



RENEWABLES

ANNUAL QUESTIONNAIRE

2016

AND HISTORICAL REVISIONS

July 2017

Attached is the annual questionnaire for renewables and waste which provides for the submission of 2016 data and historical revisions where applicable. Administrations are requested to complete the questionnaire at the latest **30 September 2017**. Earlier submissions are welcome. The transmission deadline for countries reporting to Eurostat is 30 November 2017 (Regulation (EC) No 1099/2008 on energy statistics).

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).
- European Commission, Eurostat, Energy Statistics
(for the EU Member States, European Economic Area countries, EU Candidate Countries and Potential Candidates, Energy Community Contracting Parties)
- United Nations Statistics Division, Industrial and Energy Statistics Section

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

Data Communication Procedures

IEA

31-35, rue de la Fédération, 75739, Paris, Cedex 15, France

Please send the completed questionnaire to the IEA in a CSV or Excel file as an e-mail attachment to:
renewaq@iea.org

For questions regarding the questionnaire, contact the above e-mail address.

Eurostat

European Commission – Eurostat, Unit E.5: Energy, 2920 Luxembourg
(for the EU Member States, European Economic Area countries, EU Candidate Countries and Potential Candidates, Energy Community Contracting Parties)

The completed questionnaire should be transmitted via the **Single Entry Point (SEP)** following the implementing procedures of **eDAMIS** (Electronic Data Files Administration And Management Information System): <https://webgate.ec.europa.eu/edamis/> selecting the electronic data collection ENERGY_RENEW_A and indicating the year 2016.

Countries reporting to Eurostat are reminded of the [Revision Policy for Energy Statistics](#). If you plan to revise any data in period 1990-2013, please remember to transmit to Eurostat the [Revision pre-announcement form](#) as soon as possible.

E-MAIL ADDRESS estat-energy@ec.europa.eu

NOTE

For questions regarding the questionnaire, contact Mr. Fernando Diaz Alonso, + 352 4301 30275
FERNANDO.DIAZ-ALONSO@ec.europa.eu

United Nations

United Nations Statistics Division, Energy Statistics Section
2 UN plaza, DC2-1414, New York, NY 10017, USA

The completed questionnaire should be transmitted by e-mail to:
Mr. Ralf Becker, Chief, Industrial and Energy Statistics Section, United Nations Statistics Division

E-MAIL ADDRESS energy_stat@un.org

NOTE

Fax: (1-212)-963-0623

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 (Coal, Oil, Natural gas, 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 Net calorific values.

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

Report all figures to the nearest whole number.

Where data are not available, estimates should be given and identified as such 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.

DEFINITIONS OF RENEWABLE ENERGY AND WASTE SOURCES

While there are a limited number of renewable energy and waste sources, there are a large number of technologies allowing their exploitation, most of which are still at the research/development stage or have not yet reached commercial maturity. The renewable energy and waste sources and associated technologies listed below are those which are considered to be economically viable or approaching economic viability.

1. Hydro power

Potential and kinetic energy of water converted into electricity in hydroelectric plants. Electricity from pure pumped storage plants and the pumped storage part from mixed plants should be reported in ‘Hydro’, under ‘Pumped Hydro’. Electricity from conventional hydro plants and the genuine production from mixed plants should be reported in ‘Hydro’, under detailed plant sizes. Detailed plant sizes should be reported net of pumped storage. The sum of < 1 MW, 1 to <10 MW, 10 MW and pumped hydro should equal the total ‘Hydro’.

2. Geothermal

Energy available as heat emitted from within the earth’s crust, usually in the form of hot water or steam. It is exploited at suitable sites:

- for electricity generation using dry steam or high enthalpy brine after flashing
- directly as heat for district heating, agriculture, etc.

3. Solar energy

Solar radiation exploited for hot water production and electricity generation. Passive solar energy for the direct heating, cooling and lighting of dwellings or other buildings is *not* included.

- **Solar photovoltaic** converts sunlight into electricity by the use of solar cells usually made of semi-conducting material which exposed to light will generate electricity.
- **Solar thermal** can consist of:
 - a) solar thermal-electric plants, or
 - b) equipment for the production of domestic hot water or for the seasonal heating of swimming pools (e.g. flat plate collectors, mainly of the thermosyphon type)

4. Tide, wave, ocean

Mechanical energy derived from tidal movement, wave motion or ocean current and exploited for electricity generation.

