



# COAL

(Solid Fossil Fuels and Manufactured Gases)

## ANNUAL QUESTIONNAIRE

### 2012

and Historical Revisions

July 2013

Attached is the annual questionnaire for coal, gases manufactured from coal, and associated gases which provides for the submission of 2010 data and historical revisions where applicable. Administrations are requested to complete the questionnaire by **30 September 2013 at the latest**. Earlier submissions are welcome. Under the Energy Statistics Regulation – the submission deadline for the EU, the European Economic Area and the candidate countries reporting to the Commission of the European Communities is 30 November 2013.

Please send your questionnaire to:

- International Energy Agency (IEA/OECD), Energy Data Centre  
*(the IEA will forward the data to the United Nations Economic Commission for Europe in Geneva).*
- Commission of the European Communities, Eurostat, Energy Statistics  
*(for Member States of the European Union, EU Candidate Countries and EFTA Countries)*
- United Nations Statistics Division, Energy Statistics Section

Transmission details are provided in the “Data communication procedures” section.



## **REPORTING INSTRUCTIONS**

Data should be reported for calendar years. If fiscal year data have to be used, please state this clearly and specify the period covered.

For consistency between administrations and to conform with computer software, the data reported in this questionnaire should be in whole numbers (i.e. no decimals or fractions) in the unit shown for each table.

The definitions and reporting conventions used in this questionnaire are the same as those used in the other annual questionnaires, (Oil, Natural gas, Renewables, and Electricity and heat). Please ensure that data on fuel used for electricity and heat production reported in this questionnaire are consistent with those reported for the same categories in the Electricity and heat questionnaire.

Please report all data using Gross calorific values except when specifically mentioned that Net values should be used.

Where data are not available, estimates should be given and identified as such in the Remarks page.

Any data under Not elsewhere specified should be explained in the Remarks page.

### **INTERNATIONAL STANDARD INDUSTRIAL CLASSIFICATION**

In 2008, the United Nations and the European Commission have published in parallel their revised classification codes.

- United Nations:  
International Standard Industrial Classification of all Economic Activities – ISIC, Rev.4
- European Commission:  
Statistical classification of economic activities in the European Community NACE, Rev.2

Eurostat and the International Energy Agency jointly produced a correspondence table aimed at providing continuity of time series and have updated the references in the joint questionnaires accordingly.

### **UNITS**

Data for solid fossil fuels (and coal tar) should be reported in kilotonnes (kt). Data for gases should be reported in Terajoules (TJ) on the basis of gross calorific values (GCV). Data for calorific values should be reported on an as is basis for both net and gross, and should be in kJ/kg (MJ/t). An as is basis includes all ash and moisture, and products with high ash or moisture may have calorific values on an as is basis considerably lower than the product classification boundaries on a moist but ash free, or dry mineral matter free basis.

Report all figures to the nearest whole number of kilotonnes, terajoules, or kilojoules per kilogram.

# DEFINITIONS FOR SOLID FOSSIL-FUELS AND MANUFACTURED GASES

## 1. **Hard coal:**

Hard coal refers to coal of gross calorific value equal to or greater than 24 000 kJ/kg on an ash-free but moist basis and with a mean random reflectance of vitrinite of at least 0.6 percent. Hard coal comprises:

- **Anthracite:** High rank coal used for industrial and residential applications. It has generally less than 10% volatile matter and a high carbon content (about 90% fixed carbon). Its gross calorific value is equal to or greater than 24 000 kJ/kg on an ash-free but moist basis.
- **Coking coal:** Bituminous coal with a quality that allows the production of a coke suitable to support a blast furnace charge. Its gross calorific value is equal to or greater than 24 000 kJ/kg on an ash-free but moist basis.
- **Other bituminous coal:** Coal mainly used for steam raising purposes and includes all bituminous coal that is not included under coking coal nor anthracite. It is characterized by higher volatile matter than anthracite (more than 10%) and lower carbon content (less than 90% fixed carbon). Its gross calorific value is equal to or greater than 24 000 kJ/kg on an ash-free but moist basis. If bituminous coal is used in coke ovens it should be reported as coking coal.

