

Glossary of Terms for Energy Balances

Product Definitions

Bituminous Coal and Anthracite:

Other bituminous coal is used for steam raising and space heating purposes and includes all anthracite coals and bituminous coals not included under coking coal. Its gross calorific value is greater than 23 865 kJ/kg (5 700 kcal/kg), but usually lower than that of coking coal.

Manufactured Ovoids:

A composition fuel manufactured from hard coal fines by shaping with the addition of a binding agent. Note that the amount of patent fuel produced can be slightly higher than the amount of coal consumed in the transformation process because of the addition of a binding agent.

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.

Lignite:

Lignite/brown coal is a non-agglomerating coal with a gross calorific value of less than 17 435 kJ/kg (4 165 kcal/kg), and greater than 31 per cent volatile matter on a dry mineral matter free basis.

Peat:

Combustible soft, porous or compressed, fossil sedimentary deposit of plant origin with high water content (up to 90 per cent in the raw state), easily cut, of light to dark brown colour. Peat used for non-energy purposes is not included.

Milled Peat:

Milled peat is the term used to describe air dried peat in powder or crumb form. This description is derived from the cutting operation which results in the loose crumb-like structure.

Sod Peat:

Traditional use of peat as a fuel in Ireland. It is a rectangular shaped hand cut sod dried in the open air. Can be machine cut also.

Peat Briquettes:

Small blocks of highly compressed dry peat.

Crude Oil:

Crude oil is a mineral oil of natural origin comprising a mixture of hydrocarbons and associated impurities, such as sulphur. It exists in the liquid phase under normal surface temperature and pressure and its physical characteristics (density, viscosity, etc.) are highly variable. This category includes field or lease condensate recovered from associated and non-associated gas where it is commingled with the commercial crude oil stream.

Refinery Gas:

Refinery gas includes a mixture of non-condensable gases mainly consisting of hydrogen, methane, ethane and olefins obtained during distillation of crude oil or treatment of oil products (e.g. cracking) in refineries. This also includes gases which are returned from the petrochemical industry.

Motor Gasoline:

Motor gasoline consists of a mixture of light hydrocarbons distilling between 35°C and 215°C. It is used as a fuel for land based spark ignition engines. Motor gasoline may include additives, oxygenates and octane enhancers, including lead compounds such as TEL (Tetraethyl lead) and TML (tetramethyl lead). Unleaded Motor Gasoline: motor gasoline

where lead compounds have not been added to enhance octane rating. It may contain traces of organic lead. **Leaded Motor Gasoline:** motor gasoline with TEL (tetraethyl lead) and/or TML (tetramethyl lead) added to enhance octane rating. This category includes motor gasoline blending components (excluding additives/oxygenates), e.g. alkylates, isomerate, reformat, cracked gasoline destined for use as finished motor gasoline.

Aviation Gasoline:

This is motor spirit prepared especially for aviation piston engines, with an octane number suited to the engine, a freezing point of -60°C and a distillation range usually within the limits of 30°C and 180°C .

Kerosene:

Kerosene comprises refined petroleum distillate and is used in sectors other than aircraft transport. It distils between 150°C and 300°C .

Kerosene Type Jet Fuel:

This is a distillate used for aviation turbine power units. It has the same distillation characteristics between 150°C and 300°C (generally not above 250°C) and flash point as kerosene. In addition, it has particular specifications (such as freezing point) which are established by the International Air Transport Association (IATA). This category includes kerosene blending components.

Fuel Oil:

This covers all residual (heavy) fuel oils (including those obtained by blending). Kinematic viscosity is above 10 cSt at 80°C . The flash point is always above 50°C and density is always more than 0.90 kg/l. **Low sulphur content:** heavy fuel oil with sulphur content lower than 1%. **High sulphur content:** heavy fuel oil with sulphur content of 1% or higher.

Liquefied Petroleum Gases (LPG):

LPG is light paraffinic hydrocarbons derived from the refinery processes, crude oil stabilisation and natural gas processing plants. They consist mainly of propane (C_3H_8) and butane (C_4H_{10}) or a combination of the two. They could also include propylene, butylene, isobutene and isobutylene. LPG is normally liquefied under pressure for transportation and storage.

Gas/Diesel Oil/ DERV (Distillate Fuel Oil):

Gas/diesel oil is primarily a medium distillate distilling between 180°C and 380°C . Several grades are available depending on uses: **Transport Diesel (DERV):** • on road diesel oil for diesel compression ignition (cars, trucks etc.), usually of low sulphur content; **Heating and other Gasoil:** • light heating oil for industrial and commercial uses; • marine diesel and diesel used in rail traffic; • other gas oil including heavy gas oils which distil between 380°C and 540°C and which are used as petrochemical feedstocks. This category includes blending components.

