| 2: Natural gas and petroleum industries | 06, 09, 19 |
| 3: Mining of rocks and metallic ores | 07,08 |
| 4: Meat industry | 10.1 |
| 5: Fish industry | 10.2 |
| 6: Fruit and vegetables processing and preserving | 10.3 |
| 7: Oils and fats | 10.4 |
| 8: Dairy products | 10.5 |
| 9: Mills, starches and starch products | 10.6 |
| 10: Bakery and farinaceous products | 10.7 |
| 11: Sugar, coffee, tea and infusions and confectionery products | 10.81,10.82, 10.83 |
| 12: Other food products | 10.84,10.85,10.86,10.89 |
| 13: Animal breeds | 10.9 |
| 14: Manufacture of spirits | 11.01,11.02,11.03, 11.04,11.05,11.06 |
| 15: Production of bottled water and soft drinks | 11.07 |
| 16: Tobacco products | 12 |
| 17: Preparation and spinning of textile fibres | 13.1 |
| 18: Weaving of textiles | 13.2 |
| 19: Finishing of textiles | 13.3 |
| 20: Manufacture of knitted and crocheted fabrics and of made-up textile articles, except apparel | 13.91,13.92 |
| 21: Other textile industries | 13.93,13.94,13.95, 13.96,13.99 |
| 22: Manufacture of wearing apparel | 14.1 |
| 23: Manufacture of articles of fur | 14.2 |
| 24: Manufacture of knitted and crocheted apparel | 14.3 |
| 25: Manufacture of leather and related products | 15.1 |
| 26: Manufacture of footwear | 15.2 |
| 27: Sawmilling and planing of wood | 16.10 |
| 28: Manufacture of veneer sheets and wood-based panels | 16.21 |
| 29: Manufacture of assembled parquet floors and of other builders' carpentry and joinery | 16.22,16.23 |
| 30: Manufacture of wooden containers | 16.24 |
| 31: Manufacture of other products of wood; manufacture of articles of cork, straw and plaiting materials | 16.29 |
| 32: Manufacture of pulp, paper and paperboard | 17.1 |
| 33: Manufacture of articles of paper and paperboard | 17.2 |
| 34: Printing and reproduction of recorded media | 18 |
| 35: Manufacture of basic chemicals | 20.1 |
| 36: Manufacture of pesticides and other agrochemical products | 20.2 |
| 37: Manufacture of paints, varnishes and similar coatings, printing ink and mastics | 20.3 |

| SUBSECTOR | CNAE-2009 |
|---|------------------|
| 38: Manufacture of soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations | 20.4 |
| 39: Manufacture of other chemical products | 20.5 |
| 40: Manufacture of man-made fibres | 20.6 |
| 41: Manufacture of basic pharmaceutical products | 21.1 |
| 42: Manufacture of pharmaceutical preparations | 21.2 |
| 43: Manufacture of rubber products | 22.1 |
| 44: Manufacture of plastics products | 22.2 |
| 45: Manufacture of glass and glass products | 23.1 |
| 46: Manufacture of refractory and ceramic products, except for those intended for building | 23.2,23.4 |
| 47: Manufacture of clay building materials | 23.3 |
| 48: Manufacture of cement, lime and plaster | 23.5 |
| 49: Manufacture of articles of concrete, cement and plaster | 23.6 |
| 50: Cutting, shaping and finishing of stone | 23.7 |
| 51: Manufacture of abrasive products and non-metallic mineral products n.e.c. | 23.9 |
| 52: Manufacture of basic iron and steel and of ferro-alloys | 24.1 |
| 53: Manufacture of tubes, pipes, hollow profiles and related fittings, of steel | 24.2 |
| 54: Manufacture of other products of first processing of steel | 24.3 |
| 55: Manufacture of basic precious and other non-ferrous metals | 24.4 |
| 56: Casting of metals | 24.5 |
| 57: Manufacture of metal structures and parts of structures | 25.11 |
| 58: Manufacture of doors and windows of metal | 25.12 |
| 59: Manufacture of tanks, reservoirs and containers of metal | 25.2 |
| 60: Manufacture of steam generators, except central heating hot water boilers | 25.3 |
| 61: Manufacture of weapons and ammunition | 25.4 |
| 62: Forging, pressing, stamping and roll-forming of metal; powder metallurgy | 25.5 |
| 63: Treatment and coating of metals | 25.61 |
| 64: Machining | 25.62 |
| 65: Manufacture of cutlery, tools and general hardware | 25.7 |
| 66: Manufacture of other fabricated metal products | 25.9 |
| 67: Manufacture of electronic components and boards | 26.1 |
| 68: Manufacture of computers and peripheral equipment | 26.2 |
| 69: Manufacture of communication equipment | 26.3 |
| 70: Manufacture of consumer electronics | 26.4 |
| 71: Manufacture of instruments and appliances for measuring, testing and navigation; watches and clocks | 26.5 |
| 72: Manufacture of irradiation, electromedical and electrotherapeutic equipment; optical instruments and photographic equipment; magnetic and optical media | 26.6,26.7,26.8 |
| 73: Manufacture of electric motors, generators, transformers and electricity distribution and control apparatus | 27.1 |
| 74: Manufacture of wiring and wiring devices | 27.3 |
| 75: Manufacture of electric lighting equipment | 27.4 |
| 76: Manufacture of domestic appliances | 27.5 |
| 77: Manufacture of batteries and accumulators and other electrical equipment | 27.2,27.9 |
| 78: Manufacture of general-purpose machinery | 28.1 |

| SUBSECTOR | CNAE-2009 |
|---|------------------|
| 79: Manufacture of other general-purpose machinery | 28.2 |
| 80: Manufacture of agricultural and forestry machinery | 28.3 |
| 81: Manufacture of machine tools | 28.4 |
| 82: Manufacture of other special-purpose machinery | 28.9 |
| 83: Manufacture of motor vehicles | 29.1 |
| 84: Manufacture of bodies (coachwork) for motor vehicles; manufacture of trailers and semi-trailers | 29.2 |
| 85: Manufacture of parts and accessories for motor vehicles | 29.3 |
| 86: Building of ships and boats | 30.1 |
| 87: Manufacture of railway locomotives and rolling stock | 30.2 |
| 88: Manufacture of air and spacecraft and related machinery and of military fighting vehicles | 30.3,30.4 |
| 89: Manufacture of transport equipment n.e.c. | 30.9 |
| 90: Manufacture of furniture | 31 |
| 91: Manufacture of jewellery, bijouterie and related articles | 32.1 |
| 92: Manufacture of sports goods, games and toys | 32.3,32.4 |
| 93: Manufacture of medical and dental instruments and supplies | 32.5 |
| 94: Manufacture of musical instruments and Manufacturing n.e.c. | 32.2, 32.9 |
| 95: Repair of fabricated metal products, machinery and equipment | 33.1 |
| 96: Installation of industrial machinery and equipment | 33.2 |