## 2. **Sub-bituminous coal:**

Non-agglomerating coal with a gross calorific value equal to or greater than 20 000 kJ/kg and less than 24 000 kJ/kg containing more than 31% volatile matter on a dry mineral matter free basis.

## 3. **Lignite:**

Non-agglomerating coal with a gross calorific value less than 20 000 kJ/kg and greater than 31% volatile matter on a dry mineral matter free basis.

## 4. **Patent fuel:**

A composition fuel manufactured from hard coal fines with the addition of a binding agent. The amount of patent fuel produced may, therefore, be slightly higher than the actual amount of coal consumed in the transformation process.

## 5. **Coke oven coke:**

The solid product obtained from carbonization of coal, principally coking coal, at high temperature, it is low in moisture and volatile matter. Coke oven coke is used mainly in the iron and steel industry acting as energy source and chemical agent. Coke breeze and foundry coke are included in this category. Semi-coke (a solid product obtained from carbonization of coal at low temperature) should be included in this category. Semi-coke is used as a domestic fuel or by the transformation plant itself. This heading also includes coke, coke breeze and semi-coke made from lignite/brown coal.

## 6. **Gas coke:**

By-product of hard coal used for production of town gas in gas works. Gas coke is used for heating purposes.

## 7. **Coal tar:**

A result of the destructive distillation of bituminous coal or of the low-temperature carbonisation of brown coal. Coal tar from bituminous coal is the liquid by-product of the distillation of coal to make coke in the coke oven process. Coal tar can be further distilled into different organic products (e.g. benzene, toluene, naphthalene), which normally would be reported as a feedstock to the petrochemical industry.

**8. BKB (Brown coal briquettes):**

BKB is a composition fuel manufactured from lignite or sub-bituminous coal, produced by briquetting under high pressure without the addition of a binding agent.

**9. Gas works gas:**

Covers all types of gases produced in public utility or private plants, whose main purpose is manufacture, transport and distribution of gas. It includes gas produced by carbonization (including gas produced by coke ovens and transferred to gas works gas), by total gasification with or without enrichment with oil products (LPG, residual fuel oil, etc.), and by reforming and simple mixing of gases and/or air, reported under the rows, From other sources. Under the transformation sector identify amounts of gas work gas transferred to blended natural gas which will be distributed and consumed through the natural gas grid. The quantity of fuel should be reported on a gross calorific value basis.

The production of other coal gases (i.e. coke oven gas, blast furnace gas and other recovered gases) should be reported in the columns concerning such gases, and not as production of gas works gas. The coal gases transferred to gas works plants should then be reported (in their own column) in the transformation sector in the gas works plants row. The total amount of gas works gas resulting from transfers of other coal gases should appear in the production line for gas works gas.

**10. Coke oven gas:**

Obtained as a by-product from the manufacture of coke oven coke for the production of iron and steel. The quantity of fuel should be reported on a gross calorific value basis.

**11. Blast furnace gas:**

Produced during the combustion of coke in blast furnaces in the iron and steel industry. It is recovered and used as a fuel partly within the plant and partly in other steel industry processes or in power stations equipped to burn it. The quantity of recuperated fuel should be reported on a gross calorific value basis. In addition, off-gases from all iron-production reduction processes utilising air as the oxygen source (such as Direct reduced iron) should be reported here.

**12. Other recovered gases:**

By-product of the production of steel in an oxygen furnace, recovered on leaving the furnace. The gases are also known as converter gas, LD gas or BOS gas. The quantity of recuperated fuel should be reported on a gross calorific value basis. Also covers non-specified manufactured gases not mentioned above, such as combustible gases of solid carbonaceous origin recovered from manufacturing and chemical processes not elsewhere defined.

**13. Peat:**

A combustible soft, porous or compressed, fossil sedimentary deposit of plant origin with high water content (up to 90 percent in the raw state), easily cut, and of light to dark brown colour. Peat used for non-energy purposes should not included here. Milled peat is included here.

