



# RENEWABLES

## ANNUAL QUESTIONNAIRE

### 2009

#### AND HISTORICAL REVISIONS

July 2010

Attached is the annual questionnaire for renewables and waste which provides for the submission of 2009 data and historical revisions where applicable. Administrations are requested to complete the questionnaire by the **30<sup>th</sup> of September 2010** at the latest. Earlier submissions are welcome.

Please send your questionnaire to:

- International Energy Agency (IEA/OECD), Energy Statistics Division  
*(the IEA will forward the data to the United Nations Economic Commission for Europe in Geneva).*
- Commission of the European Communities, Eurostat, Energy and Transport 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.

*\* La version française du questionnaire est disponible auprès du Secrétariat.*



## 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, 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.

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. Pumped storage should be included. Detailed plant sizes should be reported net of pumped storage. The sum of < 1 MW, 1 to <10 MW, ≥10 MW and production from pumped storage should equal ‘Hydro, all plants’.

#### 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 Biomass, Biogas 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 biodegradable 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-biodegradable 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 Biomass**

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.
- **Wood, Wood Waste, Other Solid Waste:** Covers purpose-grown energy crops (poplar, willow etc.), a multitude of woody materials generated by an industrial process (wood/paper industry in particular) or provided directly by forestry and agriculture (firewood, wood chips, bark, sawdust, shavings, chips, black liquor etc.) as well as waste such as bagasse, straw, rice husks, nut shells, poultry litter, crushed grape dregs etc. Combustion is the preferred technology for this solid waste. The quantity of fuel used should be reported on a **net** calorific value basis

**9. Biogas**

A gas composed principally of methane and carbon dioxide produced by anaerobic digestion of biomass.

- **Landfill Gas:** formed by the digestion of landfilled 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 Biogas:** such as biogas 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.

**10. Liquid Biofuels**

The quantities of liquid biofuels reported in this category should relate to the quantities of biofuel and not to the total volume of liquids into which the biofuels may be blended. 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%).

- **Biodiesels:** This category includes biodiesel (a methyl-ester produced from vegetable or animal oil, of diesel quality), biodimethylether (dimethylether produced from biomass), Fischer Tropsh (Fischer Tropsh produced from biomass), cold pressed biooil (oil produced from oil seed through mechanical processing only) and all other liquid biofuels which are added to, ***blended with or used*** straight as transport diesel.
- **Other Liquid Biofuels:** Liquid biofuels, used directly as fuel, not included in biogasoline or biodiesels.

Imports and exports of liquid biofuels refer to trade of 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.

## 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** (formerly known as Public) 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 (only), heat (only) 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 Only** refers to a plant which is designed to produce electricity only. 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)** refers to a plant which is designed to produce both heat and electricity. It is sometimes referred to as cogeneration. 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 Only** refers to a plant which is designed to produce heat only. Heat delivered from CHP or Heat Only plants may be used for process heat 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 Plants* 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:

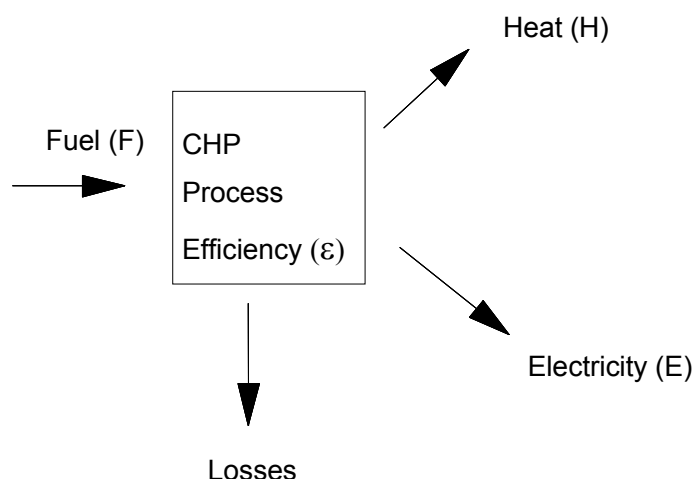
	Electricity Only	CHP	Heat Only
<b>Main Activity Producer</b>	Report all production and all fuel used	Report all electricity and heat produced and all fuel used	Report all heat produced and all fuel used
<b>Autoproducer</b>		Report all electricity produced and heat <b>sold</b> with corresponding fuel used	Report 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.