5. Wind

Kinetic energy of wind exploited for electricity generation in wind turbines.

6. Industrial waste (non-renewable)

Report waste of industrial non-renewable origin (solids or liquids) combusted directly for the production of electricity and/or heat. The quantity of fuel used should be reported on a **net** calorific value basis. Renewable industrial waste should be reported in the Solid biofuels, Biogases and/or Liquid biofuels categories.

7. Municipal waste

- **Renewable:** Report that portion of waste produced by households, industry, hospitals and the tertiary sector which is biological material collected by local authorities and incinerated at specific installations. The quantity of fuel used should be reported on a net calorific value basis.
- **Non-Renewable:** Report that portion of waste produced by households, industry, hospitals and the tertiary sector which is non-biological material collected by local authorities and incinerated at specific installations. The quantity of fuel used should be reported on a net calorific value basis.

8. Solid biofuels

Covers organic, non-fossil material of biological origin which may be used as fuel for heat production or electricity generation. It comprises:

- **Charcoal:** covers the solid residue of the destructive distillation and pyrolysis of wood and other vegetal material.
- **Fuelwood, wood residues and by-products:** Fuelwood or firewood (in log, brushwood, pellet or chip form) obtained from natural or managed forests or isolated trees. Also included are wood residues used as fuel and in which the original composition of wood is retained. Charcoal and black liquor are excluded. The quantity of fuel used should be reported on a **net** calorific value basis.
 - **Wood pellets:** Wood pellets are a cylindrical product which has been agglomerated from wood residues by compression with or without the addition of a small quantity of binder. The pellets have a diameter not exceeding 25 mm and a length not exceeding 45 mm. Note: EU countries should refer to Commission Regulation (EU) No 1006/2011 of 27 September 2011 amending Annex I to Council Regulation (EEC) NO 2658/87 on the tariff and statistical nomenclature and on the Common Customs Tariff.
- **Black liquor:** Energy from the alkaline-spent liquor obtained from the digesters during the production of sulphate or soda pulp required for paper manufacture.
- **Bagasse:** Fuel obtained from the fibre which remains after juice extraction in sugar cane processing.
- **Animal waste:** Energy from excreta of animals, meat and fish residues which, when dry, are used directly as a fuel. This excludes waste used in anaerobic fermentation plants. Fuel gases from these plants are included under biogases.
- **Other vegetal materials and residuals:** Biofuels not specified elsewhere and including straw, vegetable husks, ground nut shells, pruning brushwood, olive pomace and other wastes arising from the maintenance, cropping and processing of plants.

9. Biogases

Gases composed principally of methane and carbon dioxide produced by anaerobic fermentation of biomass, or by thermal processes.

- **Landfill gas:** formed by the anaerobic digestion of landfill waste. The quantity of fuel used should be reported on a **net** calorific value basis.
- **Sewage sludge gas:** produced from the anaerobic fermentation of sewage sludge. The quantity of fuel used should be reported on a **net** calorific value basis.
- **Other biogases from anaerobic digestion:** such as biogases produced from the anaerobic fermentation of animal slurries and of waste in abattoirs, breweries and other agro-food industries. The quantity of fuel used should be reported on a **net** calorific value basis.
- **Biogases from thermal processes:** biogases produced from thermal processes (by gasification or pyrolysis) of biomass.

10. Liquid biofuels

The quantities of liquid biofuels reported in this category should relate only to the quantities of the pure biofuel. Indeed, liquid biofuels blended with fossil fuels must be reported in the oil questionnaire. Report under this category the following:

- **Biogasoline:** This category includes bioethanol (ethanol produced from biomass and/or the biodegradable fraction of waste), biomethanol (methanol produced from biomass and/or the biodegradable fraction of waste), bioETBE (ethyl-tertio-butyl-ether produced on the basis of bioethanol; the percentage by volume of bioETBE that is calculated as biofuel is 47%) and bioMTBE (methyl-tertio-butyl-ether produced on the basis of biomethanol: the percentage by volume of bioMTBE that is calculated as biofuel is 36%).
 - Of which Bioethanol: this category includes ethanol produced from biomass
- **Bio jet kerosene:** Liquid biofuels derived from biomass and blended with or replacing Jet kerosene.
- **Biodiesels:** This category includes biodiesel (a methyl-ester produced from vegetable or animal oil, of diesel quality), biodimethylether (dimethylether produced from biomass), Fischer Tropsch (Fischer Tropsch produced from biomass), cold pressed biooil (oil produced from oil seed through mechanical processing only).
- **Other liquid biofuels:** This category includes liquid biofuels, used directly as fuel, not included in the definitions of biogasoline, biodiesel or bio jet kerosene and liquid biofuels consumption that cannot be reported under the right category because of missing information.

Note: Table 1 requests data for two categories of Liquid biofuels: Biodiesels and Other liquid biofuels. Table 2 requests that Liquid biofuels be split into five categories: **Biogasoline, of which Bioethanol, Bio jet kerosene, Biodiesels and Other liquid biofuels**. As a consequence, in Table 1, electricity and heat production from **Other liquid biofuels could also contain small amounts of Biogasoline and Bio jet kerosene**. This difference in classification was made in order to reduce the amount of information requested because it is not expected that large quantities of Biogasoline and Bio jet kerosene are being used in the transformation sector to generate electricity and heat.

Imports, exports and final consumption of liquid biofuels refer to quantities that have not been blended with transport fuels (i.e. in their pure form). Trade of liquids biofuels blended to transport fuels should be reported in the Oil questionnaire.

GEOGRAPHICAL NOTES

Australia excludes the overseas territories;

Denmark excludes the Faroe Islands and Greenland;

France includes Monaco and excludes the following overseas departments and territories: French Guiana, French Polynesia, Guadeloupe, Martinique, Mayotte, New Caledonia, Réunion, Saint-Pierre and Miquelon, and Wallis and Futuna;

Italy includes San Marino and the Holy See;

Japan includes Okinawa;

The Netherlands excludes Aruba, Curaçao, Suriname and the other former Netherland Antilles (Bonaire, Saba, Saint Eustatius and Sint Maarten);

Portugal includes the Azores and Madeira;

Spain includes the Canary Islands;

Switzerland does not include Liechtenstein

United States: includes 50 States and the District of Columbia

INSTRUCTIONS FOR COMPLETING INDIVIDUAL TABLES IN THE QUESTIONNAIRE

TABLE 1 GROSS ELECTRICITY AND HEAT PRODUCTION

Report electricity generation (MWh) and heat production (TJ) in Main Activity Producers and Autoproducers. Total electricity and heat production should be reported in the case of the Main Activity Producers supply system. In the case of Autoproducers, report total electricity generation but only heat sold to third parties.

TABLE 2 SUPPLY, TRANSFORMATION AND ENERGY SECTORS AND ENERGY END-USE

1. Indigenous production

- **Geothermal energy:** Report all geothermal heat exploited for electricity generation or as direct energy use.
- **Solar thermal:** Report all primary solar heat exploited for electricity generation or as direct energy use. Production (TJ) is the heat available to the heat transfer medium, i.e. the incident solar energy less the optical and collectors losses. Passive solar and solar photovoltaic are not included.

For conversion of primary heat sources (i.e. geothermal and solar thermal) to electricity or heat, only the quantity of heat available to the turbine or heat exchanger should be reported. Losses occurring before the turbine or heat exchanger should not be included.

- **Industrial waste (non-renewable):** Report waste of industrial non-renewable origin (solids or liquids) exploited for electricity generation or direct energy use. Production (TJ) represents the heat content (Net Calorific Value, NCV) of the industrial waste used as fuel. Renewable industrial waste should be reported in the Solid biofuels, Biogases and/or Liquid biofuels categories.
- **Municipal waste:** Production (TJ) represents the heat content (NCV) of the municipal waste used as fuel.
- **Solid biofuels:** Production (TJ) represents the heat content (NCV) of the biomass used as fuel.
- **Biogases:** Production (TJ) corresponds to the heat content (NCV) of the biogases produced, including the gases consumed in the installation for the fermentation processes but excluding flared gases.
- **Liquid biofuels:** Production for energy purposes of finished products only, not the total volume of liquids into which liquid biofuels may have been blended (see Definitions of Renewable Energy and Waste Sources section). Note: Table 1 requests data for two categories of Liquid biofuels: Biodiesels and Other liquid biofuels. Table 2 requests that Liquid biofuels be split into five categories: Biogasoline, of which Bioethanol, Bio jet kerosene, Biodiesels and Other liquid biofuels. As a consequence, in Table 1, electricity and heat production from **Other liquid biofuels could also contain small amounts of Biogasoline and Bio jet kerosene**. This difference in classification was made in order to reduce the amount of information requested because it is not expected that large quantities of Biogasoline and Bio jet kerosene are being used in the transformation sector to generate electricity and heat.

