World Energy Statistics

Database documentation

April 2026 edition

International Energy Agency

INTERNATIONAL ENERGY AGENCY

The IEA examines the full spectrum of energy issues including oil, gas and coal supply and demand, renewable energy technologies, electricity markets, energy efficiency, access to energy, demand side management and much more. Through its work, the IEA advocates policies that will enhance the reliability, affordability and sustainability of energy in its 32 member countries, 13 association countries and beyond.

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In an effort to provide users with more timely information, with the April 2026 edition of the World Energy Statistics database the IEA is releasing statistics for those countries of the IEA Family (including OECD, Association and Accession countries) and beyond, for which data up to 2024 have been already received and validated.

This documentation provides support information for the April 2026 edition of the IEA World Energy Statistics database. This document can be found online at:

https://www.iea.org/data-and-statistics/data-product/world-energy-statistics

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Changes from last edition

Starting from this publication, TXT files are discontinued. Bulk data are now made available in CSV format, fully aligned with the structure and content of the .Stat Data Explorer.

Geographical coverage

Romania became an IEA Accession country in April 2026. However, as the datasets for this edition had already been finalised, Romania is not included in the IEAFAMILY aggregate (comprising Member, Accession and Association countries). Romania will be integrated into the aggregate in subsequent editions.

Viet Nam became an IEA Association country in February 2026. However, because 2024 data was not yet available at time of publication, Viet Nam is not included in this edition and therefore not reflected in the IEAFAMILY aggregate. Viet Nam will be integrated into the aggregate in subsequent editions.

The countries, territories and economies included are:

OECD: Australia, Austria, Belgium, Canada, Chile, Colombia, Costa Rica, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Republic of Türkiye, United Kingdom, United States;

IEA Accession countries: Brazil, Chile, Colombia, Costa Rica, Israel, Romania;

IEA Association countries: Argentina, People's Republic of China, Egypt, India, Indonesia, Kenya, Morocco, Senegal, Singapore, South Africa, Thailand, Ukraine;

Other selected countries and economies: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Georgia, Kosovo, Malta, Republic of Moldova, Montenegro, Republic of North Macedonia, Serbia;

For further details, please refer to the section on Geographical coverage.

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Database structure

The database *World Energy Statistics* includes annual data for:

- countries: 64 countries and 9 regional aggregates
  (see section *Geographical coverage*);
  years: 1960-2024 (OECD countries);
  1971-2024 (non-OECD countries; regional aggregates; world).

The database includes the following three datasets:

IEAFAMBES **Energy statistics**

Energy statistics in matrix form (69 products; 103 flows) (various natural units, depending on the product);
Electricity and heat output by type of producer (12 flows) (GWh; TJ).

IEAFAMCONV **Conversion factors**
net calorific values by flow for 15 coal, peat, oil shale products (toe/t; kJ/kg);
average net calorific values for 23 oil products and 5 biofuel products (toe/t; kJ/kg);
volume to mass ratio for 22 oil products and 4 biofuel products (barrels/tonne);
gross calorific values by flow for natural gas (kJ/m^3).

IEAFAMBBL **Oil demand by product**
Oil consumption (4 flows for 9 oil product categories) (kbbl/d).

Detailed definitions of each flow and product are presented in sections *Flow definitions* and *Product definitions*.

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Flow definitions

Supply

Flow	Short name	Definition
Production	INDPROD	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). For "other hydrocarbons" (shown with crude oil), production includes synthetic crude oil (including mineral oil extracted from bituminous minerals such as oil shale and tar sands, etc.). Production of secondary oil products represents the gross refinery output. Secondary coal products (including coal gases) represent the output from coke ovens, gas works, blast furnaces and other transformation processes.
From other sources – coal	OSOURC_COAL	Refers to both primary energy that has not been accounted for under production and secondary energy that has been accounted for in the production of another fuel. For example, under primary coal: recovered slurries, middlings, recuperated coal dust and other low-grade coal products that cannot be classified according to type of coal from which they are obtained; under gas works gas: natural gas, refinery gas, and LPG, that are treated or mixed in gas works (i.e. gas works gas produced from sources other than coal).
From other sources – natural gas	OSOURC_NATGAS	Refers to both primary energy that has not been accounted for under production and secondary energy that has been accounted for in the production of another fuel.
From other sources – oil products	OSOURC_OIL	Refers to both primary energy that has not been accounted for under production and secondary energy that has been accounted for in the production of another fuel. For example, under additives: benzol, alcohol and methanol produced from natural gas; under refinery feedstocks: backflows from the petrochemical industry used as refinery feedstocks; under "other hydrocarbons" (included with crude oil): liquids obtained from coal liquefaction and GTL plants.
From other sources – renewables	OSOURC_RENEW	Refers to both primary energy that has not been accounted for under production and secondary energy that has been accounted for in the production of another fuel.
From other sources – non-specified	OSOURC_NONSPEC	Refers to both primary energy that has not been accounted for under production and secondary energy that has been accounted for in the production of another fuel. This flow is used if the source is not known.
Imports	IMPORTS	Comprise amounts having crossed the national territorial boundaries of the country whether or not customs clearance has taken place. *For coal*: Imports comprise the amount of fuels obtained from other countries, whether or not there is an economic or customs union between the relevant countries. Coal in transit should not be included. *For oil and natural gas:* Quantities of crude oil and oil products imported under processing agreements (i.e. refining on account)

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Flow	Short name	Definition
		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. Imported LNG which is exported to another country after regasification is considered both as an import and as an export of gas. *For electricity*: Amounts are considered as imported when they have crossed the national territorial boundaries of the country. If electricity is "wheeled" or transited through a country, the amount is shown as both an import and an export.
Exports	EXPORTS	Comprise amounts having crossed the national territorial boundaries of the country whether or not customs clearance has taken place. *For coal*: Exports comprise the amount of fuels 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. *For oil and natural gas:* Quantities of crude oil and oil products exported under processing agreements (i.e. refining on account) are included. 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. Imported LNG which is exported to another country after regasification is considered both as an import and as an export of gas. *For electricity*: Amounts are considered as exported when they have crossed the national territorial boundaries of the country. If electricity is "wheeled" or transited through a country, the amount is shown as both an import and an export.
International marine bunkers	BUNKERS_MARINE	Covers those quantities 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. Consumption by ships engaged in domestic navigation is excluded. The domestic/international split is determined on the basis of port of departure and port of arrival, and not by the flag or nationality of the ship. Consumption by fishing vessels and by military forces is also excluded. See *domestic navigation*, *fishing* and *non-specified (other)*. *International marine bunkers* are excluded from the *supply* at the country and regional level, but not for world, where they are included in *transport* under *World marine bunkers*.
International aviation bunkers	BUNKERS_AVIATION	Includes deliveries of aviation fuels to aircraft for international aviation. Fuels used by airlines for their road vehicles are excluded. The domestic/international split should be determined on the basis of departure and landing locations and not by the nationality of the airline. For many countries this incorrectly excludes fuel used by domestically owned carriers for their international departures. *International aviation bunkers* are excluded from the *supply* at the country and regional level, but not for world, where they are included in *transport* under *World aviation bunkers*.
Stock changes	STCHANAT	Reflects 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

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Flow	Short name	Definition
		users' stocks are not taken into account. A stock build is shown as a negative number, and a stock draw as a positive number.
Domestic supply	TES	Defined as *production + from other sources + imports - exports - international marine bunkers - international aviation bunkers ± stock changes*. Note, exports, bunkers and stock changes incorporate the algebraic sign directly in the number.
Transfers	TRANSFERS	Comprises *interproduct transfers*, *products transferred* and *recycled products*. *Interproduct transfers* results 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 *interproduct transfers* is zero. *Products transferred* is intended for oil products imported for further processing in refineries. For example, fuel oil imported for upgrading in a refinery is transferred to the feedstocks 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).
Statistical differences	STATDIFF	Defined as deliveries to *final consumption + use for transformation processes + consumption by energy industry own use + losses - domestic supply - transfers*. Statistical differences arise because the data for the individual components of supply and demand 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 processes

Flow	Short name	Definition
Transformation processes	TOTTRANF	Transformation processes comprise the conversion of primary forms of energy to secondary and further transformation (e.g. coking coal to coke, crude oil to oil products, and fuel oil to electricity).
Main activity producer electricity plants	MAINELEC	Refers to plants which are designed to produce electricity only. If one or more units of the plant is a CHP unit (and the inputs and outputs cannot be distinguished on a unit basis) then the whole plant is designated as a CHP plant. Main activity producers generate electricity 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 electricity plants	AUTOELEC	Refers to plants which are designed to produce electricity only. If one or more units of the plant is a CHP unit (and the inputs and outputs cannot be distinguished on a unit basis) then the whole plant is designated as a CHP plant. Autoproducer undertakings generate electricity wholly or partly for their own use as an activity which supports their primary activity. They may be privately or publicly owned.

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Flow	Short name	Definition
Main activity producer CHP plants	MAINCHP	Refers to plants which are designed to produce both heat and electricity (sometimes referred to as co-generation power stations). If possible, fuel inputs and electricity/heat outputs are 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. Main activity producers 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 CHP plants	AUTOCHP	Refers to plants which are designed to produce both heat and electricity (sometimes referred to as co-generation power stations). If possible, fuel inputs and electricity/heat outputs are 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. Note that for autoproducer CHP plants, all fuel inputs to electricity production are taken into account, while only the part of fuel inputs to heat sold is shown. Fuel inputs for the production of heat consumed within the autoproducer's establishment are not included here but are included with figures for the final consumption of fuels in the appropriate consuming sector. 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.
Main activity producer heat plants	MAINHEAT	Refers to plants (including heat pumps and electric boilers) designed to produce heat only and who sell heat to a third party (e.g. residential, commercial or industrial consumers) under the provisions of a contract. Main activity producers generate 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 heat plants	AUTOHEAT	Refers to plants (including heat pumps and electric boilers) designed to produce heat only and who sell heat to a third party (e.g. residential, commercial or industrial consumers) under the provisions of a contract. Autoproducer undertakings generate heat, wholly or partly for their own use as an activity which supports their primary activity. They may be privately or publicly owned. Note that the sale need not take place through the public grid.
Heat pumps	THEAT	Includes heat produced by heat pumps in transformation. Heat pumps that are operated within the residential sector where the heat is not sold are not considered a transformation process and are not included here – the electricity consumption would appear as residential use.
Electric boilers	TBOILER	Includes electric boilers used to produce heat.
Chemical heat for electricity production	TELE	Includes heat from chemical processes that is used to generate electricity.
Blast furnaces	TBLASTFUR	Includes the production of recovered gases (e.g. blast furnace gas and oxygen steel furnace gas). The production of pig-iron from iron ore in blast furnaces uses fuels for supporting the blast furnace charge and providing heat and carbon for the reduction of the iron ore. Accounting for the calorific content of the fuels entering the process is a complex matter as transformation (into blast furnace gas) and consumption (heat of combustion) occur simultaneously. Some carbon is also retained in the pig-iron; almost all of this reappears later in the oxygen steel furnace gas (or converter gas) when the pig-iron is converted to steel. In the 1992/1993 annual questionnaires, member countries were asked for the

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Flow	Short name	Definition
		first time to report in *transformation processes* the quantities of all fuels (e.g. pulverised coal injection [PCI] coal, coke oven coke, natural gas and oil) entering blast furnaces and the quantity of blast furnace gas and oxygen steel furnace gas produced. The IEA Secretariat then needed to split these inputs into the transformation and consumption components. The transformation component is shown in the row *blast furnaces* in the column appropriate for the fuel, and the consumption component is shown in the row *iron and steel*, in the column appropriate for the fuel. The IEA Secretariat decided to assume a transformation efficiency such that the carbon input into the blast furnaces should equal the carbon output. This is roughly equivalent to assuming an energy transformation efficiency of 40%.
Gas works	TGASWKS	Includes the quantities of fuels used for the production of town gas.
Coke ovens	TCOKEOVS	Includes the use of fuels for the manufacture of coke and coke oven gas.
Patent fuel plants	TPATFUEL	Includes the use of fuels for the manufacture of patent fuels.
BKB/peat briquette plants	TBKB	Includes the use of fuels for the manufacture of BKB and peat briquettes.
Oil refineries	TREFINER	Covers the use transformation of hydrocarbons for the manufacture of finished oil products.
Petrochemical plants	TPETCHEM	Includes backflows returned from the petrochemical industry. Note that backflows from oil products that are used for non-energy purposes (i.e. white spirit and lubricants) are not included here, but in non-energy use.
Coal liquefaction plants	TCOALLIQ	Includes coal, oil and tar sands used to produce synthetic oil.
Gas-to-liquids (GTL) plants	TGTL	Includes natural gas used as feedstock for the conversion to liquids, e.g. the quantities of fuel entering the methanol production process for transformation into methanol.
For blended natural gas	TBLENDGAS	Includes other gases that are blended with natural gas.
Charcoal production plants	TCHARCOAL	Includes the transformation of primary solid biofuels into charcoal.
Non-specified (transformation)	TNONSPEC	Includes the transformation of natural gas for hydrogen manufacture and other non-specified transformation.

Energy industry own use and Losses

Flow	Short name	Definition
Energy industry own use	TOTENGY	Energy industry own use covers the amount of fuels used by the energy producing industries (e.g. for heating, lighting and operation of all equipment used in the extraction process, for traction and for distribution). It includes energy consumed by energy industries for heating, pumping, traction and lighting purposes [ISIC Rev. 4 Divisions 05, 06, 19 and 35, Group 091 and Classes 0892 and 0721].

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Flow	Short name	Definition
Coal mines	EMINES	Represents the energy which is used directly within the coal industry for hard coal and lignite mining. It excludes coal burned in pithead power stations (included under electricity plants in transformation processes) and free allocations to miners and their families (considered as part of household consumption and therefore included under *residential*).
Oil and gas extraction	EOILGASEX	Represents the energy which is used for oil and gas extraction. Flared gas is not included.
Blast furnaces	EBLASTFUR	Represents the energy which is used in blast furnaces.
Gas works	EGASWKS	Represents the energy which is used in gas works.
Gasification plants for biogases	EBIOGAS	Represents own consumption of biogas necessary to support temperatures needed for anaerobic fermentation.
Coke ovens	ECOKEOVS	Represents the energy used in coke ovens.
Patent fuel plants	EPATFUEL	Represents the energy used in patent fuel plants.
BKB/peat briquette plants	EBKB	Represents the energy used in BKB and peat briquette plants.
Oil refineries	EREFINER	Represents the energy used in refineries for the operation of equipment, heating and lighting.
Coal liquefaction plants	ECOALLIQ	Represents the energy used in coal liquefaction plants.
Liquefaction (LNG)/regasification plants	ELNG	Represents the energy used in LNG and regasification plants.
Gas-to-liquids (GTL) plants	EGTL	Represents the energy used in gas-to-liquids plants.
Own use in electricity, CHP and heat plants	EPOWERPLT	Represents the energy used in electricity, CHP and heat plants.
Pumped storage plants	EPUMPST	Represents electricity consumed in hydro-electric plants for pumped storage.
Nuclear industry	ENUC	Represents the energy used in the nuclear industry.
Charcoal production plants	ECHARCOAL	Represents the energy used in charcoal production plants.
Non-specified (energy)	ENONSPEC	Represents use in non-specified energy industries.
Losses	DISTLOSS	Represents losses in energy distribution, transmission and transport.

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Final consumption

Flow	Short name	Definition
Final consumption	TFC	Is the sum of the consumption in the end-use sectors and for non-energy use. Energy used for transformation processes 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*). Backflows from the petrochemical industry are not included in final consumption (see *from other sources* under supply and *petrochemical plants* in transformation processes). Note that *international aviation bunkers* and *international marine bunkers* are not included in final consumption except for the world total, where they are reported as *World aviation bunkers* and *World marine bunkers* in *transport*.
Industry	TOTIND	Industry consumption is specified by sub-sector as listed below. Energy used for transport by industry is not included here but is reported under transport. Non-energy use in industry is excluded from industry and reported separately.
Mining and quarrying	MINING	[ISIC Divisions 07 and 08 and Group 099 (NACE Divisions 07 and 08 + Group 09.9)] Mining (excluding fuels) and quarrying.
Construction	CONSTRUC	[ISIC and NACE Rev. 4 Divisions 41 to 43]
Manufacturing	MANUFACT	Manufacturing refers to the sum of the following industrial sub-sectors: • Iron and steel • Chemical and petrochemical • Non-ferrous metals • Non-metallic minerals • Transport equipment • Machinery • Food and tobacco • Paper, pulp and print • Wood and wood products • Textile and leather Definitions of the sub-sectors can be found under the listing for each respective sub-sector below.
Iron and steel	IRONSTL	[ISIC Rev. 4 Group 241 and Class 2431]
Chemical and petrochemical	CHEMICAL	[ISIC Rev. 4 Divisions 20 and 21] Excluding petrochemical feedstocks.
Non-ferrous metals	NONFERR	[ISIC Rev. 4 Group 242 and Class 2432] Basic industries.
Non-metallic minerals	NONMET	[ISIC Rev. 4 Division 23] Such as glass, ceramic, cement, etc.
Transport equipment	TRANSEQ	[ISIC Rev. 4 Divisions 29 and 30]
Machinery	MACHINE	[ISIC Rev. 4 Divisions 25 to 28] Fabricated metal products, machinery and equipment other than transport equipment.
Food and tobacco	FOODPRO	[ISIC Rev. 4 Divisions 10 to 12]
Paper, pulp and print	PAPERPRO	[ISIC Rev. 4 Divisions 17 and 18]
Wood and wood products	WOODPRO	[ISIC Rev. 4 Division 16] Wood and wood products other than pulp and paper.

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Flow	Short name	Definition
Textile and leather	TEXTILES	[ISIC Rev. 4 Divisions 13 to 15]
Industry not elsewhere specified	INONSPEC	Including but not limited to: [ISIC Rev. 4 Divisions 22, 31 and 32] Any industry not included above. Note: Most countries have difficulties supplying an industrial breakdown for all fuels. In these cases, the *non-specified (industry)* row has been used. Regional aggregates of industrial consumption should therefore be used with caution.
Transport	TOTTRANS	Consumption in transport covers all transport activity (in mobile engines) regardless of the economic sector to which it is contributing (except for military fuel use) [ISIC Rev. 4 Divisions 49 to 51], and is specified below. Non-energy use in transport is excluded from transport and reported separately.
Domestic aviation	DOMESAIR	Includes deliveries of aviation fuels to aircraft for domestic aviation – commercial, private, agricultural, etc. It includes use for purposes other than flying, e.g. bench testing of engines, but not airline use of fuel for road transport. The domestic/international split should be determined on the basis of departure and landing locations and not by the nationality of the airline. Note that this may include journeys of considerable length between two airports in a country (e.g. San Francisco to Honolulu). For many countries this incorrectly includes fuel used by domestically owned carriers for outbound international traffic.
Road	ROAD	Includes fuels used in road vehicles as well as agricultural and industrial highway use. Excludes military consumption as well as motor gasoline used in stationary engines and diesel oil for use in tractors that are not for highway use.
Rail	RAIL	Includes quantities used in rail traffic, including industrial railways, and in rail transport laid in public roads as part of urban or suburban transport systems (trams, metro, etc.).
Pipeline transport	PIPELINE	Includes energy used in the support and operation of pipelines transporting gases, liquids, slurries and other commodities, including the energy used for pump stations and maintenance of the pipeline. Energy for the pipeline distribution of natural gas or coal gases, hot water or steam (ISIC Rev. 4 Division 35) from the distributor to final users is excluded and should be reported in *energy industry own use*, while the energy used for the final distribution of water (ISIC Rev. 4 Division 36) to household, industrial, commercial and other users should be included in *commercial/public services*. Losses occurring during the transport between distributor and final users should be reported as *losses*.
Domestic navigation	DOMESNAV	Includes 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). Fuel used for ocean, coastal and inland fishing and military consumption are excluded.
Transport not elsewhere specified	TRNONSPE	Includes all transport not elsewhere specified. Note: *International marine bunkers* and *international aviation bunkers* are shown in *supply* and are not included in *transport*

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Flow	Short name	Definition
		as part of final consumption, except for the world total (see note on *supply*).
Residential	RESIDENT	Includes consumption by households, excluding fuels used for transport. Includes households with employed persons [ISIC Rev. 4 Divisions 97 and 98] which is a small part of total residential consumption.
Commercial and public services	COMMPUB	[ISIC Rev. 4 Divisions 33, 36-39, 45-47, 52, 53, 55-56, 58-66, 68-75, 77-82, 84 (excluding Class 8422), 85-88, 90-96 and 99]
Agriculture/forestry	AGRI_FOREST	Includes deliveries to users classified as agriculture, hunting and forestry by the ISIC, and therefore includes energy consumed by such users whether for traction (excluding agricultural highway use), power or heating (agricultural and domestic) [ISIC Rev. 4 Divisions 01 and 02].
Fishing	FISHING	Includes fuels used for inland, coastal and deep-sea fishing. Fishing covers fuels delivered to ships of all flags that have refuelled in the country (including international fishing) as well as energy used in the fishing industry [ISIC Rev. 4 Division 03]. *Prior to 2007 edition, fishing was included with agriculture/forestry and this may continue to be the case for some countries.*
Final consumption not elsewhere specified	ONONSPEC	Includes all fuel use not elsewhere specified as well as consumption in the above-designated categories for which separate figures have not been provided. Military fuel use for all mobile and stationary consumption is included here (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.
Non-energy use	NE_TOT	Covers those fuels that are used as raw materials in the different sectors and are not consumed as a fuel or transformed into another fuel. Non-energy use is shown separately in final consumption under the heading *non-energy use*. Note that for biofuels, only the amounts specifically used for energy purposes (a small part of the total) are included in the energy statistics. Therefore, the non-energy use of biomass is not taken into consideration and the quantities are null by definition.
Non-energy use industry/transformation /energy	NE_IND_TRANSF	Non-energy in industry, transformation processes and energy industry own use.
Memo: Non-energy use in industry	NE_IND	Non-energy in industry (please see above for more details on industry sub-sector definitions).
Memo: Non-energy use in iron and steel	NE_IRONSTL	Non-energy use in iron and steel (please see above for more details on industry sub-sector definitions).
Memo: Non-energy use chemical/ petrochemical	NE_CHEM	Fuels used for chemical feedstocks and non–energy products in the petro-chemical industry, which includes cracking and reforming processes for the purpose of producing ethylene, propylene, butylene, synthesis gas, aromatics, butadene and other hydrocarbon-based raw materials in processes such as steam cracking, aromatics plants and steam reforming [part of ISIC Rev. 4 Group 201].