**14. Peat products:**

Products such as peat briquettes derived directly or indirectly from sod peat and milled peat.

**15. Oil shale and oil sands:**

Oil shale and oil sands are sedimentary rock which contains organic matter in the form of kerogen. Kerogen is a waxy hydrocarbon-rich material regarded as a precursor of petroleum. Oil shale may be burned directly or processed by heating to extract shale oil. Shale oil and other products derived from liquefaction should be reported on the Annual oil questionnaire in Other hydrocarbons.

## **GEOGRAPHICAL NOTES**

**Australia** excludes the overseas territories;

**Denmark** excludes the Danish Faroes and Greenland;

**France** includes Monaco and excludes the French overseas territories Guadeloupe, Martinique, Guyane, Reunion, St.-Pierre and Miquelon, New Caledonia and French Polynesia, Wallis and Futuna, Mayotte;

**Italy** includes San Marino and the Vatican;

**Japan** includes Okinawa;

**The Netherlands** excludes Suriname and the Netherlands Antilles;

**Portugal** includes the Açores and Madeira;

**Spain** includes the Canary Islands, the Balearic Islands and Ceuta and Melilla;

**Switzerland** does not include Liechtenstein;

**United States** includes 50 States and the District of Columbia, the U.S. Virgin Islands, Puerto Rico and Guam; However, foreign trade to and from all U.S. territories is included in U.S. trade. Trade between all U.S. territories and the U.S. is considered to be internal trade and not included in imports or exports.

# INSTRUCTIONS FOR COMPLETING INDIVIDUAL TABLES IN THE QUESTIONNAIRE

## TABLE 1 SUPPLY AND TRANSFORMATION SECTORS

For a proper appreciation of the reporting of solid fossil fuels, wastes and manufactured gases used in the generation of electricity and heat, respondents are urged to read the note "Definitions for electricity and heat", reproduced in Annex 1.

### 1. Indigenous production:

Report the quantities of fuels extracted or produced, calculated after any operation for removal of inert matter. In general, production includes the quantities consumed by the producer in the production process (e.g. for heating or operation of equipment and auxiliaries) as well as supplies to other producers of energy for transformation or other uses.

- *of which underground*: Report the quantity of underground production.

- *of which surface*: Report the quantity of surface production.

### 2. From other sources:

This consists of two components.

- Firstly, report recovered slurries, middlings and other low-grade coal products, which cannot be classified according to type of coal. This includes coal recovered from waste piles and other waste receptacles.
- Secondly, report supplies of fuel of which production is covered in other fuel energy balances, but for which consumption will occur in the coal energy balance. Further details of this second component is to be provided as memo items:

#### **Memo items: From other sources**

- *of which from oil products*  
(e.g.: petroleum coke addition to coking coal for coke ovens)
- *of which from natural gas*  
(e.g.: natural gas addition to gas works gas for direct final consumption)
- *of which from renewables*  
(e.g.: industrial waste as binding agent in the manufacturing of patent fuel)

### 3. Imports and Exports:

Report the quantity of fuels obtained from or supplied to other countries. Amounts are considered as imported or exported when they have crossed the political boundary of the country, whether customs clearance has taken place or not. The amount of fuels in transit (that is, on route through the country) should not be included (see notes on Tables 2 and 3).

### 4. International marine bunkers:

Report the quantities of fuels delivered to ships of all flags that are engaged in international navigation. The international navigation may take place at sea, on inland lakes and waterways, and in coastal waters. Exclude consumption by ships engaged in domestic navigation (see Domestic navigation). The domestic/international split should be determined on the basis of port of departure and port of arrival, and not by the flag or nationality of the ship. Exclude consumption by fishing vessels (see Other sectors - Fishing) and consumption by military forces (see Other sectors - Not elsewhere specified - Other).

## 5. Stock changes:

Report the difference between the opening stock level and closing stock level for stocks held on national territory. A stock build is shown as a negative number and a stock draw is shown as a positive number.