2. Imports and Exports

Report the quantity of energy obtained from or supplied to other countries. Amounts are considered as imported or exported when they have crossed the political boundary of the country, regardless of whether customs clearance has taken place.

3. 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.

4. Inland consumption (Calculated)

This is defined as:

- Indigenous production
- + Imports
- Exports
- + Stock changes

5. Statistical difference

This is equal to the difference between the calculated gross consumption (as defined above) and the observed gross consumption which corresponds to the Final energy consumption plus the Transformation sector, the Energy sector and Distribution losses.

6. Transformation sector

Report the quantities of renewables and waste used for the conversion of primary forms of energy to secondary (e.g. wind and landfill gases to electricity) or used for the transformation to derived energy products (e.g.: biogases used for blended natural gas). The Transformation Sector is divided into:

- **Main activity producer electricity plants** : Report quantities of renewables and waste used to produce electricity. Renewables and waste 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 renewables and waste used to produce electricity and heat.
- **Main activity producer heat plants**: Report quantities of renewables and waste used to produce heat.
- **Autoproducer electricity plants**: Report quantities of renewables and waste used to produce electricity. Renewables and waste used by plants containing at least one CHP unit are to be reported under *Autoproducer CHP*.
- **Autoproducer combined heat and power (CHP) plants**: Report quantities of renewables and waste that correspond to the quantity of electricity produced and heat sold.
- **Autoproducer heat plants**: Report quantities of renewables and waste that correspond to the quantity of heat sold.
- **Patent fuel plants**: Report quantities of renewables and waste used to produce patent fuel. Renewables and waste used for heating and operation of equipment should not be reported here, but reported as consumption in the Energy sector.
- **BKB plants**: Report quantities of renewables and waste used to produce BKB and PB. Renewables and waste used for heating and operation of equipment should not be reported here, but reported as consumption in the Energy sector.
- **Gas works (and other conversion to gases)**: Report quantities of renewables and waste used to produce gas works gas. Renewables and waste used for heating and operation of equipment should not be reported here, but reported as consumption in the Energy sector.
- **Blast furnaces** - Report actual quantities of renewable energy (e.g. charcoal) transformed in blast furnaces. Renewable energy used for heating and operations of equipment should not be reported here, but reported as consumption in the Energy sector.
- **Natural gas blending plants**: Report quantities of biogases blended with natural gas which are injected to the natural gas network.
- **For Blending with motor gasoline / diesel / kerosene**: Report quantities of liquid biofuels which are not delivered to the final consumption but are used with other petroleum products reported in the oil questionnaire.
- **Charcoal production plants**: Report quantities of wood used for the production of Charcoal.
- **Not elsewhere specified - Transformation**: Data should only be reported here as a last resort. If the breakdown to the above categories is not possible, administrations should specify the nature of the transformation. Please explain on the Remarks page the basis for any estimates.

7. Energy sector

Report renewable energies and waste consumed by the Energy sector to support the transformation activities. For example: renewable energies and waste used for heating, lighting or operating pumps/compressors. Note those quantities of renewable energies and waste transformed into another energy form should be reported under the Transformation sector.

The Energy sector includes ISIC¹ Divisions 05, 06, 19 and 35 and Group 091 and Class 0892 and 0721 (NACE² Divisions 05, 06, 19 and 35 and Group 09.1 and Class 08.92 and 07.21).