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Flow	Short name	Definition
		Note: this flow was called "of which petrochemical feedstocks" in previous editions.
Memo: Non-energy use in non-ferrous metals	NE_NONFERR	Non-energy use in non-ferrous metals (please see above for more details on industry sub-sector definitions).
Memo: Non-energy use in non-metallic minerals	NE_NONMET	Non-energy use in non-metallic minerals (please see above for more details on industry sub-sector definitions).
Memo: Non-energy use in transport equipment	NE_TRANSEQ	Non-energy use in transport equipment (please see above for more details on industry sub-sector definitions).
Memo: Non-energy use in machinery	NE_MACHINE	Non-energy use in machinery (please see above for more details on industry sub-sector definitions).
Memo: Non-energy use in mining and quarrying	NE_MINING	Non-energy use in mining and quarrying (please see above for more details on industry sub-sector definitions).
Memo: Non-energy use in food/beverages/tobacco	NE_FOODPRO	Non-energy use in food/beverages/tobacco (please see above for more details on industry sub-sector definitions).
Memo: Non-energy use in paper/pulp and printing	NE_PAPERPRO	Non-energy use in paper/pulp and printing (please see above for more details on industry sub-sector definitions).
Memo: Non-energy use in wood and wood products	NE_WOODPRO	Non-energy use in wood and wood products (please see above for more details on industry sub-sector definitions).
Memo: Non-energy use in construction	NE_CONSTRUC	Non-energy use in construction (please see above for more details on industry sub-sector definitions).
Memo: Non-energy use in textiles and leather	NE_TEXTILES	Non-energy use in textiles and leather (please see above for more details on industry sub-sector definitions).
Memo: Non-energy use in non-specified industry	NE_INONSPEC	Non-energy use in non-specified industry (please see above for more details on industry sub-sector definitions).
Non-energy use in transport	NE_TRANS	Non-energy use in transport.
Non-energy use in other	NE_OTHER	Non-energy use in other sectors such as residential, commercial/public services, agriculture/forestry and fishing.

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Electricity output (GWh)

Flow	Short name	Definition
Electricity output (GWh)	ELOUTPUT	Shows the total number of GWh generated by power plants separated into electricity plants and CHP plants. Electricity production for hydro pumped storage is also given separately for main activity producers and autoproducers.
Electricity output (GWh) - main activity producer electricity plants	ELMAINE	
Electricity output (GWh) - autoproducer electricity plants	ELAUTOE	
Electricity output (GWh) - main activity producer CHP plants	ELMAINC	
Electricity output (GWh) - autoproducer CHP plants	ELAUTOC	
Main activity producers - pumped hydro production (GWh)	MHYDPUMP	
Autoproducer - pumped hydro production (GWh)	AHYDPUMP	

Heat output (TJ)

Flow	Short name	Definition
Heat output (TJ)	HEATOUT	Shows the total heat generated by plants separated into CHP plants and heat plants.
Heat output (TJ)-main activity producer CHP plants	HEMAINC	
Heat output (TJ)-autoproducer CHP plants	HEAUTOC	
Heat output (TJ)-main activity producer heat plants	HEMAINH	
Heat output (TJ)-autoproducer heat plants	HEAUTOH	

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Conversion factors

Calorific values, expressed in **tonne of oil equivalent/tonne** and **kilojoules/kilogramme** represent the average gross energy content minus the latent heat of vaporisation of 1 unit of mass**;** volume to mass for oil products is expressed in **barrels/tonne.**

Flow	Short name	Definition
Average net calorific value	NAVERAGE	Available for primary and secondary oil products, liquid biofuels and charcoal.
NCV of production	NINDPROD	Available for coal products, peat, oil shale, and primary oil products.
NCV of other sources	NOSOURCES	Available for coal products, peat, oil shale, and primary oil products.
NCV of imports	NIMPORTS	Available for coal products, peat, oil shale, and primary oil products.
NCV of exports	NEXPORTS	Available for coal products, peat, oil shale, and primary oil products.
NCV of coke ovens	NCOKEOVS	Only available for coal products, peat, oil shale.
NCV of blast furnaces	NBLAST	Only available for coal products, peat, oil shale.
NCV in main activity producer electricity plants	NMAIN	Only available for coal products, peat, oil shale.
NCV in autoproducer electricity plants	NAUTOELEC	Only available for coal products, peat, oil shale.
NCV in main activity CHP plants	NMAINCHP	Only available for coal products, peat, oil shale.
NCV in autoproducer CHP plants	NAUTOCHP	Only available for coal products, peat, oil shale.
NCV in main activity heat plants	NMAINHEAT	Only available for coal products, peat, oil shale.
NCV in autoproducer heat plants	NAUTOHEAT	Only available for coal products, peat, oil shale.
NCV in industry	NIND	Only available for coal products, peat, oil shale.
NCV for other uses	NOTHER	Only available for coal products, peat, oil shale.
Volume to mass ratio	BBLTONRATIO	This ratio (barrels/tonne), inverse of density, is used to calculate the oil demand by product (in barrels).
GCV of production	GINDPROD	Only available for natural gas.
GCV of imports	GIMPORTS	Only available for natural gas.
GCV of exports	GEXPORTS	Only available for natural gas.
GCV of consumption	GFINCONS	Only available for natural gas.

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Oil demand

Expressed in **thousand barrels/day** (converted from kt using volume to mass ratios in barrels/tonne).

Flow	Short name	Definition
Net inland consumption	NETCON_INLAND	Obtained from above flows, as: TES+TRANSFER+STATDIFF-TPETCHEM-TREFINER-TCOALLIQ-TGTL-EREFINER. Note that only in this table, net inland consumption includes international aviation bunkers for all countries.
Refinery fuel	EREFINER	It shows oil refineries' own use of oil products for operation of equipment, heating and lighting. It mainly includes refinery gas, gas/diesel oil and fuel oil.
International marine bunkers	BUNKERS_MARINE	It shows international marine bunkers consumption of liquid fuels, mainly gas/diesel oil and fuel oil.
Demand	NETDELIC	Sum of the previous three flows. Note that only in this table, demand includes international marine and aviation bunkers for all countries.

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Product definitions

Coal

With the exception of the coal gases, the fuels in this section are expressed in thousand tonnes. The coal gases are expressed in terajoules on a **gross calorific value basis**.

Product	Short name	Definition
Hard coal (if no detail)	HARDCOAL_ND	This item is only used if the detailed breakdown is not available. It includes anthracite, coking coal, other bituminous coal. Hard coal refers to coal of gross calorific value greater than 24 MJ/kg (~5 732 kcal/kg) on an ash-free but moist basis and with a mean random reflectance of vitrinite of at least 0.6. Hard coal may include coals with a GCV greater than or equal to 24 MJ/kg and a mean Rr < 0.6%. Hard coal is the sum of anthracite, coking coal, other bituminous coal and for some countries, prior to 1978, hard coal includes subbituminous coal.
Brown coal (if no detail)	BROWNCOAL_ND	This item is only used if the detailed breakdown is not available. Brown coal is the sum of lignite and sub-bituminous coal. For some countries prior to 1978 brown coal excludes sub-bituminous coal.
Anthracite	ANTHRACITE	Anthracite is a high rank coal used for industrial and residential applications. It is generally less than 10% volatile matter and a high carbon content (about 90% fixed carbon). Its gross calorific value is greater than 24 000 kJ/kg on an ash-free but moist basis.
Coking coal	COKING_COAL	Coking coal refers to 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	OTH_BITCOAL	Other bituminous coal is used mainly for steam raising and space heating 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.
Sub-bituminous coal	SUB_BITCOAL	Sub-bituminous coal includes non-agglomerating coals with a gross calorific value between 20 000 kJ/kg and 24 000 kJ/kg containing more than 31% volatile matter on a dry mineral matter free basis.
Lignite	LIGNITE	Lignite is a non-agglomerating coal with a gross calorific value of less than 20 000 kJ/kg , and greater than 31% volatile matter on a dry mineral matter free basis.
Patent fuel	PATENT_FUEL	Patent fuel is 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

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Product	Short name	Definition
		transformation process. Consumption of patent fuels during the patent fuel manufacturing process is included under *energy industry own use*.
Coke oven coke	COKE_OVEN_COKE_OTH	Coke oven coke is the solid product obtained from the carbonisation of coal, principally coking coal, at high temperature. It is low in moisture content and volatile matter. Coke oven coke is used mainly in the iron and steel industry, acting as energy source and chemical agent. Also included are semi-coke (a solid product obtained from the carbonisation of coal at a low temperature), lignite coke (a semi-coke made from lignite), coke breeze and foundry coke. The heading *energy industry own use* includes the consumption at the coking plants themselves. Consumption in the *iron and steel industry* does not include coke converted into blast furnace gas. To obtain the total consumption of coke oven coke in the iron and steel industry, the quantities converted into blast furnace gas have to be added (these are included in *blast furnaces*).
Gas coke	GAS_COKE	Gas coke is a by-product of hard coal used for the production of town gas in gas works. Gas coke is used for heating purposes. *Energy industry own use* includes the consumption of gas coke at gas works.
Coal tar	COAL_TAR	Coal tar is a result of the destructive distillation of bituminous coal. Coal tar 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.
BKB	BKB	Brown coal briquettes are composition fuels manufactured from lignite, produced by briquetting under high pressure with or without the addition of a binding agent.
Gas works gas	GASWORKS_GAS	Gas works gas covers all types of gas produced in public utility or private plants, whose main purpose is the manufacture, transport and distribution of gas. It includes gas produced by carbonisation (including gas produced by coke ovens and transferred to gas works), by total gasification (with or without enrichment with oil products) and by reforming and simple mixing of gases and/or air.
Coke oven gas	COKE_OVEN_GAS	Coke oven gas is obtained as a by-product of the manufacture of coke oven coke for the production of iron and steel.
Blast furnace gas	BLAST_FURNACE_GAS	Blast furnace gas is 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.
Other recovered gases	OTH_RECOVGASES	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

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Product	Short name	Definition
		recovered from manufacturing and chemical processes not elsewhere defined.

Peat and peat products

The fuels in this section are expressed in thousand tonnes.

Product	Short name	Definition
Peat	PEAT	Peat is a combustible soft, porous or compressed, fossil sedimentary deposit of plant origin with high water content (up to 90% in the raw state), easily cut, of light to dark brown colour. Peat used for non-energy purposes is not included here. Milled peat is included here.
Peat products	PEAT_PRODUCTS	Products such as peat briquettes derived directly or indirectly from sod peat and milled peat.

Oil shale

The fuels in this section are expressed in thousand tonnes.

Product	Short name	Definition
Oil shale and oil sands	OIL_SHALE	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. Oil shale and tar sands used as inputs for other transformation processes are also included here (this includes the portion consumed in the transformation process). Shale oil and other products derived from liquefaction are included in *from other sources* under crude oil (*other hydrocarbons*).

Natural gas

Natural gas is expressed in terajoules on a **gross calorific value** basis.

Product	Short name	Definition
Natural gas	NATURAL_GAS	Natural gas comprises gases, occurring in underground deposits, whether liquefied or gaseous, consisting mainly of methane. It includes "non-associated" gas originating from fields producing hydrocarbons only in gaseous form; "associated" gas produced in association with crude oil; and methane recovered from coal mines (colliery gas) or from coal seams (coal seam gas). Production represents dry marketable production within national boundaries, including offshore production and is measured after purification and extraction of NGL and sulphur. It includes quantities used within the natural gas industry; in gas extraction, pipeline systems and processing plants. Quantities of gas that are re-injected, vented or flared are excluded. Note: starting with the 2011 edition, gas works gas is included with coal. In previous years, gas works gas was included with natural gas.

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Crude, NGL, refinery feedstocks

The fuels in this section are expressed in thousand tonnes.

Product	Short name	Definition
Crude/NGL/feedstocks (if no detail)	OIL_PRIM_PRODUCTS_ND	This item is only used if the detailed breakdown is not available. It includes crude oil, natural gas liquids, refinery feedstocks, additives/blending components and other hydrocarbons.
Crude oil	CRUDE_OIL	Crude oil is a mineral oil consisting of a mixture of hydrocarbons of natural origin and associated impurities, such as sulphur. It exists in the liquid phase under normal surface temperatures and pressure and its physical characteristics (density, viscosity, etc.) are highly variable. It includes field or lease condensates (separator liquids) which are recovered from associated and non-associated gas where it is commingled with the commercial crude oil stream.
Natural gas liquids	NGL	NGL are the liquid or liquefied hydrocarbons recovered from natural gas in separation facilities or gas processing plants. Natural gas liquids include ethane, propane, butane (normal and iso-), (iso) pentane and pentanes plus (sometimes referred to as natural gasoline or plant condensate).
Refinery feedstocks	REFINERY_FEEDSTOCKS	A refinery feedstock is a processed oil destined for further processing (e.g. straight run fuel oil or vacuum gas oil) other than blending in the refining industry. With further processing, it will be transformed into one or more components and/or finished products. This definition also covers returns from the petrochemical industry to the refining industry (e.g. pyrolysis gasoline, C4 fractions, gasoil and fuel oil fractions).
Additives/blending components	ADDITIVES	Additives are non-hydrocarbon substances added to or blended with a product to modify its properties, for example, to improve its combustion characteristics. Alcohols and ethers (MTBE, methyl tertiary-butyl ether) and chemical alloys such as tetraethyl lead are included here. The biofuel fractions of biogasoline, biodiesel and ethanol are not included here, but under liquid biofuels. This differs from the presentation of additives in the *Oil Information* publication.
Other hydrocarbons	HYDROCARBONS_OTHER	This category includes synthetic crude oil from tar sands, shale oil, etc., liquids from coal liquefaction, output of liquids from natural gas conversion into gasoline, hydrogen and emulsified oils (e.g. Orimulsion).

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Oil products

The fuels in this section are expressed in thousand tonnes.

Oil products are any oil-based products which can be obtained by distillation and are normally used outside the refining industry. The exceptions to this are those finished products which are classified as refinery feedstocks.

Production of oil products shows gross refinery output for each product.

Refinery fuel (row *oil refineries*, under *energy industry own use*) represents consumption of oil products, both intermediate and finished, within refineries, e.g. for heating, lighting, traction, etc.

Product	Short name	Definition
Refinery gas	REFINERY_GAS	Refinery gas is defined as non-condensable gas obtained during distillation of crude oil or treatment of oil products (e.g. cracking) in refineries. It consists mainly of hydrogen, methane, ethane and olefins. It also includes gases which are returned from the petrochemical industry. Refinery gas production refers to gross production. Own consumption is shown separately under *oil refineries* in *energy industry own use*.
Ethane	ETHANE	Ethane is a naturally gaseous straight-chain hydrocarbon (C_2H_6). It is a colourless paraffinic gas which is extracted from natural gas and refinery gas streams.
Liquefied petroleum gases (LPG)	LPG	Liquefied petroleum gases are the light hydrocarbon fraction of the paraffin series, derived from refinery processes, crude oil stabilisation plants and natural gas processing plants, comprising propane (C_3H_8) and butane (C_4H_{10}) or a combination of the two. They could also include propylene, butylene, isobutene and isobutylene. LPGs are normally liquefied under pressure for transportation and storage.
Motor gasoline excl. biofuels	MOTOR_GASOLINE_NONBIO	Motor gasoline is light hydrocarbon oil for use in internal combustion engines such as motor vehicles, excluding aircraft. Motor gasoline is distilled between 35°C and 215°C and 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). Motor gasoline excluding biofuels does not include the liquid biofuel or ethanol blended with gasoline – see liquid biofuels.
Aviation gasoline	AVIATION_GASOLINE	Aviation gasoline 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.
Gasoline type jet fuel	GASOLINE_JET	Gasoline type jet fuel includes all light hydrocarbon oils for use in aviation turbine power units, which distil between 100°C and 250°C. This fuel is obtained by blending kerosenes and gasoline or naphthas in such a way that the aromatic content does not exceed 25% in volume, and the vapour pressure is between 13.7kPa and 20.6kPa. Additives can be included to improve fuel stability and combustibility.

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Product	Short name	Definition
Kerosene type jet fuel excl. biofuels	KEROSENE_JET_NONBIO	Kerosene type jet fuel is a medium distillate used for aviation turbine power units. It has the same distillation characteristics and flash point as kerosene (between 150ºC and 300ºC but not generally above 250ºC). In addition, it has particular specifications (such as freezing point) which are established by the International Air Transport Association (IATA). It includes kerosene blending components. Kerosene type jet fuel excluding biofuels does not include the liquid biofuels blended with jet kerosene.
Other kerosene	KEROSENE_OTHER	Kerosene (other than kerosene used for aircraft transport which is included with aviation fuels) comprises refined petroleum distillate intermediate in volatility between gasoline and gas/diesel oil. It is a medium oil distilling between 150ºC and 300ºC.
Gas/diesel oil excl. biofuels	GAS_DIESEL_OIL_NONBIO	Gas/diesel oil includes heavy gas oils. Gas oils are obtained from the lowest fraction from atmospheric distillation of crude oil, while heavy gas oils are obtained by vacuum redistillation of the residual from atmospheric distillation. Gas/diesel oil distils between 180ºC and 380ºC. Several grades are available depending on uses: diesel oil for diesel compression ignition (cars, trucks, marine, etc.), light heating oil for industrial and commercial uses, and other gas oil including heavy gas oils which distil between 380ºC and 540ºC and which are used as petrochemical feedstocks. Gas/diesel oil excluding biofuels does not include the liquid biofuels blended with gas/diesel oil – see liquid biofuels.
Fuel oil	FUEL_OIL_RESIDUAL	Fuel oil defines oils that make up the distillation residue. It comprises all residual fuel oils, including those obtained by blending. Its kinematic viscosity is above 10 cSt at 80ºC. The flash point is always above 50ºC and the density is always higher than 0.90 kg/l.
Naphtha	NAPHTHA	Naphtha is a feedstock destined either for the petrochemical industry (e.g. ethylene manufacture or aromatics production) or for gasoline production by reforming or isomerisation within the refinery. Naphtha comprises material that distils between 30ºC and 210ºC. Naphtha imported for blending is shown as an import of naphtha, and then shown in the *transfers* row as a negative entry for naphtha and a positive entry for the corresponding finished product (e.g. gasoline).
White spirit & industrial spirit (SBP)	WHITE_SPIRIT	White spirit and industrial spirit (SBP) are refined distillate intermediates with a distillation in the naphtha/kerosene range. White spirit has a flash point above 30ºC and a distillation range of 135ºC to 200ºC. Industrial spirit (SBP) comprises light oils distilling between 30ºC and 200ºC, with a temperature difference between 5% volume and 90% volume distillation points, including losses, of not more than 60ºC. In other words, SBP is a light oil of narrower cut than motor spirit. There are seven or eight grades of industrial spirit, depending on the position of the cut in the distillation range defined above.

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Product	Short name	Definition
Lubricants	LUBRICANTS	Lubricants are hydrocarbons produced from distillate or residue; 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.
Bitumen	BITUMEN	Bitumen is a solid, semi-solid or viscous hydrocarbon with a colloidal structure that is brown to black in colour. It is obtained by vacuum distillation of oil residues from atmospheric distillation of crude oil. Bitumen is often referred to as asphalt and is primarily used for surfacing of roads and for roofing material. This category includes fluidised and cut back bitumen.
Paraffin waxes	PARAFFIN_WAXES	Paraffin waxes are saturated aliphatic hydrocarbons. These waxes are residues extracted when dewaxing lubricant oils, and they have a crystalline structure which is more or less fine according to the grade. Their main characteristics are that they are colourless, odourless and translucent, with a melting point above 45ºC.
Petroleum coke	PETROLEUM_COKE	Petroleum coke is defined as a black solid residue, obtained mainly by cracking and carbonising of petroleum derived feedstocks, 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 "calcined 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.
Other oil products	OTH_SEC_OIL_PRODS_ND	Other oil products not classified above (e.g. tar, sulphur and grease) are included here. This category also includes aromatics (e.g. BTX or benzene, toluene and xylene) and olefins (e.g. propylene) produced within refineries.

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Biofuels and wastes

The fuels in this section are expressed in terajoules on a **net calorific value** basis, with the exception of liquid biofuels and charcoal, which are in thousand tonnes.