## 6. Gross consumption:

This is defined as:

- Indigenous production
- + From other sources
- + Imports (balance)
- Exports (balance)
- International marine bunkers
- + Stock changes

## 7. Statistical differences:

Report the difference between the calculated gross consumption (as defined above) and the observed gross consumption. This item may include changes in stocks at final consumers when this cannot be specified as part of Item 7: Stock changes. Reasons for any major differences should be stated in the section provided for on the Remarks page.

## 8. Transformation sector:

Report the quantities of fuels used for the primary or secondary conversion of energy (e.g. coal to electricity, coke oven gas to electricity) or used for the transformation to derived energy products (e.g.: coking coal to coke). The Transformation sector is divided into the following sub-sectors:

- **Main activity producer electricity plants** - Report quantities of fuels used to produce electricity (Fuels used by plants containing at least one CHP unit are to be reported under *Main activity producer CHP*).
- **Main activity producer combined heat and power (CHP) plants** - Report quantities of fuels used to produce electricity and heat.
- **Main activity producer heat plants** - Report quantities of fuels used to produce heat.
- **Autoproducer electricity plants** - Report quantities of fuels used to produce electricity (Fuels used by plants containing at least one CHP unit are to be reported under *Autoproducer CHP plants*).
- **Autoproducer combined heat and power (CHP) plants** - Report quantities of fuels that correspond to the quantity of electricity produced and heat sold.
- **Autoproducer heat plants** - Report quantities of fuels that correspond to the quantity of heat sold.
- **Patent fuel plants** - Report quantities of hard coal used to produce patent fuel.
- **Coke ovens** - Report quantities of coking coal, coal breeze and lignite or sub-bituminous coal used in coke ovens. Coal products used for heating and operation of equipment should not be reported here, but reported as consumption in the Energy sector.
- **BKB / PB plants** - Report the quantity of lignite or sub-bituminous coal used for the production of BKB and the quantity of peat for peat briquettes (PB) and other peat products.
- **Gas works** - Report quantities of coal, coal products, coke oven gas and substitute natural gas used to produce gas in gas works and coal gasification plants. Products used as a fuel for heating and operation of equipment should not be included here, but reported as consumption in the Energy sector.
- **Blast furnaces** - Report actual quantities of coking coal and/or bituminous coal (generally referred to as PCI) and coke oven coke transformed in blast furnaces. Amounts used as a fuel for heating and operation of blast furnaces (e.g. blast furnaces gas) should not be included here, but reported as consumption in the Energy sector.



- **Coal liquefaction plants** - Report quantities of coal, oil shale and tar sands used to produce synthetic oil. Shale oil and other products derived from liquefaction should be reported on the Annual oil questionnaire.
- **For blended natural gas** - Report quantities of coal gases blended with natural gas.
- **Not elsewhere specified (Transformation)** - Data should be reported here only as a last resort. If a final breakdown into the above sub-sectors is not available, administrations should provide estimates wherever possible. Please explain on the Remarks page, the basis for any estimates.

## ENERGY SECTOR AND FINAL CONSUMPTION

### 1. Energy sector:

Report fuels consumed by the energy industry to support the extraction (mining, oil and gas production) or plant operations of transformation activities. For example: fuel used for heating, lighting, or operating pumps/compressors, or consumed as energy into furnaces or ovens. Note that quantities of fuels transformed into another energy form should be reported under the Transformation sector. Consumption used in support of the operation of pipelines (oil, gas and coal slurry) should be reported in the Transport sector.

The Energy sector covers ISIC<sup>1</sup> Divisions 05, 06, 19 and 35, Group 091, Class 0892 and 0721 (NACE<sup>2</sup> Divisions 05, 06, 19 and 35, Group 09.1, Class 08.92 and 07.21). The Energy sector includes the manufacture of chemical materials for atomic fission and fusion and the products of these processes. Fuels used in the manufacture of fuel briquettes and packaged fuel from coal or lignite and consumption in coke ovens and other transformation industries should also be reported here.