The energy sector is divided into:

- **Gasification plants (biogas):** Report renewables and waste consumed as energy necessary to support temperatures needed for anaerobic fermentation.
- **Own use in electricity CHP and heat plants:** : Report consumption of renewables and waste in *main activity producer* electricity plants, combined heat and power plants (CHP) and heat plants.
- **Coal mines:** Report renewables and waste consumed as energy to support the extraction and preparation of coal within the coal mining industry. Renewables and waste consumed in pithead power stations should be reported in the Transformation sector.
- **Patent fuel plants:** Report renewables and waste consumed as energy at patent fuel plants.
- **Coke ovens:** Report renewables and waste consumed as energy at coking plant.
- **Oil refineries:** Report renewables and waste consumed as energy at petroleum refineries.
- **BKB plants:** Report renewables and waste consumed as energy at BKB / PB plants.
- **Gas works:** Report renewables and waste consumed as energy at gas works plants and coal gasification plants.
- **Blast furnaces:** Report renewables and waste consumed as energy in blast furnace operations.
- **Charcoal production plants:** Report renewables and waste consumed as energy at charcoal plants.
- **Not elsewhere specified - Energy:** Data should only be reported here as a last resort. If the breakdown to the above categories is not possible, administrations should specify the nature of the plants. Please explain on the Remarks page the basis for any estimates.

8. Distribution losses

Report all losses which occur due to transport and distribution.

9. Final energy consumption

Observed is equal to total energy consumption in industry, transport and other sectors.

Calculated is defined as Gross consumption minus the Transformation sector, the Energy sector, Distribution losses and Statistical differences.

10. Industry sector

Report renewable energies and waste consumed by industrial undertakings in support of their primary activities.

Report quantities consumed in heat plants or CHP plants for the production of heat used by the plant itself. Quantities 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). To avoid double counting, fuel 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).

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.

- **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:** ISIC and NACE Divisions 25, 26, 27 and 28. Report fabricated metal products, machinery and equipment other than transport equipment.
- **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 only consumption in sectors which is not covered above. ISIC and NACE Divisions 22, 31 and 32 are included here.

11. Transport sector

Report fuels used in all transport activity irrespective of the economic sector in which the activity occurs (except military fuel use, see Other sectors). Report fuels consumed in the following ISIC and NACE categories: Divisions 49, 50 and 51.

Please note:

- **Rail:** Report all consumption by rail traffic, including industrial railways and transport as part of urban or suburban transport systems.
- **Road:** Report fuels for use in road vehicles. Includes fuel used by agricultural vehicles on highways. Excludes military use (see Other sectors - Not elsewhere specified). Excludes liquid biofuels reported as For blending to motor gasoline / diesel and biogases reported as For blended natural gas.
- **Domestic navigation:** Report fuels delivered to vessels of all flags not engaged in international navigation. Domestic navigation is 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.

12. Other sectors

- **Commercial and public services:** These activities are covered by 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), 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. Note that electricity and purchased heat use at railway, bus stations and airports should be reported in this category and not shown in the Transport sector.
- **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 used 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 state on the Remarks page what is included under this heading.

TABLE 3
TECHNICAL CHARACTERISTICS OF INSTALLATIONS AT THE END OF THE YEAR

Report the technical characteristics of renewable energy and waste installations. The average net calorific values of Liquid biofuels and Charcoal should also be reported at the end of this table.

1. Net maximum electrical capacity - classification by technology

The net maximum capacity is the maximum active power that can be supplied, continuously, with all plant running, at the point of outlet (i.e. after taking the power supplies for the station auxiliaries and allowing for the losses in those transformers considered integral to the station). This assumes no restriction of interconnection to the network. The net maximum electricity-generating capacity represents the sum of all individual plants' **maximum capacities available** to run continuously throughout a prolonged period of operation in a day.

The reported figures should relate to the maximum capacities on 31st of December and be expressed in megawatts (MW). The reported electrical capacity should include both electricity (only) and CHP plants.

Pumped storage capacity from pure pumped storage plants should be reported in 'Hydro', under 'Pure pumped storage'. The entire capacity from mixed plants should be reported in 'Hydro', under 'Mixed plants'. Capacity from conventional hydro plants should be reported in 'Hydro', under detailed plant sizes. The sum of < 1 MW, 1 to <10 MW, 10 MW, mixed and pure pumped storage should equal the total 'Hydro'.