Product	Short name	Definition
Industrial waste	WASTE_INDUSTRIAL_NONREN	Industrial waste of non-renewable origin consists of solid and liquid products (e.g. tyres) combusted directly, usually in specialised plants, to produce heat and/or power. Renewable industrial waste is not included here, but with solid biofuels, biogas or liquid biofuels.
Municipal waste (renewable)	WASTE_MUNICIPAL_REN	Municipal waste consists of products that are combusted directly to produce heat and/or power and comprises wastes produced by households, industry, hospitals and the tertiary sector that are collected by local authorities for incineration at specific installations. Municipal waste is split into renewable and non-renewable.
Municipal waste (non-renewable)	WASTE_MUNICIPAL_NONREN	Municipal waste consists of products that are combusted directly to produce heat and/or power and comprises wastes produced by households, industry, hospitals and the tertiary sector that are collected by local authorities for incineration at specific installations. Municipal waste is split into renewable and non-renewable.
Primary solid biofuels	PRIMARY_SOLID_BIOFUEL	Primary solid biofuels are defined as any plant matter used directly as fuel or converted into other forms before combustion. This covers a multitude of woody materials generated by industrial process or provided directly by forestry and agriculture (firewood, wood chips, bark, sawdust, shavings, chips, sulphite lyes also known as black liquor, animal materials/wastes and other solid biofuels). Note that for biofuels, only the amounts of biomass specifically used for energy purposes (a small part of the total) are included in the energy statistics. Therefore, the non-energy use of biomass is not taken into consideration and the quantities are null by definition.
Biogases	BIOGASES	Biogases are gases arising from the anaerobic fermentation of biomass and the gasification of solid biomass (including biomass in wastes). The biogases from anaerobic fermentation are composed principally of methane and carbon dioxide and comprise landfill gas, sewage sludge gas and other biogases from anaerobic fermentation. Biogases can also be produced from thermal processes (by gasification or pyrolysis) of biomass and are mixtures containing hydrogen and carbon monoxide (usually known as syngas) along with other components. These gases may be further processed to modify their composition and can be further processed to produce substitute natural gas. Biogases are used mainly as a fuel but can be used as a chemical feedstock.

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Product	Short name	Definition
Biogasoline	BIOGASOLINE	Biogasoline 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%). Biogasoline includes the amounts that are blended into the gasoline – it does not include the total volume of gasoline into which the biogasoline is blended.
Biodiesels	BIODIESEL	Biodiesels 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 bio-oil (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. Biodiesels includes the amounts that are blended into the diesel – it does not include the total volume of diesel into which the biodiesel is blended.
Bio jet kerosene	KEROSENE_JET_BIO	Liquid biofuels derived from biomass and blended with or replacing jet kerosene.
Other liquid biofuels	LIQBIOFUEL_OTHER	Other liquid biofuels include liquid biofuels not reported in either biogasoline or biodiesels.
Non-specified primary biofuels and waste	BIOFUELS_NONSPEC	This item is used when the detailed breakdown for primary biofuels and waste is not available.
Charcoal	CHARCOAL	It covers the solid residue of the destructive distillation and pyrolysis of wood and other vegetal material.
Memo: Renewables	RENEWABLES_TOTAL	Is equal to the direct sum of HYDRO, GEOTHERMAL, SOLAR_PV, SOLAR_THERMAL, TIDE_WAVE_OCEAN, WIND, WASTE_MUNICIPAL_REN, PRIMARY_SOLID_BIOFUEL, BIOGASES, BIOGASOLINE, BIODIESEL, LIQBIOFUEL_OTHER, BIOFUELS_NONSPEC and CHARCOAL. Note that it does not include any estimation of the amount of electricity and heat derived from renewable sources.

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Electricity and Heat

Electricity is expressed in gigawatt hours and heat is expressed in terajoules. Direct use of geothermal and solar thermal is in terajoules on a **net calorific value** basis.

Product	Short name	Definition
Elec/heat output from non-specified manufactured gases	MANUFACTURED_GAS_OUTPUT	This item is only used if the detailed breakdown is not available. It includes coke oven gas, blast furnace gas and other recovered gases. Gas works gas is not included here.
Heat output from non-specified combustible fuels	HEAT_COMBUSTIBLE_NS	This item is only used if the detailed breakdown is not available.
Nuclear	NUCLEAR	Energy released by nuclear fission or nuclear fusion.
Hydro	HYDRO	Hydro energy represents the potential and kinetic energy of water converted into electricity in hydroelectric plants.
Geothermal	GEOTHERMAL	Geothermal energy is the 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 stream or high enthalpy brine after flashing • directly as heat for district heating, agriculture, etc.
Solar photovoltaics	SOLAR_PV	Electricity from photovoltaic cells.
Solar thermal	SOLAR_THERMAL	Solar energy is the solar radiation exploited for hot water production and electricity generation, by: • flat plate collectors, mainly of the thermosyphon type, for domestic hot water or for the seasonal heating of swimming pools • solar thermal-electric plants Passive solar energy for the direct heating, cooling and lighting of dwellings or other buildings is not included.
Tide, wave and ocean	TIDE_WAVE_OCEAN	Tide, wave and ocean represents the mechanical energy derived from tidal movement, wave motion or ocean current and exploited for electricity generation.
Wind	WIND	Wind energy represents the kinetic energy of wind exploited for electricity generation in wind turbines.
Other sources	OTH_ENSOURC	Other sources includes production not included elsewhere such as fuel cells.
Electricity	ELECTRICITY	Gross electricity production is measured at the terminals of all alternator sets in a station; it

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Product	Short name	Definition
		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 generally estimated as 7% for conventional thermal stations, 1% for hydro stations, and 6% for nuclear, geothermal and solar stations. Production in hydro stations includes production from pumped storage plants.
Heat	HEAT	Heat production includes all heat produced by main activity producer CHP and heat plants, as well as heat sold by autoproducer CHP and heat plants to third parties. Fuels used to produce quantities of heat for sale are included in the transformation processes under the rows *CHP plants* and *Heat plants*. The use of fuels for heat which is not sold is included under the sectors in which the fuel use occurs. Data on heat have become available in different years for different countries and thus any aggregated data should be used with caution.

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Products for oil demand (within WORLDBBL)

Expressed in **thousand barrels/day** (converted from kt using volume to mass ratios in barrels/tonne)

Flow	Short name	Definition
NGL/LPG	NGL_LPG	NGL+LPG+ETHANE
Naphtha	NAPHTHA	NAPHTHA
Motor gasoline	MOTOR_GASOLINE	MOTOR_GASOLINE_NONBIO+ADDITIVES+ BIOGASOLINE+LIQBIOFUEL_OTHER
Aviation fuels	JETFUEL	KEROSENE_JET_NONBIO+KEROSENE_JET_BIO+ AVIATION_GASOLINE+GASOLINE_JET
Other kerosene	KEROSENE_OTHER	KEROSENE_OTHER
Gas/diesel oil	GAS_DIESEL_HEAVY_OIL	GAS_DIESEL_OIL_NONBIO+GAS_DIESEL_OIL_BIO
Fuel oil	FUEL_OIL_RESIDUAL	FUEL_OIL_RESIDUAL
Other products	OTH_OIL_PRODS	WHITE_SPIRIT+LUBRICANTS+BITUMEN+ PARAFFIN_WAXES+PETROLEUM_COKE+ OTH_SEC_OIL_PRODS_ND+CRUDE_OIL+ HYDROCARBONS_OTHER+REFINERY_GAS
Total products	OIL_TOTAL	Sum of all products.

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Geographical coverage

Geographical divisions

This document is without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area. In this publication, 'country' refers to country, economy or territory, as case may be. Data start in 1960 for OECD countries, and in 1971 for non-OECD countries and regional aggregates, unless otherwise specified.

Country/Region	Short name	Definition
OECD Americas	OECDAM	Includes Canada; Chile; Colombia; Costa Rica; Mexico and the United States.
OECD Asia Oceania	OECDAO	Includes Australia; Israel[1]; Japan; Korea and New Zealand.
OECD Europe	OECDEUR	Includes Austria; Belgium; the Czech Republic; Denmark; Estonia; Finland; France; Germany; Greece; Hungary; Iceland; Ireland; Italy; Latvia; Lithuania; Luxembourg; the Netherlands; Norway; Poland; Portugal; the Slovak Republic; Slovenia; Spain; Sweden; Switzerland; the Republic of Türkiye and the United Kingdom. Estonia, Latvia, Lithuania and Slovenia are included starting in 1990. Prior to 1990, data for Estonia, Latvia and Lithuania are included in Former Soviet Union and data for Slovenia in Former Yugoslavia.
Albania	ALBANIA	
Argentina	ARGENTINA	Argentina is currently an IEA Association country, therefore it is included in the IEA and Accession/Association countries aggregate (IEA Family), for data starting in 1971 and for the entire time series.
Australia	AUSTRALIA	Excludes the overseas territories. Data are reported on a fiscal year basis. By convention data for the fiscal year that starts on 1 July Y-1 and ends on 30 June Y are labelled as year Y.
Austria	AUSTRIA	
Belgium	BELGIUM	
Bosnia and Herzegovina	BOSNIAHERZ	Data for Bosnia and Herzegovina are available starting in 1990. Prior to that, they are included in Former Yugoslavia.

[1] The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

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Country/Region	Short name	Definition
Brazil	BRAZIL	Brazil is currently an IEA Association country, therefore it is included in the IEA and Accession/Association countries aggregate (IEA Family), for data starting in 1971 and for the entire time series.
Bulgaria	BULGARIA	
Canada	CANADA	
Chile	CHILE	Data start in 1971. Chile is currently seeking accession to full IEA membership (Accession country), therefore it is included in the IEA and Accession/Association countries aggregate (IEA Family), for data starting in 1971 and for the entire time series.
People's Republic of China	CHINA	People's Republic of China is currently an IEA Association country, therefore it is included in the IEA and Accession/Association countries aggregate (IEA Family), for data starting in 1971 and for the entire time series.
Colombia	COLOMBIA	Data start in 1971. Data for Colombia prior to 1990 in the *Oil Information* may be different from those in *World Energy Statistics* due to a change in reporting methodology. Colombia is currently seeking accession to full IEA membership (Accession country), therefore it is included in the IEA and Accession/Association countries aggregate (IEA Family), for data starting in 1971 and for the entire time series.
Costa Rica	COSTARICA	Costa Rica, which is currently seeking accession to full IEA membership (Accession country), is now included in the IEA and Accession/Association countries aggregate (IEA Family). Costa Rica joined the OECD in May 2021; data are now included in the applicable OECD aggregates.
Croatia	CROATIA	Data for Croatia are available starting in 1990. Prior to that, they are included in Former Yugoslavia.
Cyprus	CYPRUS	**Note by the Republic of Türkiye (Türkiye):** The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Türkiye recognizes the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Türkiye shall preserve its position concerning the "Cyprus" issue. **Note by all the European Union Member States of the OECD and the European Union:** The Republic of Cyprus is recognised by all members of the United Nations with the exception of Türkiye. The information in this report relates to the area under the effective control of the Government of the Republic of Cyprus.
Czech Republic	CZECH	Data start in 1971.

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Country/Region	Short name	Definition
Denmark	DENMARK	Excludes Greenland and the Faroe Islands, except prior to 1990, where data on oil for Greenland were included with the Danish statistics.
Egypt	EGYPT	Data for Egypt are reported on a fiscal year basis. By convention, data for the fiscal year that starts on 1 July Y and ends on 30 June Y+1 are labelled as year Y. Egypt is currently an IEA Association country, therefore it is included in the IEA and Accession/Association countries aggregate (IEA Family), for data starting in 1971 and for the entire time series.
Estonia	ESTONIA	Data start in 1990. Prior to that, they are included within Former Soviet Union.
Finland	FINLAND	
France	FRANCE	Includes Monaco and excludes the overseas collectivities: New Caledonia; French Polynesia; Saint Barthélemy; Saint Martin; Saint Pierre and Miquelon; and Wallis and Futuna. Energy data for the following overseas departments: Guadeloupe; French Guiana; Martinique; Mayotte; and Réunion are included for the years from 2011 onwards, and excluded for earlier years.
Georgia	GEORGIA	Data for Georgia are available starting in 1990. Prior to that, they are included in Former Soviet Union.
Germany	GERMANY	Includes the new federal states of Germany from 1970 onwards.
Greece	GREECE	
Hungary	HUNGARY	Data start in 1965.
Iceland	ICELAND	
India	INDIA	Data are reported on a fiscal year basis. By convention data for the fiscal year that starts on 1 April Y and ends on 31 March Y+1 are labelled as year Y. This convention is different from the one used by Government of India, whereby fiscal year starts on 1 April Y and ends on 31 March Y+1 are labelled as year Y+1. India is currently an IEA Association country, therefore it is included in the IEA and Accession/Association countries aggregate (IEA Family), for data starting in 1971 and for the entire time series.
Indonesia	INDONESIA	Indonesia is currently an IEA Association country, therefore it is included in the IEA and Accession/Association countries aggregate (IEA Family), for data starting in 1971 and for the entire time series.
Ireland	IRELAND	

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Country/Region	Short name	Definition
Israel	ISRAEL	The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law. Data start in 1971. Israel is currently seeking accession to full IEA membership (Accession country), therefore it is included in the IEA and Accession/Association countries aggregate (IEA Family), for data starting in 1971 and for the entire time series.
Italy	ITALY	Includes San Marino and the Holy See.
Japan	JAPAN	Includes Okinawa. Starting 1990, data are reported on a fiscal year basis. By convention data for the fiscal year that starts on 1 April Y and ends on 31 March Y+1 are labelled as year Y.
Kenya	KENYA	Kenya joined the IEA as an Association country in June 2023. Accordingly, it is included in the IEA and Accession/Association countries aggregate (IEA Family), for data starting in 1971 and for the entire time series.
Korea	KOREA	Data start in 1971.
Kosovo	KOSOVO	Data for Kosovo are available starting in 2000. Between 1990 and 1999, data for Kosovo are included in Serbia. Prior to 1990, they are included in Former Yugoslavia.
Latvia	LATVIA	Latvia joined the IEA in October 2024. Accordingly, Latvia is included in the IEA member countries aggregate (IEA Total) for data starting in 1990. Data for Latvia are available starting in 1990. Prior to that, they are included in Former Soviet Union.
Lithuania	LITHUANIA	Lithuania joined the IEA in February 2022. Accordingly, Lithuania is included in the IEA member countries aggregate (IEA Total) for data starting in 1990. Data for Lithuania are available starting in 1990. Prior to that, they are included in Former Soviet Union.
Luxembourg	LUXEMBOURG	
Malta	MALTA	
Mexico	MEXICO	Data start in 1971.
Republic of Moldova	MOLDOVA	Data for Moldova are available starting in 1990. Prior to that, they are included in Former Soviet Union.
Montenegro	MONTENEGRO	Data for Montenegro are available starting in 2005. Between 1990 and 2004, data for Montenegro are included in Serbia. Prior to 1990, they are included in Former Yugoslavia.

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Country/Region	Short name	Definition
Morocco	MOROCCO	Morocco is currently an IEA Association country, therefore it is included in the IEA and Accession/Association countries aggregate (IEA Family), for data starting in 1971 and for the entire time series. The statistical data for Morocco are supplied by and under the responsibility of the relevant Moroccan authorities. The use of such data by the IEA are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.
Netherlands	NETHERLANDS	Excludes Suriname, Aruba and the other former Netherland Antilles (Bonaire, Curaçao, Saba, Saint Eustatius and Sint Maarten).
New Zealand	NEWZEALAND	
Republic of North Macedonia	NORTHMACED	Data for the Republic of North Macedonia (North Macedonia) are available starting in 1990. Prior to that, they are included in Former Yugoslavia.
Norway	NORWAY	
Poland	POLAND	
Portugal	PORTUGAL	Includes the Azores and Madeira.
Romania	ROMANIA	Romania became an Accession country in April 2026.
Senegal	SENEGAL	Senegal joined the IEA as an Association country in June 2023. Accordingly, it is included in the IEA and Accession/Association countries aggregate (IEA Family), for data starting in 1971 and for the entire time series.
Serbia	SERBIA	Data for Serbia are available starting in 1990. Prior to that, they are included in Former Yugoslavia. Serbia includes Montenegro until 2004 and Kosovo until 1999.
Singapore	SINGAPORE	Singapore is currently an IEA Association country, therefore it is included in the IEA and Accession/Association countries aggregate (IEA Family), for data starting in 1971 and for the entire time series.
Slovak Republic	SLOVAKIA	Data start in 1971.
Slovenia	SLOVENIA	Data start in 1990. Prior to that, they are included within Former Yugoslavia.
South Africa	SOUTHAFRICA	Nuclear and Hydro electricity generation data are reported on a fiscal year basis, beginning on the 1 April Y and ending on the 31 March Y+1. South Africa is currently an IEA Association country, therefore it is included in the IEA and Accession/Association countries aggregate (IEA Family), for data starting in 1971 and for the entire time series.

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Country/Region	Short name	Definition
Spain	SPAIN	Includes the Canary Islands.
Sweden	SWEDEN	
Switzerland	SWITZERLAND	Includes Liechtenstein for the oil data. Data for other fuels do not include Liechtenstein.
Thailand	THAILAND	Thailand is currently an IEA Association country, therefore it is included in the IEA and Accession/Association countries aggregate (IEA Family), for data starting in 1971 and for the entire time series.
Republic of Türkiye	TURKIYE	
Ukraine	UKRAINE	Data for Ukraine are available starting in 1990. Prior to that, they are included in Former Soviet Union. Ukraine is currently an IEA Association country, therefore it is included in the IEA and Accession/Association countries aggregate (IEA Family), for data starting in 1990 and for the entire time series.
United Kingdom	UK	Shipments of coal and oil to the Channel Islands and the Isle of Man from the United Kingdom are not classed as exports. Supplies of coal and oil to these islands are, therefore, included as part of UK supply. Exports of natural gas to the Isle of Man are included with the exports to Ireland. As of the 1st of February 2020, the United Kingdom (UK) is no longer part of the European Union (EU) and has entered into a transition period until 31 December 2020. In this publication with data up to 2020, the UK is still included in the EU28 aggregate. However, it is excluded from the EU27_2020 aggregate.
United States	USA	Includes the 50 states and the District of Columbia but generally excludes all territories, and all trade between the U.S. and its territories. Oil statistics include Guam, Puerto Rico[2] and the United States Virgin Islands; trade statistics for coal include international trade to and from Puerto Rico and the United States Virgin Islands. Starting with 2017 data, inputs to and outputs from electricity and heat generation include Puerto Rico.

[2] Inputs to and outputs from electricity and heat generation up to 2016, and natural gas data for the entire time series for Puerto Rico are included under Other non-OECD Americas.

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Country/Region	Short name	Definition
Memo: OECD Total	OECDTOT	Includes Australia; Austria; Belgium; Canada; Chile; Colombia; Costa Rica; the Czech Republic; Denmark; Estonia; Finland; France; Germany; Greece; Hungary; Iceland; Ireland; Israel; Italy; Japan; Korea; Latvia; Lithuania; Luxembourg; Mexico; the Netherlands; New Zealand; Norway; Poland; Portugal; the Slovak Republic; Slovenia; Spain; Sweden; Switzerland; the Republic of Türkiye; the United Kingdom and the United States. Estonia, Latvia, Lithuania and Slovenia are included starting in 1990. Prior to 1990, data for Estonia, Latvia and Lithuania are included in Former Soviet Union and data for Slovenia in Former Yugoslavia.
Memo: IEA Total	IEATOT	Includes Australia; Austria; Belgium; Canada; the Czech Republic; Denmark; Estonia; Finland; France; Germany; Greece; Hungary; Ireland; Italy; Japan; Korea; Latvia; Lithuania; Luxembourg; Mexico; the Netherlands; New Zealand; Norway; Poland; Portugal; the Slovak Republic; Spain; Sweden; Switzerland; the Republic of Türkiye; the United Kingdom and the United States. Estonia, Latvia, and Lithuania are included starting in 1990. Prior to 1990, data for Estonia, Latvia and Lithuania are included in Former Soviet Union.
Memo: IEA and Accession/Association countries	IEAFAMILY	Includes: IEA member countries: Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Spain, Sweden, Switzerland, the Republic of Türkiye, the United Kingdom and the United States; Accession countries: Brazil, Chile, Colombia, Costa Rica, and Israel; Association countries: Argentina, the People's Republic of China, Egypt, India, Indonesia, Morocco, Singapore, South Africa, Thailand, Ukraine, Kenya and Senegal. Estonia, Latvia, Lithuania and Slovenia are included starting in 1990. Prior to 1990, data for Estonia, Latvia and Lithuania are included in Former Soviet Union and data for Slovenia in Former Yugoslavia. Romania became an IEA Accession country in April 2026. However, as the datasets for this edition had already been finalised, Romania is not included in the IEAFAMILY aggregate (comprising Member, Accession and Association countries). Romania will be integrated into the aggregate in subsequent editions. Viet Nam became an IEA Association country in February 2026. However, because 2024 data was not yet available at time of publication, Viet Nam is not included in this edition and therefore not reflected in the IEAFAMILY aggregate. Viet Nam will be integrated into the aggregate in subsequent editions.

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Country/Region	Short name	Definition
Memo: European Union – 27	EU27	Includes Austria; Belgium; Bulgaria; Croatia; Cyprus[3]; the Czech Republic; Denmark; Estonia; Finland; France; Germany; Greece; Hungary; Ireland; Italy; Latvia; Lithuania; Luxembourg; Malta; the Netherlands; Poland; Portugal; Romania; the Slovak Republic; Slovenia; Spain and Sweden. Please note that in the interest of having comparable data, all these countries are included since 1990 despite different entry dates into the European Union.
Memo: European Union – 28	EU28	Refers to the EU27 with the addition of the United Kingdom. Includes Austria; Belgium; Bulgaria; Croatia; Cyprus; the Czech Republic; Denmark; Estonia; Finland; France; Germany; Greece; Hungary; Ireland; Italy; Latvia; Lithuania; Luxembourg; Malta; the Netherlands; Poland; Portugal; Romania; the Slovak Republic; Slovenia; Spain; Sweden and the United Kingdom[4]. Please note that in the interest of having comparable data, all these countries are included since 1990 despite different entry dates into the European Union.
Memo: G7	G7	Includes Canada, France, Germany, Italy, Japan, United Kingdom and United States.

[3] Refer to the country note for Cyprus earlier in this section.
[4] As of the 1st of February 2020, the United Kingdom (UK) is no longer part of the European Union (EU) and has entered into a transition period until 31 December 2020.

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Fiscal year

This table lists the countries for which data are reported on a fiscal year basis. More information on beginning and end of fiscal years by country is reported in the column 'Definition'.
This document is without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area. In this publication, 'country' refers to country, economy or territory, as case may be. Data start in 1960 for OECD countries and in 1971 for non-OECD countries and regional aggregates, unless otherwise specified.