The Energy sector is divided into the following sub-sectors:

- **Own use in electricity, CHP and heat plants** - Report fuels consumed as energy at electricity plants, combined heat and power plants (CHP) and heat plants.
- **Coal mines** - Report fuels consumed as energy to support the extraction and preparation of coal within the coal mining industry. Coal burned in pithead power stations should be reported in the Transformation sector.
- **Patent fuel plants** - Report fuels consumed as energy at patent fuel plants.
- **Coke ovens** - Report fuels consumed as energy at coking plants.
- **BKB / PB plants** - Report fuels consumed as energy at briquetting plants.
- **Gas works** - Report fuels consumed as energy at gas works and coal gasification plants.
- **Blast furnaces** - Report fuels consumed as energy used in blast furnaces.
- **Oil refineries** - Report fuels consumed as energy at oil refineries.
- **Coal liquefaction plants** - Report fuels consumed as energy at coal liquefaction plants.
- **Not elsewhere specified (Energy)** - Report here fuels consumed as energy for other purposes not reported above. Please explain on the Remarks page, the basis for any estimates.

### 2. Distribution losses:

Report all losses which occur due to transport and distribution, as well as flaring of manufactured gases.

### 3. Total final consumption:

Is defined as:

Total non-energy use  
+ Final energy consumption (Industry + Transport + Other sectors).

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1. International Standard Industrial Classification of all Economic Activity, Series M, No 4/Rev. 4, United Nations, New York, 2008

2. Statistical classification of the economic activities in the European Community (NACE Rev.2) EC-Eurostat 2008.

It excludes deliveries for transformation and/or use by the energy producing industries, and the distribution losses.

#### 4. **Non-energy use:**

Report energy products used as raw materials in the different sectors; that is, not consumed as a fuel or transformed into another fuel. Report the Non-energy use by Sector.

- **Industry, Transformation and Energy sectors** - Non-energy use in all Industry, Transformation and Energy sub-sectors. Report here, for instance, coal used to make methanol or ammonia.
- **Of which: Chemical and petrochemical sector** - Non-energy use of coal includes uses as feedstocks to produce fertiliser and as feedstocks for other petrochemical products. ISIC Division 201 (NACE Division 20.1).
- **Transport sector** - Non-energy use in all Transport sub-sectors.
- **Other sectors** - Non-energy use in Commercial and public services, Residential, Agriculture and Not elsewhere specified - Other sectors. Please explain on the Remarks page, the basis for any estimates.

### ENERGY END-USE SPECIFICATION

#### 1. **Final energy consumption:**

Report total energy consumption in industry, transport and other sectors.

#### 2. **Industry:**

Report fuels consumed by the industrial undertaking in support of its primary activities.

Report quantities of fuels consumed in heat or CHP plants for the production of heat used by the plant itself. Quantities of fuels consumed for the production of heat that is sold, and for the production of electricity should be reported under the appropriate Transformation sector.

- **Iron and steel** - ISIC Group 241 and Class 2431. (NACE Groups 24.1, 24.2, 24.3 and Classes 24.51 and 24.52). Report pulverised coal injection (PCI) into blast furnaces under blast furnaces, Transformation sector, Table 1, item 25. To avoid double counting, fuels used in blast furnaces should be reported in the Transformation sector.
- **Chemical and petrochemical** - ISIC and NACE Divisions 20 and 21.
- **Non-ferrous metals** - ISIC Group 242 and Class 2432 (NACE Group 24.4 and Classes 24.53 and 24.54).
- **Non-metallic minerals** - ISIC and NACE Division 23. Report glass, ceramic, cement and other building materials industries.
- **Transport equipment** - ISIC and NACE Divisions 29 and 30.
- **Machinery** - Report fabricated metal products, machinery and equipment other than transport equipment. ISIC and NACE Divisions 25, 26, 27 and 28.
- **Mining** (excluding energy producing industries) **and quarrying** - ISIC Divisions 07 and 08 and Group 099 (NACE Divisions 07 and 08 and Group 09.9).
- **Food, beverages and tobacco** - ISIC and NACE Divisions 10, 11 and 12.
- **Paper, pulp and printing** - ISIC and NACE Divisions 17 and 18. Includes production of recorded media.
- **Wood and wood products** (other than pulp and paper) - ISIC and NACE Division 16.
- **Construction** - ISIC and NACE Divisions 41, 42 and 43.
- **Textile and leather** - ISIC and NACE Divisions 13, 14 and 15.
- **Not elsewhere specified (Industry)** - If your country's industrial classification of fuels consumption does not correspond to the above ISIC or NACE codes, please estimate the breakdown by industry and include in Not elsewhere specified (Industry) only consumption in