Mixed (hydro) plants are hydro plants with natural inflow where part or all equipment can be used for pumping water uphill and also for producing electricity from natural inflow and pump storage. Pure pumped storage plants are plants with no natural inflow, producing electricity only from water previously pumped uphill.

If, for some reason, only gross capacity data can be provided, please state this clearly. It is assumed that all equipment is in full working order, that the power produced can be disposed of without any restrictions and that optimum conditions prevail as regards primary sources (i.e. flow and head in the case of hydro plant; grade and quantity of fuel in hand and water supply, temperature, and purity in the case of thermal plant, and assuming that the output and method of production in CHP plant are those which lend to maximum electricity production).

2. Solar collectors surface

The solar collectors surface relates to the production of solar thermal heat; solar collectors surface used for electricity generation are not to be reported here (solar PV and concentrated solar power). Please report the surface of all solar collectors; glazed and unglazed collectors, flat-plate and vacuum tube with a liquid or air as the energy carrier.

3. Liquid biofuels plants capacity

Please report the production capacity, at the end of the year, in terms of tonnes of products per year.

4. Average net calorific values

Please report the *net* calorific values. Net data will be used for calculating the conversion factors for the Energy Balances. If detailed information on calorific values for each flow is not available, please report an average value.

Calorific values should be reported in kilojoules per kilogramme where available. If calorific values are reported in other units, please indicate what units are used.

TABLE 4
PRODUCTION OF SOLID BIOFUELS AND BIOGASES

Report the energy production in **net** Terajoules (TJ) produced from the fuels indicated in the table.

TABLE 5 and TABLE 6
IMPORTS BY COUNTRY OF ORIGIN AND EXPORTS BY COUNTRY OF DESTINATION

For geographical definitions see Geographical notes section.

The tables concern 6 selected fuels listed as follow: biogasoline, of which bioethanol, bio jet kerosene, biodiesel, other liquid biofuels and wood pellets

Imports: Imports of fuels should be reported by ultimate origin (the country in which the fuels were produced). Only imports destined for use in the country are considered.

Exports: Only report exports of domestically produced fuels. Exports should be reported by ultimate destination (the country in which the fuels will be consumed). Fuels transiting your country should not be included.

Where no origin or destination can be reported, the country “Not elsewhere specified” might be used.

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.

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:

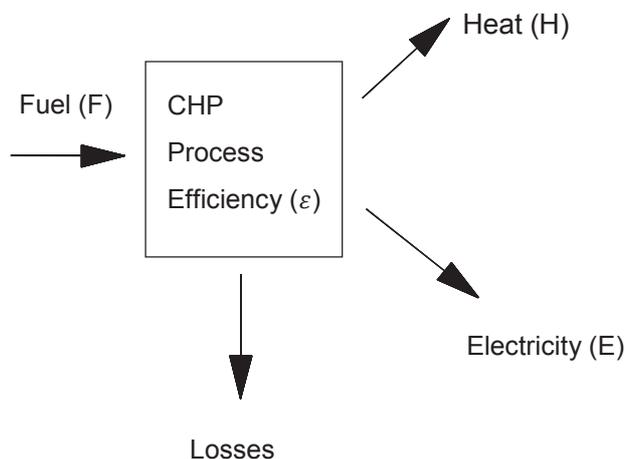
	Electricity plant	CHP plant	Heat plant
Main activity producer	Report all production and all fuel used	Report all electricity and heat produced and all fuel used	Report all heat produced and all fuel used
Autoproducer		Report all electricity produced and only heat sold with corresponding fuel used	Report only heat sold 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 (ε) is:

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

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

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

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

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

BKB	Brown coal briquettes
CHP	combined heat and power (plant)
CV	calorific value
EFTA	European Free Trade Association
EU	European Union
IEA	International Energy Agency
ISIC	International Standard Industrial Classification
J	joule
kg	kilograms
kJ	kilojoules
MW	megawatt, or one watt x 10 ⁶
MWh	Megawatt/hour, or one watt x one hour x 10 ⁶
NACE	Statistical Classification of Economic Activities in the European Community
NCV	net calorific value
PB	Peat briquettes
PV	photovoltaic
TJ	terajoule, or one joule x 10 ¹²

ANNEX 3: TABLE RELATIONS IN THE RENEWABLE AND WASTE QUESTIONNAIRE