Petroleum Coke:

Petroleum coke is a black solid by-product, obtained mainly by cracking and carbonising petroleum derived feedstock, vacuum bottoms, tar and pitches in processes such as delayed coking or fluid coking. It consists mainly of carbon (90 to 95%) and has a low ash content. It is used as a feedstock in coke ovens for the steel industry, for heating purposes, for electrode manufacture and for production of chemicals. The two most important qualities are "green coke" and "calcinated coke". This category also includes "catalyst coke" deposited on the catalyst during refining processes; this coke is not recoverable and is usually burned as refinery fuel.

Naphtha:

Naphtha is a feedstock destined for either the petrochemical industry (e.g. ethylene manufacture or aromatics production). Naphtha comprises material in the 30°C and 210°C distillation range or part of this range.

Bitumen:

Bitumen is a solid, semi-solid or viscous hydrocarbon with a colloidal structure, being brown to black in colour, obtained as a residue in the distillation of crude oil, by vacuum

distillation of oil residues from atmospheric distillation. Bitumen is often referred to as asphalt and is primarily used for construction of roads and for roofing material. This category includes fluidized and cut back bitumen.

White Spirit and SBP:

White Spirit and SBP are defined as refined distillate intermediates with a distillation in the naphtha/kerosene range.

Lubricants:

Lubricants are hydrocarbons produced from distillate by product; they are mainly used to reduce friction between bearing surfaces. This category includes all finished grades of lubricating oil, from spindle oil to cylinder oil, and those used in greases, including motor oils and all grades of lubricating oil base stocks.

Natural Gas:

Natural gas comprises gases, occurring in underground deposits, whether liquefied or gaseous, consisting mainly of methane. It includes both "non-associated" gas originating from fields producing only hydrocarbons in gaseous form, and "associated" gas produced in association with crude oil as well as methane recovered from coal mines (colliery gas).

Hydro-power:

Potential and kinetic energy of water converted into electricity in hydroelectric plants. Pumped storage is treated separately in the balance.

Wind Energy:

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

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 and **Wood, wood wastes, other solid wastes:** 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 wastes such as tallow, straw, rice husks, nut shells, poultry litter, crushed grape dregs etc. Combustion is the preferred technology for these solid wastes. The quantity of fuel used is reported on a net calorific value basis.

Landfill Gas:

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

Biogas:

A gas composed principally of methane and carbon dioxide produced by anaerobic digestion of biomass, comprising: **Sewage sludge gas,** produced from the anaerobic fermentation of sewage sludge and **Other biogas,** such as biogas produced from the anaerobic fermentation of animal slurries and of wastes in abattoirs, breweries and other agro-food industries.

Liquid Biofuel:

cover the fuels listed below: **Bioethanol:** ethanol produced from biomass and/or biodegradable fraction of waste; **Biodiesel:** a diesel quality liquid fuel produced from biomass or used fried oils; **Biomethanol:** methanol produced from biomass and/or the biodegradable fraction of waste; **Biodimethylether:** a diesel quality fuel produced from biomass and/or the biodegradable fraction of waste; **Other Liquid Biofuel:** liquid biofuels, used directly as a fuel, not included in biogasoline or biodiesels.

Geothermal energy:

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 or directly as heat for district heating, agriculture etc. Ground source geothermal energy is also included in the category.

Solar Energy:

Solar radiation exploited for hot water production and electricity generation, by: flat plate collectors, for domestic hot water or for the seasonal heating of swimming pools; photovoltaic cells; solar thermal-electric plants. Passive solar energy for the direct heating, cooling and lighting of dwellings or other buildings is not included.

Electricity:

Gross electricity production is measured at the terminals of all alternator sets in a station; it therefore includes the energy taken by station auxiliaries and losses in transformers that are considered integral parts of the station. The difference between gross and net production is amount of own use of electricity in the generation plants.

Heat:

In recent years, the production of heat for sale has been increasing in importance. To reflect this, heat production represents all heat production from public CHP and heat plants as well as heat sold by autoproducer CHP and heat plants to third parties. Corresponding fuels to produce quantities of heat for sale are being recorded in the transformation sector under the rows CHP plants and Heat plants. The use of fuels for heat which is not sold is recorded under the sectors in which the fuel use occurs.

Flow Definitions

Production:

Production refers to the quantities of fuels extracted or produced, calculated after any operation for removal of inert matter or impurities (e.g. sulphur from natural gas). It refers only to indigenous production of fuels in Ireland.