sectors which is not covered above. ISIC and NACE Divisions 22, 31 and 32 are included here. Please explain on the Remarks page, the basis for any estimates.

### 3. **Transport:**

Report fuels used in all transport activities irrespective of the economic sector in which the activity occurs with the exception of military use – see Not elsewhere specified (Other). Report fuels consumed in the following ISIC and NACE categories: Divisions 49, 50 and 51.

- **Rail** - Report all consumption for use in rail traffic, including industrial railways and transport as part of urban or suburban transport systems..
- **Domestic navigation** - Report fuels delivered to vessels of all flags not engaged in international navigation (see International marine bunkers). The domestic/international split should be determined on the basis of port of departure and port of arrival and not by the flag or nationality of the ship. Note that this may include journeys of considerable length between two ports in a country (e.g. San Francisco to Honolulu).
- **Not elsewhere specified (Transport)** - Report fuels used for transport activities not included elsewhere. Please state on the Remarks page what is included under this heading.

### 4. **Other sectors:**

- **Commercial and public services** - ISIC and NACE Divisions 33, 36, 37, 38, 39, 45, 46, 47, 52, 53, 55, 56, 58, 59, 60, 61, 62, 63, 64, 65, 66, 68, 69, 70, 71, 72, 73, 74, 75, 77, 78, 79, 80, 81, 82, 84 (excluding Class 8422 [ISIC] and Class 84.22 [NACE]), 85, 86, 87, 88, 90, 91, 92, 93, 94, 95, 96 and 99. Report fuels consumed by business and offices in the public and private sectors.
- **Residential** - Report fuels consumed by all households including "households with employed persons ISIC and NACE Divisions 97 and 98."
- **Agriculture/Forestry** - Report fuels consumed by users classified as agriculture, hunting and forestry by ISIC as follows: ISIC Divisions 01 and 02 (NACE Divisions 01 and 02).
- **Fishing** - Report fuels delivered for inland, coastal and deep-sea fishing. Fishing should cover fuels delivered to ships of all flags that have refueled in the country (include international fishing). Also include energy used in the fishing industry as specified in ISIC and NACE Division 03.
- **Not elsewhere specified (Other)** - Report activities not included elsewhere. This category includes military fuel use for all mobile and stationary consumption (e.g. ships, aircraft, road and energy used in living quarters), regardless of whether the fuel delivered is for the military of that country or for the military of another country. Please specify on the Remarks page what is included under this heading.

**TABLE 2 and TABLE 3  
IMPORTS AND EXPORTS**

For geographical definitions see Geographical notes section.

Amounts are considered as imported or exported when they have crossed the political boundaries of the country, whether customs clearance has taken place or not.

The tables concern imports of coal by ultimate origin (the country in which the coal was produced) for use in the country and exports of coal produced to the ultimate country of consumption.

Where no origin or destination can be reported, or where the country is not specified in the table, one of the 'Other' categories may be used. Please specify the country of origin or destination on the Remarks page if the information is available.

Statistical differences may arise if only total import and export are available on the above basis, while the geographical breakdown is based on a different survey, source or concept. In this case, report the differences in the 'Not elsewhere specified' category.