Country/Region	Short name	Definition
Australia	AUSTRALIA	Data are reported on a fiscal year basis. By convention, data for the fiscal year that starts on 1 July Y-1 and ends on 30 June Y are labelled as year Y.
Egypt	EGYPT	Data are reported on a fiscal year basis. By convention, data for the fiscal year that starts on 1 July Y and ends on 30 June Y+1 are labelled as year Y.
India	INDIA	Data are reported on a fiscal year basis. By convention, data for the fiscal year that starts on 1 April Y and ends on 31 March Y+1 are labelled as year Y. This convention is different from the one used by Government of India, whereby fiscal year starts on 1 April Y and ends on 31 March Y+1 are labelled as year Y+1.
Japan	JAPAN	Starting 1990, data are reported on a fiscal year basis. By convention, data for the fiscal year that starts on 1 April Y and ends on 31 March Y+1 are labelled as year Y.
South Africa	SOUTHAFRICA	Nuclear and Hydro electricity generation data are reported on a fiscal year basis, beginning on the 1 April Y and ending on 31 March Y+1.

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Country notes and sources

OECD countries

General notes

The notes given in this document refer to data for the years 1960 to 2024 published in the on-line data service. In general, more detailed notes are available for data starting in 1990.

Data are obtained through annual submission of five fuel questionnaires from national administrations, as indicated for each country in the section on sources.

In some instances it has been necessary for the IEA Secretariat to estimate some data; explanations of the estimates are provided in the country notes. For more information on fuel-specific methodologies, please refer to the IEA information publications (Oil information, Natural Gas information, Coal information, Electricity information and Renewables information).

This section lists a few specific notes that apply to all countries, and it is followed by a time series of comprehensive country-specific notes by fuel and flow.

Prior to 1974, most fuel inputs and electricity and heat outputs for autoproducers are included in main activity producers. The figures for the quantities of fuels used for the generation of electricity and heat and the corresponding outputs in CHP and heat plants should be used with caution. Despite estimates introduced by the IEA Secretariat, inputs and outputs are not always consistent. Please refer to notes below under *Electricity and heat*.

Data for anthracite, coking coal, other bituminous coal, sub-bituminous coal and lignite are available separately from 1978. Prior to 1978, only data for hard coal and brown coal (lignite/sub-bituminous coal) are available.

In 1996, the IEA Secretariat extensively revised data on coal and coke use in blast furnaces, and in the iron and steel industry (for those countries with blast furnaces), based on data provided to the OECD Steel Committee and other sources. The quantities of fuels transformed into blast furnace gas have been estimated by the IEA Secretariat based on its blast furnace model.

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For biofuels and waste (i.e. solid biofuels, biogases, liquid biofuels, industrial waste and municipal waste), there may be breaks in time series between 1988 and 1989, as in 1997 the IEA Secretariat extensively revised these data based on data from Eurostat (for the EU-15 member countries) and on other national sources for other OECD member countries, and data from Eurostat were generally available from 1989. Generally, data on biofuels and waste are reported in non-specified prior to 1989.

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Australia

Source

Department of Climate Change, Energy, the Environment and Water, Canberra.

General notes

All data refer to the fiscal year (e.g. July 2020 to June 2021 for 2021).

Starting with the 2013 edition and following, data for Australia were revised back to 2003 due to the adoption of the National Greenhouse and Energy Reporting (NGER) as the main energy consumption data source for the Australian Energy Statistics. As a result, there are breaks in the time series for many data between 2002 and 2003. The revisions have also introduced some methodological issues, including identifying inputs and outputs to certain transformation processes such as gas works plants, electricity plants and CHP plants. Energy industry own use and inputs to the transformation processes are sometimes not reported separately in the correct categories. More detail is given in the notes below.

Coal

General notes

Stock change and statistical difference are both subject to further review for black coal grade by the Australian administration.

Following La Niña events that affected Australia territory from 2020 to 2023, which compromised usual data collection practices, coal supply data quality for these years as well as 2024 has been impacted.

Due to confidentiality reasons, for **other bituminous coal**, **subbituminous coal**, **lignite** and **coal tar** the Australian administration submits subtotals of demand flows but not their breakdown. As a result, since the 2020 edition, part of the demand side data for these products have been estimated by the IEA Secretariat for the years from 2018 to 2023. In the 2026 edition, 2024 data for several industrial sectors for the afore-mentioned products have been aggregated in the "Not elsewhere specified (Industry)" flow by the Australian administration.

From the 2020 edition, part of the demand side for **anthracite** is confidential. Some of the quantities reported under "Industry, not elsewhere specified" could refer to other flows.

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In the 2021 edition, the split between underground and surface production of **coking coal** and **other bituminous coal** was revised back to 2015 based on new available data.

In the 2017 edition, the Australian administration revised data on **coal tar** back to 2010 resulting in breaks in time series between 2009 and 2010.

In the 2016 edition, extensive revisions were made to 2010 to 2013 data for many primary and manufactured products causing breaks in production, trade and consumption between 2009 and 2010. Time series which begin in 2010 may be reported in other flows until 2009. 2014 data were reported on the same basis as 2010 to 2013.

In the 2015 edition, increases of production and consumption of **other bituminous coal** for 2013 are due to both new mine capacity and improved classification data. In the 2016 edition, these revisions were extended back to 2010. Apparent switching between **sub-bituminous coal** and **other bituminous coal** between 2009 and 2010 suggests that some **other bituminous coal** was reported as **sub-bituminous coal** prior to this, across several flows.

Reclassification of some **coal** types in the 2013 edition were calculated on an energy basis and resulted in a net increase of quantities of primary coal from 2003 to 2011.

Breaks in the time series for **gas works gas** between 2008 and 2009 are due to a change of survey, while reduced production and consumption between 2006 and 2008 are due to the removal of some **natural gas** inputs.

Data on **blast furnace gas** for electricity production by autoproducers begins in 1986.

Hard coal data prior to 1978 may include **sub-bituminous coal**.

Supply

In the 2025 edition, preliminary data for 2024p stock changes of **other bituminous coal** were estimated due to significant statistical discrepancies.

In the 2024 edition, large stock change in **coking** and **other bituminous coal** reflects significant drawdown of stocks for 2022.

In the 2023 edition, **other bituminous coal** and **coking coal** production for 2017 and 2018 were revised due to updated commodities statistics. As a result, also

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stock change figures have been realigned from 2017 onwards due to new available information.

In 2018, a substantial stock draw of **coking coal** followed a 2017 stock build caused by meteorological phenomena.

The decrease of **lignite** production and consumption in 2017 and 2018 was due to the closure of brown coal fired Hazelwood power plant in early 2017, contributing to a higher consumption of **other bituminous coal**.

Only **anthracite** trade is reported separately; the remainder that is consumed domestically is included with **other bituminous coal** due to confidentiality requirements. There were no recorded anthracite exports or estimated anthracite production in 2018.

Anthracite production data are unavailable and are therefore estimated by the Australian administration as a balance of trade and consumption. There is no visibility over stock movements of this fuel.

Registers show large sporadic shipments of **anthracite** rather than steady supply streams.

Export trade in **coke oven coke** between 2005 and 2011 exists, but data are unavailable for reasons of confidentiality. From 2012 onward exports are estimated by the Australian administration but without providing information on the destination country.

Transformation

In the 2023 edition, the consumption of **other bituminous coal** in main activity producer electricity plants has been revised from 2017 onwards in line with administrative reporting.

In 2015, a new plant within the mining sector started its operations increasing the consumption of **coke oven coke**.

The one company producing **BKB** closed its operation during 2015. As such, production and consumption declined significantly.

For 2003 to 2012, **coke oven gas** reported as energy industry own-use in electricity or CHP plants is used for generation purposes, while **natural gas** used for own-use plant support is reported in the transformation sector.

Natural gas consumed to fuel the distribution of **natural gas** in natural gas networks is reported as transformation for **gas works gas** production until 2005.

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The drop in **BKB** production in 2004 was due to a fire in the main production plant.

Consumption

Decline in **coking coal** use alongside rising steel production appears commensurate with process changes in Iron and Steel sector.

In the 2016 edition, revisions for 2010 onwards have increased the quantities of **sub-bituminous coal** and decreased the quantities of **other bituminous coal** being used in the non-metallic minerals industry as more accurate information has become available.

Consumption in *wood and wood products* is included in *paper, pulp and print* from 2001 onwards.

Oil

General notes

From 2026 edition, stock change of **lubricants** is confidential and is included under **other oil products** starting from 2024 data**.**

From the 2022 edition onwards, data for **white spirit, naphtha** and **bitumen** (except for trade data for the latter) are included in **other oil products** due to confidentiality from 2019 onwards. Refinery outputs for **aviation gasoline** are confidential and included in **other oil products** starting from 2020 data.

Starting with the 2024 edition (2022 data), **refinery feedstocks** are also confidential. This causes a big statistical difference for **crude oil** refinery intake, especially for 2023 and 2024p: the observed refinery intake (directly reported by refineries) includes refinery feedstocks, while the calculated refinery intake, derived from trade figures, does not.

Other hydrocarbons reported under *from other sources natural gas* correspond to hydrogen used in refineries from 2011 to 2015, also represented as the output of *non-specified transformation* in the balances format.

Supply

The declines in refinery output and exports of refined products in 2021 are the result of refinery closures.

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In the 2022, 2023 and 2024 editions, refinery fuel use of **fuel oil** in 2020, 2021 and 2022 are confidential.

In the 2023 and 2024 editions, refinery fuel use of **other oil products** in 2021 and 2022 includes **fuel oil** and unclassified fuels.

In the 2022 and 2023 editions, stock changes are confidential for **other kerosene** (2020 and 2021) and **gas/diesel oil** (partially for 2020 and 2021). Where appropriate, these are included in **other oil products.** Stock breaks may therefore appear.

Part of **LPG** exports in 2019 is confidential.

In 2019, refinery output of **other oil products** increased as a result of higher consumption in *oil and gas extraction* and improved data collection.

In 2018, production of **NGL** declined as a result of product reclassification where quantities of condensate had previously been included and now moved to **crude oil**.

Crude oil production and imports continued to decline in 2016 following the closure of domestic refining capacity in New South Wales (Kurnell Refinery) and Queensland (Bulwer Island Refinery). Refinery outputs also fell as a result. These two sites have been converted to import terminals helping Australia expanding its import capacity. As a result refined products imports increased considerably in 2016.

From 2010 **crude oil** production estimates for selected companies have been replaced by actual data.

Imports of **fuel oil** have been estimated by the Australian administration.

In the 2015 data, **fuel oil** imports dropped significantly due to the closure of the two large consumers of this product, the Gove alumina refinery and the Point Henry aluminium smelter.

There is a break in the time series for **crude oil** and **NGL** between 2001 and 2002.

The drop in the production of **crude oil** in 1999 is due to a gas explosion at the Longford plant.

Prior to 1992, part of the **NGL** production is included in **crude oil**.

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Transformation

There is a break in the refinery balance between 2010 and 2011 due to the reclassification of a facility from upstream to downstream.

As a result of a new methodology adopted to split **gas/diesel oil** inputs between main activity and autoproducer plants, breaks in series appear between 2009 and 2010.

Consumption

In the 2022 edition, due to improved data and mandatory reporting, the Australian administration introduced revisions from 2016 onwards for **LPG**, **motor gasoline**, **gas/diesel oil**, **kerosene type jet fuel**, **fuel oil**, **lubricants** and **other oil products**.

In the 2021 edition, due to a change in the reporting methods, the Australian administration has reallocated some consumption of **LPG**, **other kerosene**, **fuel oil** and **other oil products** from the *commercial and public services* sector to *not elsewhere specified (energy)* for 2018 data onwards.

In the 2021 edition, consumption of **LPG**, **gas/diesel oil** and **other oil products** in *oil and gas extraction* increased owing to new facilities going online in 2019.

In the 2021 edition, non-energy use of **white spirit** and **bitumen** in *not elsewhere specified (industry)* are included in **other oil products** due to confidentiality.

In the 2021 edition, there is a break between 2018 and 2019 in the transport sector consumption notably for **LPG**, **gas/diesel oil, kerosene type jet fuel** and **fuel oil**. The Australian administration intends to submit historical revisions in the 2022 edition.

In 2018 **fuel oil** consumption in the *commercial and public services* sector increased due to the inclusion of data for a new water and waste services facility.

In 2017 the Queensland Nickel refinery closed down and the Portland Aluminium refinery was reduced for an extended period due to a power fault. As a result **fuel oil** consumption in the *non-ferrous metal* sector declined in 2017.

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Natural gas

General notes

In the 2020 edition, the Australian administration reallocated quantities in the consumption side, based on analysis of new data and to be consistent with Australian Energy Statistics. Additionally, revisions were made to trade flows based on a revised methodology for calculating the volumes of imports and exports.

In the 2019 edition, the Australian administration proceeded to major revisions on the supply side from 2013 onwards due to a change in methodology on production quantities and more recent sources on calorific values. Additionally the *Oil and gas extraction*, and *Liquefaction (LNG)/regasification plants* on the demand side were revised from 2003 onwards, which resulted in increased statistical differences.

In the 2016 edition, the Australian administration revised **natural gas** demand data for some flows back to 2010, resulting in breaks in time series between 2009 and 2010.

In 2015, the Australian administration revised production and certain consumption data back to 2006. The production figures now include previously uncaptured flows.

Prior to 1991 **natural gas** data include **ethane**.

Supply

In the 2026 edition, *international marine bunkers* figures for **LNG** were estimated by the IEA Secretariat from 1990 onwards. These values were subtracted from exports, as these quantities are used by the vessels, and therefore are not in fact exported.

In the 2025 edition, associated gas, colliery gas, exports, gas vented and flared were revised to reflect a new way of processing the data that uses slightly different conversion factors.

In the 2023 edition, *Opening/Closing stock level* and *Stock changes* are reported for the first time with data available back to 2002. In the 2022 edition, historical revisions were made to *gas vented* and *gas flared* back to 1990 due to new methodology.

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The GCV of *inland consumption (calculated)* has been falling since 2017 due to increases in liquefaction and the volume lost during this process.

For 2018, there is a continuation of the increase in *indigenous production* (+15%) and *exports* (+18%) of gas, which started in 2017 due to the LNG exporting capacity coming online in 2016 and 2017.

Around 30% of the production (mainly coal seam gas) is estimated by the Australian administration.

All gas imports come from the Bayu-Undun field in Timor Leste. Earlier questionnaires reported that the source was "Not elsewhere specified" for reasons of confidentiality. Import data from 2016-17 has been revised and provides the actual source.

Extraction from the Bayu-Undun field ceased in June 2023. Australia's gas imports fell significantly in 2023, and will be zero from 2024 onwards.

Australia's gas exports to Thailand nearly doubled between 2022 and 2023. Trade analysis shows that Thailand, along with China and Malasia, have historically produced enough gas to meet their own demands, but declining production and reserves have led them to import LNG.

Transformation

In the 2025 edition, Consumption in Main activity producer electricity; Autoproducer electricity; Main activity producer CHP; and Autoproducer CHP was revised from 2017 to 2019 using a calculation method to ensure that reporting matches their publications.

From 2011 to 2016, the *Non-specified transformation* of **natural gas** represents amounts used to produce hydrogen for hydrodesulphurization in refineries.

Until 2005, natural gas consumed to fuel the distribution of natural gas in natural gas networks was reported as transformation for gas works gas production.

Starting in 2024, **natural gas** consumption for *Gas Works (transformation)* has dropped to zero and is expected to remain at this level in the coming years.

Consumption

In the 2023 edition, transmission losses and distribution losses were reported separately for the first time. Data source of road consumption has been changed and the data were revised for 2021. Gas consumption in the Paper, pulp and

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printing sector was revised to from 2017 to 2022 to remove the discontinuity that had been caused by the change of data reported by a paper mill facility.

There is a break in the time series between 2021 and 2022 in the *Transport Sector* due to a change in estimation methodology. Consumption in the *residential* and *agriculture/forestry* sectors is estimated by the Australian administration based on models.

There are breaks between 2002 and 2003 in due to major revisions made in the *Oil and gas extraction*, and *Liquefaction (LNG)/regasification plants* in the context of the 2019 edition.

Between 2009 and 2010 some breaks in time series may occur due to changes in methodologies and to improved data sources. Revisions to the consumption data include changes to energy use in liquefaction plants, and a shift of *gas works gas (transformation)* to *non-specified energy* from 2006 onwards. Revisions to previous years are pending.

Between 2001 and 2002 there are breaks in time series for consumption data due to an industry structural shift and changes in methodology.

Data for 1999 and 2000 end-use consumption are estimated by the Australian administration.

In 2023, they reported transmission and distribution losses for 2017-2023 for the first time.

Biofuels and waste

General notes

In the 2025 edition, the large increase in **biodiesel** for 2024p is due to the reallocation of part of **biodiesel** that is misallocated for the 2023 figure. This figure will be revised in the next edition.

In the 2018 edition, **biogases** were revised downward by the Australian administration back to 2015 as a result of the removal on 1 July 2015 of a production subsidy for domestic ethanol. The subsidy was equal to the excise rate on unleaded petrol.

A large **biogas** production facility did not report any production in 2016-2017. In 2017, this led to reductions in the consumption of **biogases** in auto CHP plants and the commercial and public services sector.

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Increases in production of **solid biofuels** since 2014 are related to incentives under the Renewable Energy Target legislation, which went into effect in 2001 and aims to increase the share of electricity generation from renewable sources. More information is available here: http://www.cleanenergyregulator.gov.au/RET.

The data for **biogasoline** and **biodiesel** are not available before 2003 and 2004 respectively.

From 1996, a different industry consumption breakdown for biofuels and waste is available and leads to breaks in time series.

Supply

Biogas production data at sewage treatment works are not available.

Indigenous production of **biodiesel** has decreased substantially starting with 2016 data because one of the major **biodiesel** producers ceased production in January 2016. The trend continues in 2017, when, according to Bioenergy Australia, low oil prices and higher feedstock prices created a difficult market for the remaining **biodiesel** producers. The trend continues in 2018 data.

Production of **biogasoline (ethanol)** decreased since the Ethanol Production Grants Programme ended on 30 June 2015. On 1 July 2015, the fuel excise on domestically produced ethanol was reduced to zero and will be increased by 2.5 cents per litre until it reaches 12.5 cents per litre. Additionally, 2017 quantities were also affected by low oil prices.

Consumption

In the 2018 edition, **solid biofuels** were revised back to 2010 by the Australian administration, expanding the scope from the revisions in the 2016 and 2017 editions to *indigenous production* and consumption sectors which weren't previously revised. This results in a break in time series between 2009 and 2010.

In the 2017 edition of this publication, there has been a revision to the time series of **solid biofuels** consumption in *Paper, pulp and printing* sector. This time series has been revised back to 2010 resulting in break in time series between 2009 and 2010.

In the 2016 edition of this publication, the Australian administration revised **primary solid biofuels** back to 2010 which impact mostly final consumption in *food and tobacco*. This created breaks in time series.

The consumption data of **biogases** in industry is not available before 2003.

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Electricity and heat

General notes

Calculated calorific values of combustible fuels are reported in gross values by Australia due to the lack on determining the moisture content of the fuels.

In the 2025 edition, The Australian administration revised the time series for several products and types of producers to better reflect the information provided by the underlying data sources. For **coal products** change were made back to 2002, for **oil products** and **natural gas** from 2017 as for **hydro**, **wind** and **solar** generation. These revisions impacted also the **electricity** balance from 2002 onwards.

In the 2016 edition, several **combustible fuel** electricity production time series as well as some **electricity** consumption time series were revised by the Australian administration back to 2010 in order to limit the use of estimated data and are causing some breaks.

From 1992 onwards, **heat** data are not available as there is insufficient data to report what little heat is sold in Australia.

Supply

Data for production of electricity from **wind** are available from 1994.

Data for electricity production from solar photovoltaic start in 1992 and from solar thermal in 2003.

Transformation

For 2018 data, electricity output from **lignite** declined due to the closure of the Hazelwood power plant. In addition, there was no output from **BKB** due to the closure of both Hazelwood power plant, and the only briquette manufacturer in Australia.

Fuels used for generation by autoproducers represent single fuel-fired units only. The use of fuel in multi-fired units operated by autoproducers is included in industry consumption.

In the 2018 edition, new methodologies were introduced by the Australian administration for reporting **electricity** production from solar sources. First, the methodology for reporting electricity production from **solar PV** and **solar thermal** was changed between 2009 and 2010, resulting in a break in time series. Prior to

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2010, the ratio of electricity production from **solar thermal** to total solar was assumed to be the same each year. After 2010, **solar PV** autoproducer electricity production is the residual after the main activity **solar PV** and **solar thermal** are deducted from total solar production. There is an additional break in time series between 2013 and 2014 for **solar** production when a new methodology for determining large-scale **solar PV** production was introduced for main activity **solar PV** plants.

In the 2017 edition, following an extended review of past data, the Australian administration revised electricity outputs of **blast furnace gas** *autoproducer electricity plants* for the period 2003-2004 and of *autoproducer CHP plants* fuelled by **other oil products** for 2009, resulting in more realistic efficiency rates for these plants.

In 2002, the Australian administration started to use a new survey methodology and reclassified the types of plants between main activity producers and autoproducers.

Prior to 1995, electricity production from **biogases** is included in **natural gas**.

Prior to 1986, inputs and outputs from autoproducer CHP plants are not available.

Consumption

The 2021-2023 editions incorporate successive revisions to sectoral consumption provided by the Australian administration. These affected data back to 2009 (2021-2022 editions), and 2015 (2023 edition). In particular, data for *Construction* were significantly revised in the 2022 edition. This also affected *transmission and distribution losses* which act as a balancing item. Breaks may occur between 2008 and 2009.