## **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;

**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 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. Production (TJ) is the difference between the enthalpy of the fluid produced in the production borehole and that of the fluid eventually disposed of (reinjection borehole).
- **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.
- **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 biomass, Biogas and/or Liquid biofuels categories.
- **Municipal Waste:** Production (TJ) represents the heat content (NCV) of the municipal waste used as fuel.
- **Solid Biomass:** Production (TJ) represents the heat content (NCV) of the biomass used as fuel.
- **Biogas:** 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).

### 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)

(calculated) is defined as:

- Indigenous Production
- + Imports
- Exports
- +/- Stock changes

## 5. Statistical Differences

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.: biogas used for blended natural gas). The Transformation Sector is divided into the following sub-sectors:

- **Main Activity Producer Electricity Plants** (formerly known as Public 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** (formerly known as Public Heat and Power Plants) - Report quantities of renewables and waste used to produce electricity and heat.
- **Main Activity Producer Heat Plants** (formerly known as Public 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 / PB Plants** - Report quantities of renewables and waste used to produce BKB. 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 Gas** - 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.
- **For Blended Natural Gas** - Report quantities of biogases blended with natural gas.
- **For Blending to Motor Gasoline / Diesel** - 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.

## 7. Energy Sector

Report renewable energies and waste consumed by the energy industry to support the transformation activity. 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 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 is divided into the following sub-sectors:

- **Gasification Plants:** Report renewables and waste consumed as energy necessary to support temperatures needed for anaerobic fermentation.
- **Main Activity Producer 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.
- **Petroleum Refineries:** Report renewables and waste consumed as energy at petroleum refineries.
- **BKB / PB Plants** - Report renewables and waste consumed as energy at BKB plants.
- **Gas Works:** Report renewables and waste consumed as energy at gas works 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 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.

## 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

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

Report quantities consumed in boilers 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 + Class 2431 (NACE Groups 24.1, 24.2, 24.3 + Classes 24.51 and 24.52).
- **Chemical (including Petrochemical):** ISIC and NACE Divisions 20 and 21.
- **Non-Ferrous Metals:** ISIC Group 242 + Class 2432 (NACE Group 24.4 + 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.

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.

- **Mining (excluding energy producing industries) and Quarrying:** ISIC Divisions 07 and 08 + Group 099 (NACE Divisions 07 and 08 + Group 09.9).
- **Food Processing, Beverages and Tobacco:** ISIC and NACE Divisions 10, 11 and 12.
- **Pulp, Paper 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.

## 11. Transport

Report fuels used in all transport activities (non-stationary) irrespective of the economic sector in which the activity occurs. Report fuels consumed in the following ISIC and NACE categories: Divisions 49, 50 and 51.

- **Rail:** Report all consumption by rail traffic, including industrial railways. Consumption by rail transport as part of urban or suburban transport systems should be reported in "non-specified (Transport)".
- **Road:** Report fuels for use in road vehicles. Includes fuel used by agricultural vehicles on highways. Excludes military use in road vehicles (see Other Sector - 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:** Report fuels consumed by business and offices in the public and private sectors. 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, 85, 86, 87, 88, 90, 91, 92, 93, 94, 95, 96 and 99.
- **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 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 Sectors:** 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 3**  
**TECHNICAL CHARACTERISTICS OF INSTALLATIONS AT THE END OF THE YEAR**

Report the technical characteristics of renewable energy and waste installations. Pumped storage capacity should be included in 'Hydro, all plants'. Detailed plant sizes should be reported net of pumped storage. The sum of < 1 MW, 1 to <10 MW,  $\geq 10$  MW and pumped storage should equal 'Hydro, all plants'. 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 31<sup>st</sup> of December and be expressed in megawatts (MW). The reported electrical capacity should include both electricity (only) and CHP plants.

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

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 historical and forecast 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 WOOD/WOOD WASTE/OTHER SOLID WASTE**

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

## Table Relations in the Renewables and Waste Questionnaire