**TABLE 4  
AVERAGE CALORIFIC VALUES**

Please report both *gross* and *net* calorific values. Net data will be used for calculating the conversion factors for the historical and forecast Energy balances. Where only net values are available, please calculate *gross* by adding 5% to the net value.

If detailed information on calorific values for each flow is not available, please report an average value. Calorific values should be reported in megajoules per tonne where available. If calorific values are reported in other units, please indicate what units are used.

## ANNEX 1: DEFINITIONS FOR ELECTRICITY AND HEAT

The questionnaires seek information on the fuel requirements for, and the generation of electricity and heat according to producer and generating plant types.

### Types of Producer:

Producers are classified according to the purpose of production:

- **Main activity producer** undertakings generate electricity and/or heat for sale to third parties, *as their primary activity*. They may be privately or publicly owned. Note that the sale need not take place through the public grid.
- **Autoproducer** undertakings generate electricity and/or heat, wholly or partly for their own use as an activity which supports their primary activity. They may be privately or publicly owned.

### Types of plant:

The separation of fuel use and electricity/heat generation statistics according to the type of plant (i.e. electricity, heat or combined electricity and heat) will normally be conducted using statistics collected at the plant level, i.e. generating stations comprising one or more generating sets or units. The definitions given below have been prepared on this assumption. However, when a country has data for the electricity and heat output and fuel inputs for **each of the generating units** within a plant, these data should be used to prepare the report. In this case the definitions set out below will need to be interpreted on the unit basis rather than on the plant basis.

- **Electricity plant** refers to a plant which is designed to produce only electricity. If one or more units of the plant is a CHP unit (*see below*) then the whole plant is designated as a CHP plant.
- **Combined heat and power (CHP) plant** refers to a plant which is designed to produce both heat and electricity. It is sometimes referred to as a co-generation power station. If possible, fuel inputs **and** electricity/heat outputs should be reported on a unit basis rather than on a plant basis. However, if data are not available on a unit basis, the convention for defining a CHP plant noted above should be adopted.
- **Heat plant** refers to a plant which is designed to produce only heat. Note: Heat delivered from CHP or Heat plants may be used for process or space heating purposes in any sector of economic activity including the Residential sector.

It should be noted that:

- **Electricity** production reported for *Autoproducer electricity* or *Autoproducer CHP* should be the total quantity of electricity generated.
- All **heat** production from *Main activity producer - CHP* and *Main activity producer - Heat* plants should be reported. However, heat production reported for *Autoproducer CHP* and *Autoproducer heat* plants should comprise only the heat sold to third parties. Heat consumed by autoproducers should not be included.
- Report in the transformation sector only those quantities of fuels used to generate the amounts of electricity and heat reported in the questionnaire. The quantities of fuel consumed for the production of heat which is not sold will remain in the figures for the final consumption of fuels by the relevant sector of economic activity.

The reporting requirements for *transformation sector* activities can be summarised schematically as follows:

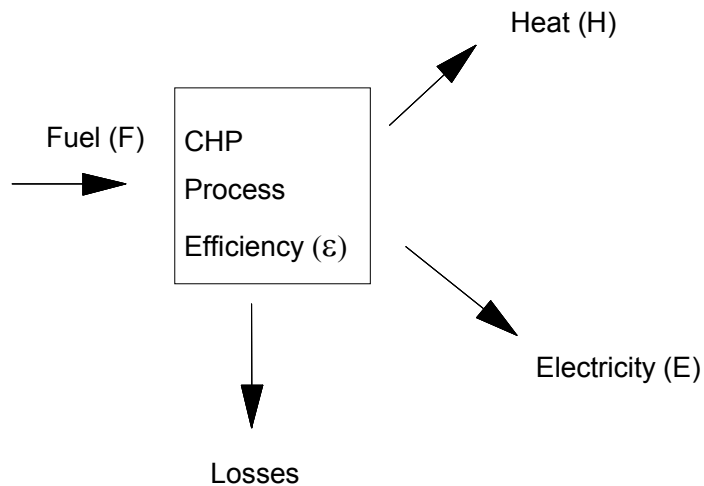
	Electricity plant	CHP plant	Heat plant
<b>Main activity producer</b>	Report all production and all fuel used	Report all electricity and heat produced and all fuel used	Report all heat produced and all fuel used
<b>Autoproducer</b>		Report all electricity produced and only heat <b>sold</b> with corresponding fuel used	Report only heat <b>sold</b> and corresponding fuel used

In this questionnaire the term **Combustible fuels** refers to fuels that are capable of igniting or burning, i.e. reacting with oxygen to produce a significant rise in temperature.