The significant growth in electricity consumption at LNG/regasification plants in 2016 and 2017, is due to the commencement of large-scale production at Australia's new east coast LNG plants.

From 1990 to 2008, electricity consumption in *wood and wood products* is included together with paper, pulp and printing.

Prior to 2006, electricity consumption in *mining and quarrying* includes consumption in *liquefaction/regasification plants*.

The direct use of solar heat (mostly domestic solar panels) is available from 1974.

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Electricity consumption in coke ovens has been estimated by the Australian administration from 1974 to 1999.

Prior to 1974, the breakdown of electricity consumption in industry and energy sub-sectors is not available and energy industry consumption is included in industry.

Electricity consumption in the *non-specified transport* sector represents transport support services, including those for air and water transport, and for transport for mining operations.

Prior to 1971 electricity consumption in the *commercial and public services* sector is included in industry.

Reported electricity consumption in the oil *and gas extraction* sector may include some consumption in *LNG/regasification plants*.

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Austria

Source

Bundesanstalt Statistik Österreich, Vienna.

General notes

Starting with the 2016 edition and following, widespread data revisions were received due to enhanced reporting from 2005 onwards as a consequence of improved Austrian Final Energy Consumption surveys. For some time series, these revisions were extrapolated back to 1990. As a consequence, there may be breaks between 2004 and 2005, and 1989 and 1990. For more details on the methodologies in the revisions in the energy balance, there is more information here:http://www.statistik.at/wcm/idc/idcplg?IdcService=GET_PDF_FILE&RevisionSelectionMethod=LatestReleased&dDocName=036412

For more details on the methodologies related to consumption in households, there is more information here:
http://www.statistik.at/wcm/idc/idcplg?IdcService=GET_PDF_FILE&RevisionSelectionMethod=LatestReleased&dDocName=078265

Coal

General notes

In the 2021 edition, revisions were made in several products for the period 2005-2018, most of them were small in absolute and/or relative value.

In the 2019 edition, revisions concerning the iron and steel industry were received for data since 2005. The revisions impacted the energy sector for **coke oven gas** and **blast furnace gas**.

In 2018 data, **blast furnace gas** decreased following maintenance work in one of the blast furnaces. Additionally, other recovered gases (LD-gas) are reported separately following an improvement in reporting from the 2020 edition (in previous editions it was reported under **blast furnace gas).**

The last **lignite** mine closed in the second quarter of 2004 and **lignite** use for power generation ceased in 2006.

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Since 1996, **gas works gas** data are reported with **natural gas** because it is distributed in the same network. The amount of **gas works gas** is negligible and it is mostly consumed by households.

“Trockenkohle” is included with **BKB** because of its high calorific value.

Supply

In 2018 there were high values of **patent fuel** imported and consumed in the paper and pulp industry, which was not the case in 2019.

Consumption

In the 2026 edition, minor revisions were introduced to several products for the period 2020-2023, mainly in the Industry and Other sectors.

In the 2023 edition, the final energy consumption in industry and other sectors of several products was revised for 2020 due to new available information from national surveys.

One of the revisions made in the 2021 edition was the reallocation of some quantities from Blast furnace (energy) to Coke oven (Energy) for the products **blast furnace gas**, **coke oven gas** and **other recovered gases**.

Among the revisions made in the 2021 edition, some quantities of **coke oven coke** were reallocated from the industry Iron & Steel (TFC) to the category Non-Energy Use-Chemical/ Petrochemical.

Oil

General notes

In the 2022 edition, revisions in the time series for **gas/diesel** oil deliveries for international marine bunkers appear as a result of a change in the methodology reported by the Federal Environment Agency to Statistics Austria. As a consequence of this change in methodology, revisions also appear for **gas/diesel** oil consumption in road transport and domestic navigation from 1990 onwards.

Supply

In 2023, the increase in **bio gasoline** supply is due to an increase in the amounts that can legally be blended with non-bio gasoline.

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In 2022, the decrease in **crude oil** inputs to refineries and **gas/diesel oil** refinery output is due to an accident which primarily impacted inputs of the former and outputs of the latter.

In the 2021 edition, the Austrian administration revised the stock levels (national territory) of **motor gasoline** (from 2006 onwards) and **fuel oil** (from 2005 onwards) but with the stock changes preserved as in the previous edition. A stock break appears for **fuel oil** between 2004 and 2005.

In the 2016 edition, exports of naphtha are no longer reported from 2014, past values may refer to exports of petrochemical raw material.

Deliveries of gas/diesel to international marine bunkers were revised back to 1990 after implementation of a new study results.

Prior to 1990, a portion of naphtha is included with other oil products.

Transformation

In the 2019 edition the administration incorporated revisions as a result of improved reporting from the refinery to Statistics Austria. As a result, there may be breaks in the time series between 2004 and 2005.

Consumption

In 2023 the decrease in gas/diesel oil consumption in the residential sector is the result of the development of heat-pumps in Austria and the decrease of heating oil consumption in households.

Natural gas

Supply

In the 2023 edition, trade data was revised back to 2005 due to a change in methodology to eliminate the reporting of transit trade. This results in no *exports* reported and a decrease in *imports.* In the 2022 edition, the time series for *Opening and Closing stock level (National Territory)* was revised in Terajoules from 1990 onwards due to new information becoming available from data providers.

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Export amounts are calculated by the national administration by subtracting *stock changes* and domestic consumption from *import* figures.

Transformation

In the 2018 edition, the time series for *blast furnaces* was reclassified from 1990 onwards, and thus moved from the Transformation to the Energy sector. This has resulted in increasing the efficiency of the blast furnaces process.

Between 1995 and 1996 there is a break in time series for *autoproducer electricity and CHP* plants due to the availability of more detailed data.

Consumption

In the 2019 edition, Austrian administration revised *oil and gas extraction* and *oil refinery* **natural gas** consumption data for 2005 onwards based on data reported to the Emissions Trading Scheme (ETS). Additionally, it revised data since 2005 for *other sectors'* flows since 2005 and *industry sector* since 2012 based on a combination of the results of sample surveys and data from the regulator.

Any inconsistencies in the time series for *commercial/public services* until 2011 are the result of this sub-sector being computed as a residual. Since 2012 the *commercial/public services* consumption figures are surveyed annually and the consumption quantities in small and medium enterprises in *industry* are the projected results of biannual sample surveys. The increase in *pipeline transport* consumption for 2013 is due to a new methodology of data collection. Historical revisions are pending. Prior to 2000, differences due to measurement are included with *distribution losses*.

Biofuels and waste

General notes

Data for 1986 to 1989 for **solid biofuels**, **industrial waste**, **biogases** and **liquid biofuels** are IEA Secretariat estimates based on information published by OSTAT in *Energieversongung Österreichs Endgültige Energiebilanz*.

Consumption

In the 2016 edition, improvement in the iron and steel industry data have allowed more precision in the consumption, among other for **industrial waste** in blast furnaces.

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In the 2016 edition, the consumption of **solid biofuels** in the residential sector was revised down from 2005 data.

Electricity and heat

Supply

In the 2025 edition, Austria made extensive revisions for Electricity and Heat Production from Auto CHP plants (Biogases) and Main Heat plants (Geothermal, Diesel and Natural Gas).

Amounts for both net electricity production and plant own use are calculated by the Austrian administration by applying a fixed percentage multiplier to the gross production of all plants in the public grid, regardless of plant type or fuel.

Electricity production from **geothermal** main electricity plants only refers to electricity that is fed into the grid. Total production is not known as these plants are below the reporting threshold.

Transformation

For 2020, the decrease in electricity and heat output from **other bituminous coal** was in part due to the closure of a power plant.

Electricity only plant data may include some CHP plants operating in **electricity** only mode. In addition, fuel inputs to and electricity outputs from CHP plants are re-allocated from CHP to electricity-only plants if the implied CHP efficiency would fall below 75%.

Fluctuating efficiencies from year to year for **solid biofuel** and **industrial waste** plants are related to operational decisions which are governed by a formula described in the *Standard documentation Meta information on Energy balances for Austria and the Laender of Austria* published in June 2016 on the Statistics Austria website.

In the 2018 edition, electricity production from **municipal waste** main activity electricity plants was revised from 2003-2009. Additionally, electricity production from **municipal waste** main activity CHP plants was revised in 2014.

A large autoproducer electricity plant was reclassified as an autoproducer CHP plant and therefore creates a break in time series for **municipal waste** in 2011.

In 2009, inputs of **other oil products** to autoproducer CHP plants were reclassified as **refinery gas** and **natural gas**.

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Due to a change in the survey methodology, the **heat** produced in small plants (capacity inferior to 1 MW) is not reported starting in 2002.

Heat from chemical processes used for **electricity** production is available from 2000.

Electricity generation from **geothermal** started in 2002.

Prior to 2002, data for **biogases** only include plants of 1 MW or larger.

Prior to 1981, inputs to main activity producer electricity plants include inputs to CHP plants. All electricity production by CHP plants is included in electricity plants, and only production from combustible fuel sources is taken into account. Autoproducer CHP heat production is included in main activity producer CHP plants. For heat, own use is included in distribution losses.

Consumption

In the 2024 edition, Austria revised transport data back to 2017 based on new information available.

In the 2020 edition, Austria revised consumption data back to 2013 based on a new methodology for disaggregating consumption across sectors.

In the 2020 edition, a large portion of electricity consumption in *blast furnaces* was reallocated to *iron and steel* sector from 1990 to 2004. This creates breaks in series in these timeseries between 2004 and 2005. Revisions to data for 2005 onwards are expected in a future edition.

Electricity consumption in *Road* includes trams, trolleybuses, subways, cableways, chair- and drag-lifts, as well as 100% electric vehicles.

In the 2019 edition, Austria revised data back to 2005 in order to present international reporting as consistent as possible with the national energy balances. In addition, consumption figures were revised based on more recent surveys of energy consumption in small and medium sized enterprises. Outliers and the extrapolation methodology will be revised following the results of the next survey.

Electricity consumption in oil refineries includes consumption in gas works plants prior to 1991.

From 1990 to 2009, small amounts of **electricity** used in heat pumps have been included in the residential sector.

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Starting in 1990, consumption of **electricity** in the field of electricity supply, district heating and water supply are included in *other energy industry own use*, prior to that it was included in commercial/public services.

Also prior to 1991, **electricity** consumption in the iron and steel industry includes consumption in coke ovens and blast furnaces.

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Belgium

Source

FOD Economie - SPF Economie, DG Energy, Brussels.

Coal

General notes

Trade flows for **anthracite** include transit trade. This will be amended in the next publication.

Oil shales and **sub-bituminous coal** have been grouped due to confidentiality reasons.

In the 2020 edition, data from 2013 was revised, and **sub-bituminous coal** figures are now reported under this category, whilst previously they were under **other bituminous coal**. **BKB** figures has been also revised back to 2013.

In the 2016 edition, improved data collection has led to some breaks in time series. These revisions include **hard coal** classifications, products and processes in integrated iron and steel manufacture and may be extended further back in future editions.

Data for **anthracite** prior to 2014 may include a small portion of **other bituminous coal**.

Hard coal data prior to 1978 may include **sub-bituminous coal**.

Other bituminous coal and **sub-bituminous coal** data reported in *from other sources* refer to coal recuperated from coal dumps.

Supply

Supply-side data are obtained through surveying questionnaires instead of customs data.

Transit trade is excluded. For each country (trade partner), the imported and exported quantities are compared and cleared. In the case of Belgium, this decreases the final figure of exports. 2019 data shows a rise in exports of **other bituminous coal**; the imports decreased during that year but some companies continued to export the stocks originated from those countries in 2019, leading to this rise.

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In the 2019 edition, the calorific values of imported **bituminous coal** were revised upwards by the Belgian administration since 2015, resulting in a significant increase in the coal primary energy supply. Historical revisions are pending.

Conventional production of **other bituminous coal** ceased on 31 August 1992.

Transformation

Since 2024, the use of **brown coal briquettes** in autoproducer CHP plants and in *paper, pulp and printing industry* sector are merged with **other bituminous coal** due to confidentiality requirements. Similarly **oil shale and oil sands** data is aggregated to **sub-bituminous coal** data and **coal tar** imports by partner country are not reported anymore due to confidentiality requirements.

A significant portion of the **coke oven gas** produced in the coke ovens is fed back to the coke ovens as an energy source (reported in the energy sector/coke ovens flow). This quantity should be taken into account when calculating the energy efficiency of coking processes.

In the 2019 edition, **anthracite** previously reported as consumption in the *iron and steel industry* was reclassified as part of the transformation process in *blast furnaces* since 2013.

In 2016, the decrease of **other bituminous coal** inputs to main activity producer electricity plants was due to the permanent closure of Langerlo, Belgium's last coal-fired main activity electricity.

In 2015, the decrease of **coke oven gas** inputs to autoproducer CHP plants is due to a power plant closure in 2015.

In 2014 and 2015, **coking coal** inputs to coke ovens decreased due to a coke oven closure in June 2014.

In 2014, the decrease of **other bituminous coal** inputs to main activity producer electricity plants is due to a power plant closure in 2014.

Consumption

In the 2021 edition, consumption of **other bituminous coal** in the sectors of Transport/Rail and Other sectors/Agriculture were included starting in 2015.

In the 2018 edition, industrial consumption for the period 2013 through 2015 was revised for **coking coal** and **anthracite**, as more accurate consumption data became

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available. Data for **coking coal** prior to 2013 may include a small portion of **anthracite.**

The decrease of **other bituminous coal** and **coke oven coke** in the iron and steel industry in 2002 is due to the closure of several plants.

The use of **coke oven gas** in chemical and petrochemical activities ceased in 1996.

Oil

General notes

Between 2008 and 2009 breaks in series occur for **naphtha** and **LPG** in both transformation and final consumption in the petrochemical sector as a result of methodological improvements made by the Belgian administration.

Data on biofuels are not available before 2009.

Other hydrocarbons correspond to pure hydrogen used in refineries.

Supply

Following a change in legislation, there is an increase in blended **biodiesel** in 2020.

In the 2022 edition, the Belgian administration revised **petroleum coke** imports and inland deliveries from 2015 onwards.

In 2019, the increase in *refinery gross output* of **petroleum coke** is due to a new delayed coker unit.

In 2018, increase in *imports* and deliveries for *international marine bunkers* of **residual fuel oil** is due to the inclusion of volumes of aromatic oils.

In 2017 new legislation increased the biofuel blending target for **motor gasoline** from 4% of volume to 8.5% of volume. As part of this E10 gasoline was introduced and became the new standard product in the country.

In the 2019 edition, the Belgian administration included new companies in their reporting; some of which are particularly active in the production and trade of **lubricants** and **bitumen**.

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Consumption in *international marine bunkers* dipped in 2014 and 2015 due to the closure of several bunkering companies. During 2015 these were replaced by new companies which became fully operational in 2016.

Starting from 2013, a new data source was introduced for petroleum coke trade.

Transformation

In 2017 the upgrade project of Antwerp refinery and petrochemical plant was completed. Two key projects were completed: new refinery capacity for the conversion of heavy fuel oil into low sulphur light products and increasing steam cracker flexibility to maximize the processing of low cost advantaged feedstock. The latter is reflected in feedstock needs. Output of lighter end products as well as petroleum coke is impacted by these upgrades.

Consumption

In the 2023 edition, the Belgian administration revised the consumption data from 2009 onwards.

In the 2021 edition, the Belgian administration revised the consumption data for **lubricants** from 2010 onwards as a result of the identification of new active players in the market. Breaks may occur in the series between 2009 and 2010.

In 2018, a project in a petrochemical plant in Antwerp has started in which **refinery gases** are treated to recover valuable hydrocarbons. These quantities are reported under **LPG** and reflect the increase observed for non-energy use in the petrochemical industry in 2018.

The decrease of **fuel oil** in industry consumption since 1993 is due to the introduction of an excise tax as well as increased use of natural gas.

Natural gas

General Notes

In the 2025 edition, some revisions have been made due to methodological corrections to better meet definitions or to correct calculation errors and survey data corrections.

In the 2022 edition, historical revisions were made back to 2013 due to better data availability and harmonisation with other gas data.

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Supply

Since 2020, the consistent increase of *from other sources – renewables* is an expected trend as more injection points of biomethane become active and increase production. The trade data from 2018 onwards include transit figures as a result of a change in methodology.

Since 2009 gas trade in Belgium includes imported LNG which is regasified and subsequently exported to other countries.

In the 2019 edition, the LNG consumption data in *international marine bunkers* are confidential.

Transformation

New reporting of *blast furnaces* in the 2022 edition, this is linked to the recent installation of a DRI-plant which uses natural gas to replace coal for the reduction of iron ore.

The Belgian administration is in the process of revising 2010 and 2011 transformation sector data. As such, an unusually high quantity of **natural gas** is reported under not elsewhere specified (transformation).

Between 2008 and 2009, there is a break in efficiency of **natural gas** autoproducer CHP plants due to a change in methodology regarding the reporting of unsold **heat**.

Consumption

In 2018 refinery gas started being further purified into products, leading to a higher consumption by *oil refineries*.

Consumption in the transport equipment sector decreased in 2015 due to the closure of a large industry of this sector in December 2014.

In 2003, the large decrease in *non-specified industry* consumption is due to improvements in data collection.

Since 2000, **natural gas** began to replace **blast furnace gas** in the *iron and steel* industry.

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Biofuels and waste

General notes

Renewable **municipal waste** includes a share of renewable **industrial waste**.

Data for **biodiesels** and **biogasoline** are available starting in 2009.

In the 2023 edition, Belgium revised data back to 2004 due to improved data availability and change of methodology.

Supply

In the 2026 edition, data improvements to the supply of **biodiesel**, **biogasoline**, and **bioethanol** led to significant revisions in the time series for these products. These updates were based on an in-depth review of administrative data and the incorporation of new survey information from producers.

In the 2025 edition the Belgian administration introduced **industrial waste** imports and revised indigenous production since 2010 onwards due to new available information.

Due to the closure of the Max Green biomass plant in Rodenhuize, imports and use in transformation of **primary solid biofuels** has decreased significantly in 2023.

Data on pure **biogasoline** and **biodiesels** trade are not available for 2009 and 2010.

Transformation

In 2015, part of the law regulating the blending of biodiesel with diesel was temporarily suspended but in 2016, this law was reinstated.

Consumption

Industry consumption of **renewable municipal waste** is confidential and entirely reallocated to paper, pulp and printing industry use of **primary solid biofuels**.

In the 2025 edition, distribution losses for **municipal wastes** and **biogases** were reported. In the 2026 edition, the reported losses for these products have been removed, as they represented flared volumes rather than distribution losses. Furthermore, actual distribution losses for **solid biofuels** are now reported, reflecting heat losses within district heating networks.

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Distribution losses of **municipal wastes** and **biogases** correspond to the production of heat that is lost to the environment. These time series will be revised in the next reporting cycle.

In the 2025 edition the country changed the classification of a waste incinerator from main activity to autoproducer heat. As a result, we see revisions of **municipal wastes** from the energy sector to commercial and public services.

In the 2024 edition, improvements in methodology and classification of the statistics collected by a data provider resulted in new consumption flows and breaks in the time series of some industrial subsectors of **primary solid biofuels** for 2022.

Consumption of **bioethanol** increased in 2017 due to legislation coming into effect on 1 January 2017, which increased the blending obligation for gasoline products.

Industrial waste consumption in the chemical sector started in 2011.

Other liquid biofuels consumed in power plants reported before 2011 can include biodiesel.

New data on consumption cause breaks in time series for primary solid biofuels between 2011 and 2012.

Electricity and heat

General notes

In the 2025 edition, Belgium revised data back to 2010 due to improved data availability.

In the 2022 edition, Belgium revised data back to 2014 due to improved data availability, and improved natural gas data.

In the 2021 and 2020 editions, Belgium revised data back to 2010 and 2014 respectively.

Supply

In the 2023 edition, *transmission and distribution losses* of **heat** were revised back to 2014 due to new measurements of heat losses. Data before 2014 will not be revised.

In 2019, the increase in **electricity** exports is mainly due to the opening of the NEMO-Link interconnector between Belgium and the United Kingdom.

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Electricity production from **other sources** mainly comprises production at a gas expansion station with heat recovery and at a hydraulic turbine in a waste water treatment plant.

From 2013 onwards, reported **heat** distribution losses decreased due to a more precise estimation method.

The production of electricity from **wind** is available from 1987.

Transformation

Changes in ownership resulted in production by Autoproducer CHP plants with **Municipal Waste** in 2022.Values of **other bituminous coal** input and output for Autoproducer CHP plants were adjusted due to confidentiality reasons for 2022, 2021, 2020 and 2019.

In 2020 and 2018, electricity output from **nuclear** decreased due to outages at a number of reactors.

Langerlo, Belgium's last **coal**-fired main activity electricity producer closed permanently in March 2016.

Heat production from chemical processes used for electricity production is available from 2005.

In 2012, **heat** production from chemical sources has been estimated by the IEA Secretariat.

Offshore wind production in Belgium commenced in 2009. Data are available from2010.

Prior to 2009 some unsold **heat** was reported in **natural gas** autoproducer CHP plants, together with the associated natural gas input. This causes the drop in efficiency in 2009.

In 2007 data, no information was available on heat production in main activity CHP plants for **industrial waste**.

In 2003, combustion of **municipal waste** for electricity and heat generation purposes increased significantly. However, because a large portion of the heat produced is not used (sold), plant efficiencies dropped significantly between 2002 and 2003.

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In 2000, most autoproducer electricity plants using **combustible fuels** were reclassified as autoproducer CHP plants; the heat production from these plants was used for internal industrial processes and not sold to third parties until 2005.

For 1998 and 1999, **electricity** production at main activity producer CHP plants with annual heat output below 0.5 TJ is reported with main activity producer electricity only plants.