Imports and Exports:

Imports and exports comprise amounts having crossed the national territorial boundaries of the country whether or not customs clearance has taken place. a) **Coal** Imports and exports comprise the amount of fuels obtained from or supplied to other countries, whether or not there is an economic or customs union between the relevant countries. Coal in transit should not be included. b) **Oil and Gas** Quantities of crude oil and oil products imported or exported under processing agreements (i.e. refining on account) are included. Quantities of oil in transit are excluded. Crude oil, NGL and natural gas are reported as coming from the country of origin; refinery feedstocks and oil products are reported as coming from the country of last consignment. Re-exports of oil imported for processing within bonded areas are shown as an export of product from the processing country to the final destination. c) **Electricity** Amounts are considered as imported or exported when they have crossed the national territorial boundaries

International Marine Bunkers:

International marine bunkers cover those quantities delivered to sea-going ships of all flags, including warships. Consumption by ships engaged in transport in inland and coastal waters and by fishing vessels in all waters is not included.

Stock Changes:

Stock changes (opening stock minus closing stock) reflect the difference between opening stock levels on the first day of the year and closing levels on the last day of the year of stocks on national territory held by producers, importers, energy transformation industries and large consumers. Oil and gas stock changes in pipelines are not taken into account. With the exception of large users mentioned above, changes in final users' stocks are not taken into account. A stock build is shown as a negative number, and a stock draw as a positive number.

Primary Energy Supply (including non-energy):

Primary energy supply is defined as production + inputs from other sources + imports - exports - international marine bunkers ± stock changes. This includes any energy source that may be used for non-energy purposes such as natural gas as a feedstock for fertilizer production.

Primary Energy Supply (excluding non-energy):

Total primary energy supply (TPES) is made up of production + imports - exports - international marine bunkers ± stock changes but excluding non-energy uses.

Statistical Differences:

Statistical difference is defined as deliveries to final consumption + use for transformation and consumption within the energy sector + distribution losses - domestic supply - transfers. Statistical differences arise because the data for the individual components of supply are often derived from different data sources by the national administration. Furthermore, the inclusion of changes in some large consumers' stocks in the supply part of the balance introduces distortions which also contribute to the statistical differences.

Transformation Input:

This section details the energy inputs into the conversion of primary forms of energy to secondary and further transformation (e.g. coking coal to coke, crude oil to petroleum products, heavy fuel oil to electricity).

Public Thermal Power Plants:

Public thermal power plants refer to plants which are designed to produce electricity only from the combustion of fuels. Public supply 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.

Combined Heat & Power plants:

Combined heat and power (CHP) plants (refers to plants which are designed to produce both heat and electricity). CHP plants may be autoproducer (generating for own use only) or third party ownership selling electricity and heat on-site as well as exporting electricity to the grid. Public supply 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.

Pumped Storage:

Electricity consumed in, and generated from hydro-electric storage plants.

Briquetting plants:

This category covers the use of fuels for the manufacture of patent fuels & briquettes.

Oil Refineries:

Petroleum refineries (covers the use of hydrocarbons for the manufacture of finished petroleum products).

Transformation Output:

This section details the outputs from the conversion of primary forms of energy into secondary and further transformation (e.g. coking coal to coke, crude oil to petroleum products, heavy fuel oil to electricity).

Exchanges & Transfers:

Transfers comprise inter-product transfers, products transferred and recycled products. Inter-product transfers result from reclassification of products either because their specification has changed or because they are blended into another product, e.g. kerosene may be reclassified as gasoil after blending with the latter in order to meet its winter diesel specification. The net balance of inter-product transfers should be zero. Products transferred reference is intended for petroleum products imported for further processing in refineries. For example, fuel oil imported for upgrading in a refinery is transferred to the feedstock category. Recycled products are finished products which pass a second time through the marketing network, after having been once delivered to final consumers (e.g. used lubricants which are reprocessed). Exchanges are used to exchange say electricity produced from hydro to the electricity column.

Own Use & Distribution Losses:

Own use covers use of energy in refineries, power generation stations etc. Distribution losses include losses in gas distribution and electricity transmission. It may also include unaccounted for use of crude oil and petroleum products.

Non-Specified Energy:

Includes non-specified energy sector's use.

Total Final Energy Consumption:

The term final consumption (equal to the sum of end-use sectors' consumption) implies that energy used for transformation and for own use of the energy producing industries is excluded. Final consumption reflects for the most part deliveries to consumers (see note on stock changes).

Industry sector:

Consumption of the industry sector is specified in the sub-sectors (energy used for transport by industry is not included here but is reported under transport). Covers NACE categories 13 - 37 excluding energy mining and oil refining.

Transport Sector:

Consumption in the Transport sector covers all transport activity (in mobile engines) regardless of the economic sector to which it is contributing.

Commercial and Public Services:

Services sector including government and public services.

Residential:

All consumption by households, excluding fuels used for transport. Includes households with employed persons (ISIC Division 95) which is a small part of total residential consumption.

Agriculture:

Includes energy consumed by such users whether for traction (excluding agricultural highway use), power or heating (agricultural and domestic).