## METHODOLOGY FOR APPORTIONING FUEL INPUT IN A CHP PLANT

In cases where national administrations have not adopted a methodology for this purpose, the following approach is proposed where the fuel input is divided between electricity and heat in proportion to their shares of the CHP useful energy output.

In CHP units the relationship between the fuel input and the output electricity and heat, without regard to the type of thermodynamic process, may be modelled simply in the diagram below.



The following relationship defining overall efficiency ( $\epsilon$ ) is:

$$\epsilon = (H + E) / F$$

The definition given proposes that the imputed fuel use for electricity,  $F_e$ , and (as a consequence) that for heat,  $F_h$ , are:

$$F_e = F - H / \epsilon = F (E / (E + H))$$

$$F_h = F - E / \epsilon = F (H / (E + H))$$

The formula should be used only where national administrations have not already adopted a methodology for the purpose of reporting CHP on a unit basis.

## ANNEX 2: LIST OF ABBREVIATIONS

BFG	Blast furnace gas.
BKB	brown coal briquettes (braunkohlebriketts)
BOS	basic oxygen steelmaking
CCGT	combined-cycle gas turbine
CHP	combined heat and power
CO	carbon monoxide
CO <sub>2</sub>	carbon dioxide
COG	coke-oven gas
CV	calorific value
dmmf	dry, mineral matter free. Adjustment factor for the calorific value of coals accounting for ash and inherent moisture, but also elements like Sulphur and Nitrogen which will not remain after combustion.
DRI	direct reduced iron.
EFTA	European Free Trade Association. (Iceland, Liechtenstein, Norway and Switzerland)
EU	European Union
GCV	gross calorific value
IEA	International Energy Agency
IGCC	Integrated gasification combined cycle (plant)
ISIC	International Standard Industrial Classification
J	joule
kJ	kilojoule
kWh	kilowatt/hour, or one watt x one hour x 10 <sup>3</sup>
LD Gas	LD denotes Linz and Donawitz - two towns in Austria that pioneered use of oxygen lances in basic oxygen steel furnaces
LNG	liquefied natural gas
LPG	liquefied petroleum gas; refers to propane, butane and their isomers, which are gases at atmospheric pressure and normal temperature
Mtce	million tonnes of coal equivalent (1 Mtce=0.7 Mtoe)
Mtoe	million tonnes of oil equivalent. One Mtoe is 1 x 10 <sup>16</sup> joules.
MW	megawatt, or one watt x 10 <sup>6</sup>
MAFB	moist, ash-free basis
NACE	nomenclature statistique des activités économiques in the European Community
NCV	net calorific value
NO <sub>x</sub>	nitrogen oxides
OECD	Organisation for Economic Co-operation and Development
PB	peat briquettes
PCI	pulverized coal injection
tce	tonne of coal equivalent = 0.7 toe

TFC	total final consumption
TJ	terajoule, or one joule x 10 <sup>12</sup>
toe	tonne of oil equivalent
TPES	total primary energy supply
UNECE	United Nations Economic Commission for Europe
UNFCCC	United Nations Framework Convention on Climate Change
UNSD	United Nations Statistics Division
UNIPEDA	International Union of Producers and Distributors of Electrical Energy (in 2002 merged with Eurelectric, and is now European Grouping of Electricity Undertakings, EEIG)
VOCs	volatile organic compounds



### ANNEX 3: Table relations within the Coal questionnaire