Prior to 1982, **electricity** production in main activity producer CHP plants is included in production from electricity plants. Also, inputs of fuels for electricity generation in main activity producer electricity plants include inputs for heat production in CHP plants.

Consumption

For 2022, a change in methodology by one data provider to calculate **electricity** consumption in the residential sector contributed to a drop of consumption. Prior to 2022, solar PV production of small-scale PV-installations (PV < 10 kW) were added to the consumption figures in the residential sector.

In the 2023 edition, **heat** consumption was revised back to 2014 due to new measurements of heat losses.

In 2018, the methodology use to allocating **heat** consumption between the *residential*, *commercial and public services*, and *agriculture and forestry* sectors by one data provider was changed, resulting in some breaks in-series.

Electricity consumption in *Road* includes some consumption by electricity vehicles (EVs), based on vehicles numbers distances travelled. However, coverage of hybrid vehicles varies across regions. In addition, not all charging is included. Therefore, some consumption by EVs is still included under *Residential*.

In the 2019 edition, revisions were implemented for the direct use of **solar thermal** in other sectors back to 2010 due to improved data availability.

For 2012, **electricity** consumption in the mining and quarrying sector has been estimated by the IEA Secretariat.

For 2012, oil refineries **electricity** consumption has been estimated by the IEA Secretariat based on refinery activity data. Part of the estimated amount has been removed from consumption in the chemical and petrochemical sector.

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Breaks in time series may exist between 2007 and 2008 due to revisions of the Classification of the Economic Activities in the European Community (NACE) classifications.

There is no **heat** consumption starting in 2007 in the iron and steel industry because the installation concerned became an autoproducer in July 2006 and the heat is no longer sold.

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Canada

Source

Natural Resources Canada, Ottawa.

General notes

In the 2018 edition, data for Canada were revised back to 2005 following a ten-year revision of the Report on Energy Supply and Demand (RESD), the main set of Canadian annual data. The revision standardizes the methodology used for the IEA data submission and has mainly affected the demand side. Additional details are given under each fuel.

From the 2014 edition, the Canadian administration revised time series back to 2005, using additional data from the Annual Industrial Consumption of Energy, the Annual Survey of Secondary Distributors, the Report on Energy Supply and Demand and the Natural Resources Canada Office of Energy Efficiency. Breaks in time series also appear between 1989 and 1990, due to changes in methodology, incorporated in 2002.

Coal

General notes

The 2022 edition includes revisions to coal production starting in 2015.

The 2021 edition includes some revised data as the methodology implemented in the previous edition was further refined by the Canadian administration.

The 2020 edition includes revisions for all the time series by the Canadian administration as more accurate data was available.

Significant statistical differences can be observed for several coal products. This is under investigation and further improvements are expected in further editions.

In the 2018 edition, data for Canada were revised back to 2005 following a ten year revision of the Report on Energy Supply and Demand (RESD), the main set of Canadian annual data. The revision standardizes the methodology used for the IEA data submission and has mainly affected the demand side.

In the 2017 edition, due to the extensive revisions of the Report on Energy Supply and Demand (RESD), significant statistical differences can be observed for several

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coal products for the period 2005-2015. In the 2016 and 2017 edition, extensive revisions for the period 2005 to 2015 were received as more data became available due to improvements in data collection.

In the 2014 and 2015 editions, some revisions to the 2004 to 2006 data were received in addition to some time series and products for 2007 to 2011.

From the 2014 edition, the Canadian administration revised time series back to 2005, using additional data from the Annual Industrial Consumption of Energy, the Annual Survey of Secondary Distributors, the Report on Energy Supply and Demand and the Natural Resources Canada Office of Energy Efficiency. Breaks in time series also between appear 1989 and 1990, due to changes in methodology, incorporated in 2002.

Due to a Canadian confidentiality law, it is not possible for the Canadian administration to submit disaggregated time series for all of the **coal** types. Between 2002 and 2006, the IEA Secretariat has estimated some of the missing time series. The data for 2007 onwards are given directly as reported, however data may be present in non-representative products, and additionally these ad hoc reclassification methodologies contribute significantly to larger than normal statistical differences across products.

At this point in time, **oil shale and oil sands** data are not submitted, and this energy source is deemed to enter the supply stream as shale oil (**other hydrocarbons**).

Supply

Production of o**ther bituminous coal** increases considerably in preliminary 2022 data due to the reopening of some mines (Westmoreland's coal valley mine and Vista coal mine) while production of **sub-bituminous coal** decreases due to the closure of other mines (Highvale mine and Sheernees mine).

In the 2023 edition, total imports and exports as well as imports by origin and exports by destination of **coking coal**, **other bituminous coal** and **coke oven coke** were revised for 2019 and 2020 by the Canadian administration.

Due to confidentiality constraints, from 2014 the breakdown of production by type of coal is estimated by the Canadian administration, while stock changes and statistical differences are estimated since 2001.

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Transformation

In December 2018, Canada announced regulations to phase-out traditional coal-fired electricity by 2030.

Injection of pulverized coal into blast furnaces (PCI) occurs, but is not available for confidentiality reasons. Coals consumed in this manner are reported in the iron and steel industry along with other consumption.

Before 1978, **lignite** inputs to main activity producer heat plants are included in final consumption. Starting in 1979, these inputs are included in main activity producer electricity plants.

Consumption

In the 2023 edition, the Canadian administration reported a new consumption of **lignite** in non-energy use for 2020. The exact classification of this use is under discussion and may be subject to changes in the following editions.

In the 2023 edition, the Canadian administration revised the methodology to report disaggregated final consumption of coal in order to better reflect official data while still protecting confidentiality. This led to revisions of non-energy and industry consumption flows of many primary and secondary coal products for 2019 and 2020.

Data of consumption of **anthracite** in the iron & steel sector is confidential. The Canadian administration provides an estimate.

Since 2001, consumption of **anthracite** in non-energy use is estimated by the Canadian administration.

Due to the unavailability of data, non-energy use of **coke oven coke** and **hard coal** is included with final consumption sectors prior to 1978 and 1980, respectively.

Oil

General notes

In the 2026 edition the Canadian administration revised data between 2019 and 2023 due to access to new data.

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In the 2024 edition, several breaks can be observed for **petroleum coke** due to the new reporting methodology of the Canadian administration.

Several breaks in series appear between 2018 and 2019 due to the new Monthly Refined Petroleum Products (MRPP) survey launched by the Canadian administration in the beginning of 2019. The survey, redesigned to better reflect the evolution of the refined petroleum industry, includes greater coverage of all products.

The 2018 edition includes numerous time series revisions for the years 2005-2016. This is due to the ten-year revision of the Report on Energy Supply and Demand, which is the main set of Canadian annual data. The majority of these revisions were applied to the demand side.

In the 2016 edition, the Canadian administration was able to reconcile some historical inconsistencies by reporting inputs and outputs to upgraders. In the supply side, these quantities are reported under **other hydrocarbons**. In the demand side, they are reported under the respective output products (**refinery gas, road diesel,** and **petroleum coke**).

Time series for **other non-specified oil products** may fluctuate as they have been computed as residuals.

Receipts from non-reporting companies are currently represented in the statistical difference flow, work is ongoing with the Canadian administration to address gaps in the coverage that lead to increasing statistical differences.

Supply

In the 2023 edition, significant shifts in the balances of **refinery gas**, **petroleum coke** and **other oil products** are reported by the Canadian administration from 2019 data onwards, in line with the revisions in the MRPP.

In the 2023 edition, **LPG** exports from 2019 onwards have been eliminated, following determination by the Canadian administration that the previous estimation method was overstating the total volume of exports.

In the 2022 edition, the Canadian administration no longer reports imports of **additives/oxygenates** from 2019 onwards. As these amounts refer to hydrocarbon-based **motor gasoline** blending components, they are therefore included in the imports of this oil product.

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The Sturgeon refinery began operations in late 2017. The refinery produced its first diesel fuel in December 2017. It primarily processed synthetic **crude oil** but has successfully transitioned to **bitumen.**

In the 2018 edition the domestic supply of crude oil was revised due overall revisions to the Report on Energy Supply and Demand and the inclusion of additional data sources in the reporting.

From 2014 data the Canadian administration started using customs-based trade data to report crude oil imports. In the 2017 edition, **crude oil** imports data have been revised back to 2005 following this methodology. Some revisions to imports of secondary products have already been made and further revisions are expected.

Condensates and pentanes plus are included in **crude oil** from 2005, in **NGL** 1990 to 2004 and in **LPG** prior to 1990. Historical revisions are pending.

From 2005 primary oil products include direct imports of condensates by crude oil producers.

Production of **other hydrocarbons** represents synthetic crude oil produced from tar sands.

From 2005, **other hydrocarbons** from other sources natural gas corresponds to natural gas used for the upgrading of synthetic crude oil (reported under GTL transformation in the natural gas consumption data) and natural gas used to upgrade petroleum products (reported under non-specified transformation in the natural gas consumption data). Revisions to this flow were introduced in the 2019 edition. From 1990 to 2005, these quantities are reported in indigenous production of **other hydrocarbons**. Prior to 1990, they are included in the natural gas supply.

Imports of **other hydrocarbons** from 1994 to 2000 correspond to orimulsion imports from Venezuela.

Refinery output from **gas/diesel oil** and **petroleum coke** includes output from oil sands and upgraders.

The Canadian administration is currently unable to provide a figure for the domestic production of additives, but is working on solutions which will make this possible. Meanwhile, significant statistical differences can be observed for several secondary oil products.

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Transformation

In the 2023 edition, the Canadian administration reallocated inputs of **other oil products** for electricity production in main activity producers to **motor gasoline** from 2005 onwards.

Consumption

In the 2025 edition, **petroleum coke** consumption previously reported under autoproducer electricity has been reallocated towards refinery fuel from 2014 onwards. Additionally, consumption of **petroleum coke** in oil and gas extraction was revised downward. Downward revisions were made in the consumption of **fuel oil** across several sectors including domestic navigation, mining and quarrying, and construction reflecting updated information released by the Canadian administration.

In the 2024 edition, the Canadian administration reported data for energy-use in wood and wood products from 2005 onwards for **other kerosene.**

In the 2024 edition, the Canadian administration revised consumption of **gas/diesel oil** for energy-use in oil and gas extraction from 2005 onwards.

In the 2023 edition, the Canadian administration reported data for energy-use in iron and steel and chemical (including petrochemical) from at least 2017 onwards for **other kerosene**, **gas/diesel oil** and **fuel oil.** Data for previous years remain confidential or not available.

In the 2023 edition, the Canadian administration revised the split of deliveries of aviation fuels between international and domestic aviation from 2004 onwards. Furthermore, consumption for military use is reported under not elsewhere specified (transport) from 2004 onwards.

In the 2022 edition, the Canadian administration reports **refinery gas, gas/diesel oil** and **petroleum coke** consumption by crude bitumen upgraders in the oil/gas extraction sector from 2019 onwards.

In the 2022 edition, the Canadian administration provides newly-available data for petroleum coke consumption for energy-use in non-ferrous metals, chemical and iron and steel sectors from 2019 onwards. Prior to 2019, they remain confidential.

In the 2021 edition, the Canadian administration has moved the consumption of **aviation gasoline** from *commercial and public services* to *domestic aviation* from 2013 onwards. Similarly, consumption of **jet kerosene** in *non-specified (industry)* has been moved to *domestic aviation* from 2013 onwards.

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In 2019, the increase in refinery fuel use of **refinery gas** is due to the inclusion of refinery fuel used by upgraders. Prior to 2019, this is included in the *oil and gas extraction* sector.

In the 2020 edition in order to increase consistency with IEA's Energy Efficiency Indicators methodology, the Canadian administration has moved the consumption of **motor gasoline** and **gas/diesel oil** from *commercial and public services* to *road transport*. Moreover, consumption of **jet kerosene** in *commercial and public services* has been moved to *domestic aviation*.

Due to confidentiality issues, consumption data for selected products and flows, such as fuel oil and gas/diesel consumption in *iron and steel* from 2009 up to at least 2016, are not available. For the same reason, selected products may include estimates provided by the Canadian administration, such as **fuel oi**l and **bitumen** data for 2014.

In the 2019 edition the data series for consumption in *oil and gas extraction* was revised back to 2005 by the Canadian administration as new data sources meant a more accurate distribution between this sector and mining is now possible.

International marine bunkers are included with inland waterways prior to 1978.

Natural gas

General notes

In the 2019 edition, the Canadian administration proceeded to data revisions from 2005 onwards based on the revised source statistics from Statistics Canada and with the aim of achieving greater consistency with the Energy Efficiency Indicators data submission to IEA.

Supply

In the 2026 edition, *international marine bunkers* figures for **LNG** were estimated by the IEA Secretariat from 2013 onwards. These values were subtracted from exports, as these quantities are used by the vessels, and therefore are not in fact exported.

Indigenous production is measured by the Canadian administration by upscaling the marketable production by approximately 11% to account for own-use in the extraction process.

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Associated gas has been estimated by the Canadian administration for 2016 and 2017.

Prior to 2005, n*on-associated gas* production data includes *colliery gas* as well as *associated gas* produced in Alberta.

Transformation

For 2000, the increase in *main activity producer electricity* is due to new generation plants in Alberta and Ontario.

Due to confidentiality reasons, the Canadian administration estimated **natural gas** consumption in *oil refineries* for the 2014-2017.

Gas-to-liquids (transformation) represents quantities of **natural gas** consumed in the production of synthetic crude oil.

Non-specified transformation represents quantities of **natural gas** used for the upgrading of refined oil products.

Consumption

In the 2019 edition, the *oil and gas extraction* consumption was revised back to 2005 in order to more accurately separate it from other mining/extractive activities.

In the 2019 edition, an improved methodology was applied to *industry sector* for 2005 onwards resulting in a share of the *not elsewhere specified (industry)* being allocated to various industrial sub-sectors and creating breaks between 2004 and 2005.

Distribution losses flow is computed as a balancing variable.

Due to confidentiality reasons, the Canadian administration estimated **natural gas** consumption in the following sectors for 2014-2017: *iron and steel*, *non-ferrous metal*, *transport equipment* and *machinery*.

For 2011, the increase consumption by *non-metallic mineral* production is due to switching from **coal** to **natural gas** in cement manufacturing.

Prior to 1990 data for consumption of **natural gas** for *construction* are not available.

Prior to 1978, consumption in *non-specified industry* includes gas used as fuel in *oil refineries*.

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Prior to 1978, agriculture is included in industry, and no detailed industry sub-sector data are available.

Biofuels and waste

General notes

In the 2023 edition, some values for biogases, renewable municipal waste and non-renewable municipal waste were revised. The revisions are mainly in the transformation sector and cover the years 1990-2021.

In the 2022 edition, **solid biofuels** were significantly revised starting from 2016 due to the utilization of new data sources. This may lead to data breaks in the transformation sector between 2015 and 2016.

The split of **municipal waste** reported assumes 65% renewable and 35% non-renewable.

The IEA Secretariat has estimated the data for **biogases, industrial and municipal waste** from 1990 to 2004, **biogasoline** (ethanol) from 1998 to 2004 based on information supplied by Natural Resources Canada.

Supply

Canadian **biodiesel** production increased significantly in 2014 because a large producer came online at the end of 2013. In 2016 again, there was a big increase in production of **biodiesel** due to a large plant coming online in Alberta. This is also the reason for the increase in export, as Canada exports most of its **biodiesel** to the US.

There were no exports of **biogasoline** since 2013.

Consumption

In the 2022 edition, due to the utilisation of new data sources, data breaks are visible between 2004 and 2005 for **solid biofuels**.

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Electricity and heat

General notes

In the 2020 edition, the Canadian administration provided revised data back to 2005 based on revised methodologies and sectoral alignments, and to incorporate additional data.

In previous editions, the Canadian administration also undertook revisions of many parts of the electricity time series back to 2005, based on the results of the Report on Energy Supply and Demand in Canada (RESD). In particular, revisions were made on the inputs and outputs of power plants fuelled by combustible fuels and on the breakdown of final electricity consumption, resulting in possible breaks in time series.

Supply

In 2019, the Annapolis Royal **tidal** power station closed.

In the 2018 edition, revisions were made to electricity production from **wind** back to 2013.

For 2017 onwards, fluctuations in electricity output from **nuclear** occur in part due to reactor refurbishment works. Staggered maintenance across various reactors is scheduled for Darlington (2017-2027) and Bruce (2020-2034) power generation stations.

Discrepancies occur between respective reported figures for **electricity** trade between Canada and the US from 2016 onwards.

Autoproducer **solar PV** electricity generation is available from 2016. Prior to 2016, data are included in main activity producers. As a result, a break in series occurs for main activity producer solar generation between 2015 and 2016.

Starting in 2009, a new source has been used for electricity production from **solar**, **wind**, and **tide**. This new source covers production from **solar** and **wind** only from plants with capacity higher than 500 kW.

Heat production includes **heat** produced by **nuclear** power stations for distribution to other consumers up to 1997.

Electricity production from **other sources** mainly refers to steam and waste heat.

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Transformation

For the 2022 edition, the Canadian Administration submitted revised data for **solid biofuels**, due to the incorporation of data from the Industrial Consumption of Energy survey alongside existing data from the Annual Electric Thermal Generating Stations survey.

For autoproducers generating electricity with process steam produced from **biofuels** and **waste**, the energy required to produce the initial steam is not taken into account by the Canadian administration and as a result the efficiencies are overstated.

In the 2016 edition of this publication, there was a reclassification from autoproducer to main activity producer for plants fuelled by **biogases** and **municipal waste**.

The breakdown of electricity and heat generation between **natural gas** and **oil products** in main activity producer CHP plants has been estimated by the Canadian administration starting in 1990. This may cause breaks in the time series between 1989 and 1990.

Net electricity production by autoproducers prior to 1990 includes production from combustible fuel sources only.

Inputs of fuels to heat plants are not available for 1979 to 1987.

Consumption

In the 2023 edition, the Canadian Administration used revised consumption data back to 2000, drawing on more detailed sectoral classification data available in the Industrial Consumption of Energy (ICE) survey.

Electricity consumption in *road* refers to consumption in establishments primarily engaged in truck transport services; the operation of urban, interurban and rural transport systems (including urban rail); school buses; charter and sightseeing buses, taxis and limousine services.

In the 2020 edition, data for several sectors were revised back to 2005 to improve accuracy and alignment with ISIC classifications. In particular, data previously reported under “non-specified” sectors were reallocated to specific sectors, and improvements were made to *transmission and distribution losses*. As a result, some breaks may occur between 2004 and 2005.

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In 2017, the decrease in **electricity** consumption in the chemicals sector is partially due to a large consumer having been rotated out of the source sample survey used to compile the data.

Prior to 2005, *transmission and distribution losses* of **electricity** could include statistical difference for certain years.

Consumption of **electricity** in *oil and gas extraction* is not available prior to 1987.

Consumption of **electricity** in *coal mines* is not available between 1982 and 1986.

Breaks in the time series occur between 1973 and 1974 in *agriculture/forestry*, and between 1987 and 1988 in the industry sector.

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Chile

Source

Energía Abierta, Comisión Nacional de Energía, Ministerio de Energía, Santiago.

General notes

Data are available starting in 1971.

In the 2017 edition, data for 2014 and 2015 were revised to replace figures previously estimated by the Secretariat.

From 1990, consumption in paper and pulp includes forestry and consumption in agriculture is included in *non-specified industry*. In general, a new methodology has been applied for data since 1990, leading to other breaks in time series between 1989 and 1990.

Coal

General notes

Other bituminous coal data includes **sub-bituminous coal**, if present. For 2024 edition, sub-bituminous coal is reported for the first time.

In the 2023 edition, **gas works gas** balance has been estimated by the IEA Secretariat.

Supply

For 2024 edition, imports and consumption of sub-bituminous coal are reported for the first time.

In the 2023 edition, stock change data for all products and trade data for **coke oven coke** for 2022 were not yet available to the Chilean administration.

In the 2021 edition, imports and consumption of **anthracite** are reported for the first time. The time series has been completed back to 2015.

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Consumption

In the 2024 edition, **coke oven gas** was estimated by the IEA Secretariat for the data year 2022 based on the “Balance Nacional de Energía”.

Since 1990, consumption in paper and pulp includes forestry and consumption in agriculture is included in non-specified industry. In general, a new methodology has been applied for data since 1990, leading to other breaks in series between 1989 and 1990.

Oil

General notes

There are breaks in time series between 2008 and 2009 due to a change in methodology by the Chilean administration.

Supply

Receipts from other sources of other hydrocarbons correspond to natural gas used in refineries. These quantities are the results of *not-elsewhere specified transformation* in the Balances format.

Consumption

Starting with 2017 reference year data the administration can now identify consumption in construction and agriculture. Prior to these quantities were reported under not elsewhere specified.

Natural gas

General notes

The 2017 values for *not elsewhere specified transformation* and *oil refineries* have been estimated by the IEA secretariat.

Supply

Chile started reporting *exports* of **natural gas** with 2016 data.

Data representing **LPG** injected into the **natural gas** distribution network are available starting in 2009. They are reported in *from other sources - oil*.

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Transformation

For 2009 and 2010, inputs of **natural gas** to *autoproducer CHP* plants were estimated by the Chilean administration. For other years, these inputs are included in *autoproducer electricity* consumption.

Not elsewhere specified transformation represents **natural gas** that is blended with **refinery gas**.

Consumption

Natural gas used for *oil and gas extraction* is included in gas consumption for energy use in *oil refineries*.

Non-specified transport corresponds to marine transport.

Biofuels and waste

General notes

In the 2024 edition, the 2022 figures have been estimated by the IEA Secretariat based on a combination of preliminary supply side data, submitted for this cycle and the 2022 energy balances published by the Ministry of Energy.

Supply

In 2021, there is no supply, transformation or energy/end use of Charcoal and Municipal Waste.

Production of **landfill gas** ceased from 2001 - 2014 as landfill sites stopped producing adequate gas to continue collection.

Transformation

In 2021, the input in main activity producer electricity – **solar thermal** and the **solar collectors installed surface** have been estimated by IEA Secretariat.

A new survey on primary **solid biofuels** causes breaks in production and input to autoproducer CHP between 2011 and 2012.

Consumption

Charcoal production and consumption have been estimated by the IEA Secretariat until 2013. From 2014 data, only **solid biofuels** input to **charcoal** production plant is estimated.

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The Chilean administration applied a new revised methodology for *final consumption* of **primary solid biofuels**. This may lead to data breaks in time series between 2013 and 2014.

Electricity and heat

Supply

Electricity production from **geothermal** started at Cerro Pabellón in 2017.

In 2014, the Chilean administration applied a new methodology in the reporting of electricity generation from **solar PV** and **wind**, resulting in breaks in time series between 2013 and 2014. Revisions for previous years are pending.

The majority of electricity generation *from other sources* is from a conveyor belt transporting crushed rock from high altitude to lower altitude in a mine. A small amount from waste heat is also included.

Solar thermal heat production has been estimated by the IEA Secretariat using data published by Chilean ministry of energy.

Heat production from **solid biofuels** and **biogas** use in Main CHP plants is not available.

Electricity production from autoproducer **hydro** is self-declared, and as such, subject to variation.

Transformation

In the 2026 edition, the IEA Secretariat estimated the input (in terajoules) and the **electricity** output from **sub-bituminous coal, LPG, fuel oil** and **petroleum coke** for main activity producer and autoproducer electricity plants, between 2022 and 2024, to cover certain gaps in the submission of the Chilean administration.

For 2019, the increase in electricity output from **natural gas** and the decrease in output from **coal** were due to the closure of some coal-fired power plants, and the resumption of natural gas imports from Argentina.

For 2014, data on inputs to transformation processes were taken from the published energy balance, and the output was estimated based on the efficiency reported in previous years.

Electricity production from **other bituminous coal** includes sub-bituminous coal.

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Production of **chemical heat** used for electricity generation started in 2013. Besides chemical heat, data for heat production in CHP and heat plants are not available.

Increases in electricity from **natural gas** in 2010 are due to the openings of new LNG terminals.

The split of **electricity** generation by main activity and autoproducer by fuel was estimated by the Chilean administration for the period 1990 to 2003.

The variability of electricity output from **oil products** is in part due to the fact that oil-fired power plants are used for backup generation.

In 2024, the inputs of **solar thermal** to the main activity producer electricity plantsdeclined due to a temporary closure of a concentrated solar power plant.

Consumption

Consumption in *agriculture/forestry,* and *construction* are available from 2017. For prior years, data are reported under *Industry (non-specified)*.

Electricity consumption in *mining and quarrying* includes: coal mining; *industry (non-specified)* includes food, beverages, and tobacco; and wood and wood products; *commercial and public services* includes gas works.

Increases in **electricity** consumption in the *road transport* sector from 2014 onwards are the result of a new estimation methodology, while electric vehicles used for the transportation of ores are reported as consumption within the mining and quarrying industry.

Disaggregated data on **solar thermal** consumption by sector are not available. Therefore, all consumption is allocated to the *non-specified other* sector.

Prior to 2009, most *statistical differences* are included in *distribution losses*.

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Colombia

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Sources for Biofuels and waste:

Ministry of Mines and Energy, Energy Information Department, Bogotá.

General notes

Data for Colombia are available starting in 1971.

Colombia joined the OECD in April 2020. Colombia submitted questionnaires with data for 2019 starting in 2021 edition.

In the 2026 edition, 2024 data have been estimated by the IEA Secretariat based on a combination of supply side data submitted to the IEA, and the energy balances published by the Colombian Unidad de Planeación Minero Energética (UPME).

In the 2025 edition, most of the 2023 data have been extracted from the 2023 energy balances published by the Colombian Unidad de Planeación Minero Energética (UPME) or estimated from it.

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2022 and 2021 data have been estimated by the IEA Secretariat based on a combination of supply side data submitted to the IEA, and the energy balances published by the Colombian Unidad de Planeación Minero Energética (UPME). Historical revisions were not provided and some breaks in the time series can appear for 2018/2019.

Due to the new questionnaire layout used, minor revisions occurred for years 1990-2018, leading to minor breaks in the time series for 1989/1990.

In the 2020 edition, data for solar photovoltaic and biogas were added, based on new information from Unidad de Planeación Minero Energética (UPME) and the International Renewable Energy Agency (IRENA).

In the 2020 edition, the oil balance was revised based on new information from UPME, Asociación Colombiana del Petróleo (ACP), Refinería de Cartagena and Ecopetrol. Time series for paraffin waxes, bitumen and lubricants are now available from 1992 onwards. Petroleum coke data are available from 2016 onwards. Data for non-specified oil products are partially estimated by the IEA Secretariat, and include products such as arotar, slop, sulphur and propylene. Naphtha is revised from 2008 onwards to reflect UPME and Ecopetrol information on exports and imports. Transfers of naphtha for crude oil dilution are estimated by the IEA Secretariat. Crude oil stock changes and transfers are revised from 2010 onwards, as well as 2010-2013 supply and refinery input of crude oil to take into account the latest information from UPME.

In the 2020 edition, the correction of discrepancies in biodiesel and ethanol data leads to revisions in biodiesel, ethanol, diesel and motor gasoline data from 2005 onwards.

In the 2018 edition, time series for the period 2013-2016 were revised based on new energy balances received from UPME. Breaks in time series may occur between 2012 and 2013.

Coal

General notes

In the 2026 edition, the Colombian administration revised part of the data for recent years, notably regarding the production flow for all non-gaseous coal products. In addition, part of 2024 data has been estimated by IEA Secretariat based on the 2024 energy balances published by the Colombian “Unidad de Planeación Minero Energética (UPME)”, and **other bituminous coal** exports

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breakdown by country is not available and will be assessed in subsequent publications.

In the 2025 edition, the IEA Secretariat has estimated preliminary data for 2024p for all the products and 2023 data have been estimated by the IEA Secretariat based on the 2023 energy balances published by UPME", as there were no submission of data for 2023 and 2024 from the Colombian administration.

In the 2024 edition, The IEA Secretariat revised the historical time series of the net calorific value of production for **coke oven coke**, to better reflect information from Colombian producers. As a result, the IEA Secretariat estimated also **coking coal** input in coke ovens transformation and **coking coal** production for the entire time series, to ensure consistency of the coking coal balance and coke ovens transformation efficiency.

Supply

In the 2024 edition, the IEA Secretariat estimated the production of **anthracite, coke oven gas** and **blast furnace** since it was not reported by the country.

In the 2024 edition, the IEA Secretariat estimated the production of **bituminous coal** between 2020 to 2022 due to the lack of available information.

In the 2022 edition, **coking coal** production was estimated by the IEA Secretariat for the data year 2020.

Consumption

Data for non-energy use is not currently available.

In the 2024 edition, the IEA Secretariat estimated the distribution of demand of **bituminous coa**l in the industry sector and other sectors for 2022 to avoid breaks in the time series.

In the 2024 edition, the IEA Secretariat estimated the use of **coke oven coke** in the blast furnace transformation and the industry sector based on OLACDE's report.

In the 2023 edition, the IEA Secretariat revised the 2020 figures of industry consumption for **coking coal** and **other bituminous coal** based on information from the energy balance and the Statistical Bulletin published by UPME.

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Oil

General notes

In the 2026 edition, the IEA Secretariat estimated most of the data based on the the 2024 energy balances published by the Colombian “Unidad de Planeación Minero Energética (UPME)”.

In the 2025 edition, most of the 2023 data is directly extracted from the energy balance published by UMPE. However, data for petrochemical products (**refinery gas**, **refinery feedstocks**, naphtha) and non-energy products (**lubricants, paraffin wax, petroleum coke**, **other oil products**) were estimated by the IEA secretariat.
2024p data is calculated based on monthly submissions to the IEA.

In the 2022 edition, data for Colombia prior to 1990 in the Oil Information may be different from those in World Energy Statistics due to a change in reporting methodology. The data from 1990 onwards reflect the conventions and methodologies of the IEA/Eurostat/UNECE annual oil questionnaire. As such, there may be breaks between 1989 and 1990.

In the 2021 edition, data for **lubricants** and **paraffin wax** are estimated by the IEA Secretariat.

Supply

In the 2022 edition, the Colombian administration reported stock changes in 2021 for several oil products. The stock change of **crude oil** in 2020 and 2021 may include some missing coverage in indigenous production. From 2010, products transferred of refinery feedstocks refer to **naphtha** blended with **crude oil** for dilution at refineries. Stock changes of some primary and secondary oil products are estimated by the IEA Secretariat.

Consumption

Crude oil may be used at refineries to support refinery operations. From 1990 onwards, these are reflected in the statistical difference.

In the 2025 edition, the split of domestic versus international aviation **jet kerosene** consumption was estimated by the IEA secretariat from 1990 onwards.

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Natural gas

General notes

In the 2025 edition, the IEA Secretariat made revisions to data dating back to 2006 for many flows in Final Consumption to align them with the historical data of the Colombian administration. These changes have caused a break in the time series between 2005 and 2006. For the preliminary 2024 data, estimations had to be performed by the IEA Secretariat, based on data from CEDIGAZ and the International Group of Liquefied Natural Gas Importers (GIIGNL).

In the 2024 edition, no 2022 natural gas data was submitted to the IEA from the Ministry of Mines and Energy, therefore extensive estimations were required to be made by the IEA Secretariat. The estimations were made using a number of different sources including the Colombia Aggregated National Energy Balance, Colombia Natural Gas Market Manager Annual Report, data from other international organizations, and data from the other fuel questionnaires that were submitted.

In the 2023 edition, revisions were made back to 2006 for many flows in Final Consumption to align the data with the historical data of the Colombia administration. This has resulted in a break in the time series between 2005 and 2006.

Biofuels and waste

General notes

In the 2026 edition, 2024 data have been estimated by the IEA Secretariat based on a combination of supply side data submitted to the IEA, and the energy balances published by the Colombian Unidad de Planeación Minero Energética (UPME).

In the 2025 edition, 2023 data are estimated by the IEA Secretariat based on the 2023 energy balances published by Colombia's Unidad de Planeación Minero Energética (UPME) and OLACDE.

In the 2024 edition, the 2022 data for **municipal waste**, **primary solid biofuels**, **charcoal** and some electricity generation and capacity figures have been estimated by the IEA Secretariat based on a combination of preliminary supply side data, submitted for this cycle and the 2022 energy balances published by the Colombian Unidad de Planeación Minero Energética (UPME).

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2021 data are estimated by the IEA Secretariat based on OLACDE and the Federación Nacional de Biocombustibles de Colombia for liquid biofuels.

Electricity and heat

General

In the 2026 edition, the IEA Secretariat has estimated fuel inputs, corresponding electricity generation, and final electricity consumption based on the 2024 energy balance published by Colombia's Mining and Energy Planning Unit (UPME), as the data reported by the country showed efficiencies outside the normal range or were incomplete.

In the 2025 edition, most of the 2023 data are estimated by the IEA Secretariat based on the 2023 energy balance published by UPME.

In the 2025 edition, IEA Secretariat made revision to electricity trade in 2019, electricity consumption in not elsewhere specified (Energy) in 2020 and natural gas fuel inputs and electricity generation by main activity and autoproducer electricity from 2021 onwards based on UPME energy balance.

In the 2024 edition, some 2022 data were estimated by the IEA Secretariat based on the energy balances published by the Colombian Unidad de Planeación Minero Energética (UPME), data submitted by the Colombian Administration and other sources.

In the 2023 edition, 2021 data for fuel inputs and electricity outputs from **combustible fuel** fired power plants have been estimated by the IEA Secretariat based on the 2021 energy balances published by the Colombian *Unidad de Planeación Minero Energética (UPME)* and data submitted by the Colombian Administration.

Supply

From 2019 onwards, due to the lack of detailed electricity own use data, net electricity generation and electricity own use by source have been estimated based on the total reported net to gross ratio for each year. Revisions are pending.

Transformation

Prior to 2019, inputs of residual fuel oil, non bio gas/diesel oil, and other kerosene to electricity generation are reported under the relevant fuel. However, the

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associated outputs are reported in aggregated format under other oil products. Historical revisions are pending.

Data for blast furnace gas use in autoproducer electricity plants have been estimated by the IEA Secretariat.

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Costa Rica

Sources

Sources for 2016 onwards:

Balance Energético Nacional, Dirección de Energía, Ministerio de Ambiente y Energía (MINAE), San José

Secretaría Planificación Subsector Energía (SEPSE), San José

Sistema de Información Energética de Latinoamérica y el Caribe. Latin American and Caribbean Energy Organization (OLACDE), Quito, accessed at: https://sielac.olade.org/default.aspx

Generación y Demanda, Informe Anual, Instituto Costarricense de Electricidad, San José, various editions up to 2024.

IEA Secretariat estimates.

Sources up to 2015:

Direct communication with the Ministerio del Ambiente y Energía, San José.

Balance Energético Nacional, Secretaría Planificación Subsector Energía (SEPSE), San José, various editions.

IEA Secretariat estimates.

General notes

Data for Costa Rica are available starting in 1971. For all fuels, data for 2022 are largely estimated by the IEA Secretariat by considering various sources. For 2023, data for coal and oil were submitted by the country, while data for electricity and renewables were estimated by the IEA Secretariat.

Costa Rica joined the OECD in May 2021. Costa Rica submitted questionnaires with data for 2020 starting with the 2022 edition.

In the 2025 edition, provisional 2024p was estimated by the IEA Secretariat as no submission was made to the IEA. For 2023 data, coal and oil were submitted by the country, while data for electricity and renewables were estimated by the IEA Secretariat.

In the 2024 edition, data for 2022 for all fuels are largely estimated by the IEA Secretariat by considering various sources.

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In the 2022 edition, data were largely revised across all fuels for years 2016 to 2019, leading to large breaks in 2015/2016.

In the 2020 edition, due to clarification given by Secretaría Planificación del Subsector Energía (SEPSE), data for **coke oven coke** were revised to zero and corresponding figures reported as **petroleum coke**, for use in the cement industry.

In the 2020 edition, crude oil transfers and stock changes are revised between 2013 and 2015 to reflect the blending of remaining crude oil inventories with products after the closure of the refinery in 2011. As a result of this revision, NGL data is no longer reported. Transfers of fuel oil to gasoil are estimated in 2016 and 2017, while 2018 transfers data is reported by SEPSE.

Data previously reported in non-specified (other) consumption of gasoil is now reported in the construction sector from 2005.

In the 2019 edition, the IEA integrated revisions received from the country for the years 2006-2016. Most changes are for primary solid biofuels.

Coal

General notes

In the 2024 edition, no data were reported, leading to estimate all the values from different sources (UN COMTRADE and OLACDE mainly).

Other bituminous coal and **anthracite** are reported together until 2015 and separated from 2016.

Consumption

In the 2024 edition, 2022 consumption data is estimated based on the 2022 national balance published by OLACDE.

Oil

General notes

In the 2023 edition, the Costa Rican administration revised some data from 2016 onwards as a result of an update to the National Transport Survey that contained

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greater detail of sales made by RECOPE, the state oil company, to direct consumers. Breaks may occur between 2015 and 2016.

Consumption

In the 2024 edition, 2022 consumption data is estimated based on the 2022 national balance published by OLACDE.

In the 2022 edition, non-energy consumption of **bitumen** is reported in construction for the time series. Previously, they were reported in non-energy use in industry/transformation/energy.

Biofuels and waste

General notes

In the 2026 edition, the IEA Secretariat received a submission for biofuels and waste after several cyles, containing data for 2024, but the information provided was incomplete. To avoid breaks in series, the IEA Secretariat estimated missing values and will continue working closely with the “Ministerio de Ambiente y Energía” to establish a coherent and consistent historical time series in the coming cycles.

For the 2025 edition, the IEA Secretariat estimated all the 2023 data based on various secondary sources, as there was no submission of data from the Costa Rica administration.

For the 2024 edition, the IEA Secretariat estimated all the 2022 and 2023 data based on various secondary sources, as there was no submission of data from the Costa Rica administration.

Costa Rica joined the OECD in May 2021 and submitted questionnaires starting with the 2020 data cycle. Historical revisions were provided starting from 2016. Some breaks in the time series can appear for 2015/2016 and the most significant regard **solar PV**, **solid biofuels** and **charcoal**.

Transformation

Solid biofuels CHP auto-producers are classified as electricity auto-producers before 2016.

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Electricity and heat

General notes

For the 2026 edition, the country resumed reporting and submitted data from 2022 onwards, following several reporting cycles without submissions. Due to efficiencies falling outside acceptable ranges, the IEA Secretariat estimated specific inputs and outputs for **gas/diesel**, **solid biofuels**, and **biogases** for the period 2022–2024. In addition, consumption by sub-sector was estimated, as this information was not reported by the country. These estimates were based on the *Annual Report on Electricity Generation and Demand* published by the Costa Rican Institute of Electricity, as well as the *Balance Energético Nacional* prepared by the Ministerio de Ambiente y Energía.

Supply

Due to the lack of detailed electricity own use data, net electricity generation and electricity own use by source have been estimated based on the total reported net-to-gross ratio for each year. Revisions are pending.

Thermal electricity generation can show variation as the majority of electricity output is produced from hydro and wind.

Transformation

Prior to 2016, inputs of **residual fuel oil** and **non-bio gas/diesel oil** to electricity generation are reported under the relevant fuel. However, the associated outputs are reported in aggregated format under **other oil products**. Historical revisions are pending.

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Czech Republic

Sources

Czech Statistical Office, Prague.

Ministry of Industry and Trade, Prague.

General notes

Due to ongoing review of energy data for 2010-2014, revisions have been made in the 2017 edition. Full details are given under each fuel.

Data are available starting in 1971.

Coal

General notes

Other bituminous coal data include **sub-bituminous coal** for all years if present.

The production and use of gas works gas ceased in 2020.

In the 2023 edition, the Czech Statistical Office revised **coking coal** and **other bituminous coal** imports for 2019 and 2020 as some **coking coal** was reclassified during resale within the country and consumed as **other bituminous coal**.
In the 2022 edition, calorific values were revised for the historical time series leading to revised input to main electricity producer plants and TES.

In the 2018 edition, data for the Czech Republic were revised back to 2010 based on administrative data causing breaks in time series between 2009 and 2010. These revisions impacted mainly industrial consumption for **lignite**, **BKB** and **other recovered gases**.

In the 2017 edition, coal consumption in the residential sector has been revised back to 2010 due to a new survey in households made by Czech Statistical Office, creating breaks in time series between 2009 and 2010.

Increased production and consumption of **other recovered gases** in 2014 is due to improved tracking of by-products from various transformation processes. Tail gases from the production of carbon black from coal tar are reported here, as are

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off gases from the manufacture and cleaning of syngas from lignite for an IGCC plant.

Coal which had been previously classified as **sub-bituminous coal** until the 2008 edition is now reported under **lignite** for all years.

Revisions by the Czech administration have resulted in some breaks in time series between 2001 and 2002.

Data for 1990 to 1995 were estimated based on the Czech publication Energy Economy Year Book.

In 1995, town gas production (included in **gas works gas**) ceased.

Since 2010 **BKB** includes multipurpose brown coal dust for both supply and consumption.

Supply

In the 2021 edition, revisions were made for the period 2010-2018 to the consumption of **other bituminous coal** and **lignite** in Main Activity Producer CHP Plants and Main Activity Producer Electricity Plants. Only the structure changed, the total did not change. Revisions were also made to the calorific values of these products and flows for the same time period.

Mining in Lazy Mine was lowered until the closure of the mine in November 2019. This shows in the decrease of production of **coking coal**.

Imports of **lignite** for the year 2019p are expected to be revised upward in the next edition as more comprehensive data will be available.

Other recovered gases are combustible gases obtained during the production of **gas works gas** and as a result of chemical processes.

Production *from other sources* of **other bituminous coal** is from coal slurries.

A portion of **other bituminous coal** reported under *from other sources* for the period 2010-2015 correspond to reclassified **coking coal**.

Statistical differences for **coking coal** for the period 2010-2015 are partly due to the reclassification of coking coal to **other bituminous coal**.

Consumption

In 2023, consumption of several products decreased due to a drop in the activity of one of the main Iron & Steel producers. This concerns mainly Coking Coal input

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to Coke Ovens and Coke oven Coke input to Blast Furnaces, in transformation sector.

In the 2023 edition, most of the consumption of **other bituminous coal** in Mining and quarrying between 2016 and 2020 was removed as the Czech Statistical Office discovered it was non-energy consumption already reported in the relevant flow.

In the 2023 edition, a new consumer of pulverized lignite (reported under **BKB**) was identified in Mining and quarrying sector, from 2011 onwards.

In the 2019 edition, **coke oven gas** in energy own-use consumed by electricity, CHP and heat plants was revised for 2016 resulting in a break in the series.

In the 2015 edition, improved reporting enabled revisions to be made for certain primary **coal** consumption flows between 2010 and 2012.

In the 2014 edition, residential consumption for the period 1990 through 2011 was revised for **other bituminous coal**, **lignite**, **coke oven coke** and **BKB**, as more accurate consumption data became available.

Due to economic restructuring in consumption in the late 1990s (big state enterprises subdividing and/or privatising and the utilisation of new technologies by businesses), there may be breaks in time series in these sectors.

Oil

General notes

Data prior to 1994 are estimated by the IEA Secretariat.

In 2016 both Czech refineries were affected by accidents which resulted in decreased refinery throughput, increased refinery losses and a large decrease in imports of **crude oil** offset by increased imports of finished products. The second accident affected the ethylene production unit and led to decreased activity in the petrochemical sector.

In 2017, the units previously affected by accidents were upgraded and operations resumed with increased output.

Supply

Additives from other sources renewables include bioETBE intended for blending with **non-bio gasoline**.

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Transformation

From 2002 data onwards, some amounts of **fuel oil** have been reclassified under **other products**. This change mainly affects the transformation sector.

Consumption

Between 1998 and 1999, breaks in **gas/diesel** final consumption time series are due to a new data management system implemented by the Czech administration.

Natural gas

General notes

Between 1993 and 1994 there are some breaks in time series due to a change in the energy balance methodology between former Czechoslovakia and the Czech Republic. Since 1993, data have been officially submitted by the Czech Statistical Office.

Supply

From 2013 all *non-associated gas* production was reclassified as *colliery gas* production.

Transformation

In the 2022 edition, the large increase in inputs for electricity generation in autoproducers is due to the cessation of energy gas production (gas works gas) in one company and its replacement by natural gas.

In 1996 **natural gas** inputs into *gas works (transformation)* ended.

Consumption

There is a break in time series in the *industry* and *transformation sectors* between 2009 and 2010 due to new available data from distribution companies.

Starting with 2008 data, hydrogen production is reported in *chemical and petrochemical* feedstocks as non-energy use. Up to 2007, *chemical and petrochemical* consumption includes both energy and non-energy use.

Prior to 1994 data in *transport sector* are for former Czechoslovakia.

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Biofuels and waste

General notes

The restructuring of the Czech electricity market leads to breaks in the time series in all sectors between 1998 and 1999.

Data for **municipal waste** and **solid biofuels** are not available prior to 1990, and **liquid biofuels** data are not available prior to 1992.

Supply

The increase in the consumption of **industrial wastes (non-renewable)** in the *non-metallic minerals* sector in 2018 is related to increased demand from cement companies.

Transformation

For 2016 data, an increased excise duty was imposed on **biofuels**, causing a decline in consumption.

In 2016, a main activity producer CHP incineration plant fired by **municipal waste** was in test operation at Chotikov.

Consumption

In the 2017 edition, due to a new survey in households made by the Czech Statistical Office in 2015 (ENERGO 2015), **solid biofuels** consumption in residential sector has been considerably revised upwards since 1990.

Hospital waste previously reported as **municipal waste** is reported under **industrial waste** since 2008.

New survey systems cause breaks in final consumption in 1999 and in 2002. Breaks in both supply and consumption of biofuels and waste occur again in 2003.

Electricity and heat

General notes

Solar PV generation was reported entirely under main activity producers until the 2025 edition. In this edition, a portion of main activity producers was reclassified as autoproducers for the year 2023, resulting in a data break. Revisions to the

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historical time series are expected in future editions.In the 2021 edition, there were revisions for **solar thermal** from 2006 to 2018.

In the 2017 edition, data for the Czech Republic were revised back to 2010 due to the acquisition of new administrative data, allowing access to more accurate and detailed data sources. As a result, there are breaks in several time series between 2009 and 2010.

Data from 1990 onwards have been officially submitted by the Czech administration. This may lead to breaks in time series between 1989 and 1990.

Electricity statistics from 1971 to 1989 have been estimated by the IEA Secretariat except for final consumption and trade which were submitted by the Czech administration.

For 2017, apparent declines in autoproducer **heat** production by the *chemical and petrochemical* sector, and in consumption by *petroleum refineries,* occur due to the incorporation of an oil refinery into a neighbouring petrochemical enterprise.

Supply

In the 2024 edition, autoproducer electricity plant using “heat from chemical sources” was reported for the first time, thanks to data coverage improving.

Electricity from **other sources** includes output from ammonia, Styrofoam-derived liquid waste, unipetrol fuel gas, waste heat, and pressure reduction turbines on gas pipelines.

The amount of heat reported under **other sources** is primarily waste heat from the glass industry until 2009.

From 1999 onwards, small amounts of **heat** have been exported to the Slovak Republic.

Transformation

For 2020 data onwards, a new method was used to allocate data between electricity only and CHP plants. This result in some breaks between 2019 and 2020.

In the 2020 edition, a revision of the methodology for reporting the production of autoproducer plants running on **combustible fuels** removed multiple breaks in time series between 2009 and 2010 for CHP and electricity-only plants that were introduced in the 2017 edition.

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For 2017, **heat** production from electric boilers and heat pumps is based on new survey data, whereas, data for prior years have been estimated by the Czech administration. As a result, some breaks in series may occur. Historic revisions are pending.

Electricity generated from **waste heat** in CHP plants is included with the total production from **combustible fuels**.

Data on **heat** own use and **heat** imports start in 2010 and 2009 respectively, following extensive revisions by the Czech administration in the 2017 edition due to the acquisition of new administrative data. Prior to this period, data are not available due to lack of sources.

The production of electricity reported in the category **other fuel sources** refers to electricity produced from turbines driven by the mixture of air, ammonia and other non-coal gases derived from the petrochemical industry.

From 2014, some autoproducer **heat** plants production figures became too small to appear in data collected.

From 2012 data, new autoproducer **heat** plants were added to the data collection, causing a break in time series.

In 2012, a main activity producer electricity plant using **solid biofuels** started to produce also heat and was reclassified as main activity CHP plant.

A different reporting methodology used by the Czech administration for **biofuels and waste** causes some breaks in time series between 2002 and 2003.

In 1999 and 2000, various big enterprises have been divided, sold and merged. This causes breaks in the time series of all types of plants.

Industrial waste use in main activity producer electricity plants is included with **solid biofuels** from 1996.

Data on **biogases** and waste used in main activity producer CHP and autoproducer heat plants start in 1993.

Prior to 1990, electricity production in main activity producer CHP and autoproducer CHP plants is included in main activity producer electricity plants.

Prior to 1990, heat production excludes heat sold by industry. In addition, heat production prior to 1990 is reported under main activity heat plants because the breakdown by producer and plant type is not available before then.

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The breakdown of net **electricity** production by source is not available prior to 1990.

Data on **heat** production, and the corresponding fuel inputs, have been estimated from 1980 to 1989 based on consumption in *residential* and *commercial/public services*. Prior to that, inputs are included in industry.

Consumption

Data on **electricity** consumption by cable cars (reported under *non-specified transport)* are available from 2017.

Data for direct use of **solar energy** are available from 2003.

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Denmark

Source

Danish Energy Agency, Copenhagen.

General notes

In the 2004 edition, major revisions were made by the Danish administration for the 1990 to 2001 data, which may cause breaks in time series between 1989 and 1990.

Coal

General notes

In the 2023 edition, the Danish Energy Agency informed us that they received new data regarding **other bituminous coal** and **coke oven coke** for two years before the latest submission year, and that this is likely to happen also in future cycles. The revisions concerned several flows of **other bituminous coal** balance for the years from 2018 to 2020, including stock change and transformation, and industry use of **other bituminous coal** and **coke oven coke** for 2019 and 2020. Furthermore, several calorific values of **other bituminous coal** were modified from 2019 onwards.

In the 2020 edition, the historical series for gas works gas have been revised and set to 0 for all flows. After a revision of the definitions it was concluded that there is no gas works gas transformation taking place in Denmark.

Supply

Trade data for **other bituminous coal** might include transit trade.

A large increase of **steam coal** imports in 2003 was related to a drought in Scandinavia. Thermal power plants were operated more intensively to replace hydro-generated electricity that was consumed in the country. Additionally, more coal-generated electricity was exported to other countries in the region. Significant fluctuations in demand are also evident for other years for similar reasons, including 2006 and 2013, but exist to a lesser extent.

Declines in stocks of **steam coal** stem from extensive deployment of renewable generation technologies and policy to further reduce Denmark's utilisation of coal-

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fired power and implement co-firing with renewable fuels as a part of their *Energy Strategy 2050*.

Oil

General notes

In the 2020 edition, as a result of resolved confidentiality issues, **biogasoline** and **biodiesel** are reported separately from 2012 onwards.

Starting with 2013 data the Danish administration reports products transferred to refinery feedstocks. In previous years refinery output is reported net of product transfers.

Between 1995 and 2004, **other hydrocarbon** imports and inputs to main activity producer CHP plants represent orimulsion.

From 1990 onwards, Greenland and the Danish Faroes are not included in the oil data.

Information on waste oil recycling and final consumption begins in 1989 and is reported in other oil products.

In 1988, consumption of **gasoline type jet fuel** ceased.

As of 1987, separate data for **paraffin waxes** are no longer available.

Prior to 1975, **refinery gas** is reported net of consumption in refineries.

Supply

In the 2023 edition, the Danish administration revised the supply data of **motor gasoline** as early as 2008.

Quantities of other hydrocarbons represent **natural gas** used by refineries.

Transformation

Due to improved survey methods, inputs to electricity and heat generation have been reclassified, causing a break in time series between 1993 and 1994. The oil inputs used in industrial sub-sectors for producing surplus heat, which is delivered to district heating networks, are allocated to these industrial sub-sectors.

In 1994, the marked increase in inputs to CHP production is due to increased electricity exports to Norway.

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From 1974 to 1979, consumption of fuel oil for the CHP production by autoproducers has been estimated.

Consumption

Consumption data are based on a detailed survey sent to companies in Denmark every other year. For non-survey years, the consumption figures are estimated by the Danish Energy Agency

White spirit and lubricants deliveries are estimated by Denmark.

For 1994 and 1995, industry detail is based on a new survey.

Prior to 1990, gas/diesel oil and fuel oil consumption for fishing are included in domestic navigation

Natural gas

Supply

In the 2025 edition, the imports and exports include transit trade, which leads to a significant increase in imports and exports from 2023 onwards.

Transformation

In 2020 edition, *gas works (transformation)* were revised due to a change in the reporting methodology.

Consumption

The consumption of LNG for marine transport and *international marine bunkers* is not reported due to confidentiality.

The breakdown for industrial consumption for the latest year is estimated by the Danish administration using the previous year's *industry sector* sub-sectoral shares and updated the following year.

Biofuels and waste

General notes

In the 2024 edition, the Danish administration estimated **solar thermal** final consumption and **municipal waste** (renewable and non-) exports for 2022 as

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equal to 2021, because these data are not available by the time of the publication. They are likely to be revised in the next ones.

Transformation

In the 2022 edition, the 2020 figure of heat generation from **biogas** heat autoproducer plants has been estimated by the IEA Secretariat.

From 2012, **biodiesel** production is confidential and gathered with imports.

Consumption

In the 2024 edition, consumption of **biogases** in road transport between 2018 and 2021 has been revised to 0 due to new available information and to avoid double counting of quantities already injected in the natural gas grid.

In the 2020 edition, the consumption of **municipal wastes** in the *commercial and public services sector* for 2017 data was revised.

In the 2016 edition, the Danish administration revised energy consumption in industry sectors causing some breaks in **solid biofuels** consumption between 2010 and 2011.

The data on the consumption of **municipal waste** in the industry sector are delayed by one year and the Danish administration duplicates the previous year's data until the data become available.

The Danish administration estimates the growth in consumption of **solid biofuels** in the industry sector for the most recent year based on the growth in the transformation sector.

Electricity and heat

General notes

In the 2025 edition, the Danish administration revised fuel input and electricity and heat generation for several products and types of producers from 2021 onwards.

In the 2020 edition, there were revisions from 2010 to 2017 for **solid biofuels**, **biogases** and **solar thermal**.

Heat data are not available prior to 1976.

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Supply

For 2019 data, the increase in heat output from **electric boilers** and **heat pumps** was due to the opening of new facilities. This also contributed to an increase in the coefficient of performance for heat pumps between 2018 and 2019.

In 2017, the declines in **electricity** and **heat** output from **other bituminous coal** and the corresponding increases in output from **solid biofuels** are attributable to fuel switching in co-fired plants.

The amount of **heat** reported under *other sources* is heat recovered from industrial processes and sold for district heating.

Heat produced for sale by heat pumps starts in 1994.

Geothermal and **solar heat** production for sale is available from 1989.

From 1984 onwards, small amounts of **heat** have been imported from Germany.

The production of electricity from **wind** is available from 1978.

Transformation

Efficiency of **solid biofuels** autoproducer **heat plants** dropped in 2022. Revisions are pending.

Fish oil used in main activity producer heat plants is included with **solid biofuels**.

Due to the high number of heating companies burning wood chips that are equipped with boilers with flue-gas condensation, the solid biofuels heat plants show a high efficiency. The efficiency decline evident in 2016 was due to two less efficient plants switching to biofuels.

For some years, heat plants fired by natural gas, municipal waste, solid biofuels, biogases, and other oil products show efficiencies greater than 100%, on a net calorific value basis, due to the use of condensing boilers and other flue gas condensation technologies that recover the latent heat of vaporisation. Inclusion of small quantities of heat output from oil used alongside municipal waste in data for municipal waste may also affect efficiencies.

Biodiesels and biogasoline consumption for electricity and heat production are reported under other liquid biofuels, for confidentiality reasons.

Data for other liquid biofuels main activity heat plants are available back to 1994.

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Consumption

In the 2025 edition the Danish administration revised industry consumption of **heat** by sub-sectors for the entire time series, while total industry consumption remained unchanged, due to new available information.

For 2020, the breakdown of **electricity** and **heat** total final consumption is estimated by the Danish administration based on 2019 data and will be revised in the following reporting cycle once their new industry survey results are released.

In the 2016 edition, the Danish administration revised **electricity** and **heat** consumption in the industry sector from 1990.

Transmission and distribution losses of **electricity** are calculated as a residual.

The direct use of **solar thermal** energy is available from 1978.

Electricity consumption in *non-specified industry* includes consumption in district heating plants and for the distribution of electricity.

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Estonia

Source

Statistics Estonia, Tallinn.

General notes

Data for Estonia are available starting in 1990. Prior to that, they are included in Former Soviet Union.

In the April 2026 edition, a break in series is observed between 2023 and 2024 due to methodological changes in data collection in the country.

Coal

General notes

In the 2025 edition, preliminary data for 2024p supply of gas works gas, peat, coke oven gas and coke oven coke were estimated by the IEA secretariat as no official data were received for these products by the time the database was finalised.

Fuels reported as **coke oven gas** and **gas works gas** are the gaseous by-products of **oil shale** liquefaction. Shale oil production has two technologies: solid heat carrier (SHC) and gas generators (GG). SHC output byproduct (in addition to oil shale) is semi-coke oven gas, which is categorized under **coke oven gas**. The GG byproducts (in addition to oil shale, fenols) are generator gas, which is categorized under **gas work gas** and semi-coke, which is categorized under **coke oven coke**. Inputs of **oil shale** to “coal liquefaction plants” are the inputs for retorting in liquefaction plants. These definitions and classification were applied to all the time series, back to 1990, in the 2024 edition.

In the 2024 edition, the Estonian administration revised oil shale inputs in the transformation sector since 1990. Thanks to these revisions, the IEA Secretariat is now reporting an aggregated input to Coal liquefaction plants (Transformation) instead of a breakdown between Coke ovens, Gas works and Coal liquefaction plants as was done in previous editions.

In the 2023 edition, the IEA Secretariat has further aligned the reporting of calorific values of **oil shale** to the figures provided by the Estonian administration. This led to revisions in energy terms of production and demand flows for 2019 and 2020

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and of all types of electricity and heat producers but main activity electricity plants from 1990 onwards.

In the 2023 edition, the Estonian administration revised **peat** production, stock changes and consumption in main activity producer heat for 2020 due to new available information.

In 2019, the production and consumption of **oil shale** decreased significantly. This was due to two factors: CO2 and Russian electricity prices made the power generation from this fuel less accessible to the market; and at the same time Estonia was developing a strategy to reduce the direct burning of oil shale into electricity.

In the 2013 edition, data for **oil shale** production for the period 1991 to 1997 were revised to match Estonian GHG National Inventory values. Consumption data remained unchanged.

Supply

Indigenous production of **peat products** stopped in 2017.

Oil

General notes

In the 2025 edition, fFuel oil inputs to main activity heat plants in 2022 include fuel oil produced from oil shale.

In the 2021 edition, the Estonian administration submitted some revisions for *residential* consumption data and corrections in the historical time series. This affects **gas/diesel oil**, in particular.

In 2012 data, breaks in time series occur for trade figures, now including re-exports, and for international bunkers.

For 1990 to 2007, oil data are based on direct communication with Statistics Estonia and UNECE.

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Natural gas

Consumption

Consumption reported under *not elsewhere specified (Energy)* represents consumption of different activities of companies in the energy sector (NACE 35) for own uses without transformation.

There are inconsistencies in the time series for *residential* consumption as this sector is computed as a residual.

In 2014 Estonia's main company in the *chemical and petrochemical* sector ceased activity, resulting in no non-energy use of natural gas.

In 2009 Estonia's main producer of fertilisers ceased activity, resulting in a sharp decrease in the non-energy use of **natural gas**. The plant reopened in 2012.

Biofuels and waste

General notes

In the 2021 edition, revisions were made in main activity producers burning **municipal wastes** from 2015 to 2018.

In the 2021 edition, revisions were made in electricity plants burning **solid biofuels** in 2017 and 2018.

In the 2021 edition, revisions were made in main activity producers burning **industrial waste (non-renewable)** from 2016 to 2018.

In the 2021 edition, there were revisions in the *non-metallic minerals* sector from 2015 to 2018 for **industrial waste (non-renewable)** and **municipal wastes**.

In the 2021 edition, there was a revision in the *wood and wood products* sector for **primary solid biofuels (excluding charcoal)** in 2017.

Data for **biogases** include **landfill gas** starting in 2005.

Electricity and heat

General notes

In the 2022 edition, the Estonian Administration revised historical data, in particular, for **oil shale**, **coke oven gas**, and **gas works gas**, in order to better

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align data with that reported by companies under the EU Emissions Trading System (ETS).

Transformation

In 2019, electricity output from **oil shale** decreased. This was in part due to higher carbon pricing, and the availability of low cost electricity imports.

In the 2020 and 2021 editions, reporting methodologies were aligned with the requirements for physical energy flow accounts (PEFA). As a result, some breaks in series occur between 2015 and 2016. In particular, for **renewable municipal waste**, **coke oven gas**, and **industrial waste**.

Electricity output from **solar** is available from 2016.

Fuels reported as **coke oven coke** and **gas works gas** are the solid and gaseous by-products of **oil shale** liquefaction, and main activity heat and electricity generation from these fuels is tightly associated with liquefaction plants.

Inputs of **fuel oil** and **gas works gas** to transformation processes include **shale oil**.

In the 2018 edition, the surge in main activity heat from **solid biofuels** was related to reclassification from autoproducer heat plants, where previously autoproducer own use heat and associated fuel inputs are not reported, and the fuel consumption appears in the main economic activity of the autoproducer.

From 1990 to 1999, some of the **electricity** and **heat** production are reported under **other oil products** while the inputs are reported under the individual fuels.

Consumption

From 2021 onwards, **electricity** consumption previously reported under *Transport (non-specified)* is reported *Commercial and public services*.

Electricity consumption in the *non-specified energy* sector includes consumption in the Classification of the Economic Activities in the European Community (NACE) 3512 and 3513 categories.

Electricity consumption in *road* mainly refers to trolley buses.

Trade

For electricity, trade data are reported on the basis of commercial transactions. Therefore, data may not reflect actual physical exchanges, or include all trade

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partners. The Estonian Administration hopes to revise these data in a coming cycle.

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Finland

Source

Statistics Finland, Helsinki.

General notes

In 2014, a new survey system and a reclassification of the data lead to breaks in the time series between 1999 and 2000 for most products and sectors. The new survey system is more detailed and has better product coverage, especially in electricity, CHP and heat production, as well as in industry.

Coal

General notes

Peat stock changes are calculated as the difference between supply and consumption.

Other recovered gases refer to the gaseous by-products of the ferrochrome production process.

Coal tar used for non-energy purposes or exported is not reported in either production or consumption.

Since 2023, imports for **coking coal** and **other bituminous coal** are not reported anymore due to confidentiality requirements.

In the 2015 edition, revisions were received for some consumption flows of **other bituminous coal** and **coke oven coke**, while **other recovered gases** (from ferrochromium manufacture) were reported separately for the first time, with revisions back to 2000. Prior to 2000, off-gases from ferrochromium manufacture are included in blast furnace gas, and inputs of **coke** oven **coke** for ferrochromium manufacture in inputs to blast furnaces instead of *non-specified transformation*.

Prior to 2008, **peat products** are included with peat data.

A large increase of steam coal imports in 2003 is related to a drought in Scandinavia. Thermal power plants were operated more intensively to replace hydro-generated electricity that is consumed in the country. Additionally, more coal-generated electricity was exported to other countries in the region.

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The increase of **other bituminous coal** inputs into main activity producer electricity plants from 1993 to 1994 was due to coal replacing imported electricity and hydro power.

Production of **gas works gas** ceased in April 1994.

Hard coal data prior to 1978 may include sub-**bituminous coal**.

Supply

Peat products refer to peat briquettes and pellets, which were supplied from old stocks for 2019 and 2020.

Transformation

In the 2023 edition, **anthracite** consumption was reallocated from “Not elsewhere specified (Transformation)” to final consumption in iron and steel industry from 2013 to 2017 according to IRES guidelines on the reporting of coal products used as reductants (mostly for the manufacture of iron and steel).

The consumption of **other bituminous coal** in the energy sector (own use in electricity, CHP and heat plants) covers the use of coal in the pilot phase of a new power plant (the amount of coal was not used for producing any useful heat or electricity).

In 2017, the consumption of coal in main activity producer electricity plants decreased considerably following the move of a large plant to the national capacity reserve.

The significant increases and decreases of **other bituminous coal** inputs into main activity producer electricity plants from year to year are due to coal replacing imported electricity and hydro power.

Likewise, **peat** production is highly dependent upon favourable weather conditions and the pricing of other fuels. The decrease in **peat** and **other bituminous coal** usage in main activity electricity plants in 2008 was due to record electricity generation from hydro plants. A similar circumstance occurred in 2012.

The first coking plant started operation in 1987, hence imports of **coking coal** and production of **coke oven coke** and **coke oven gas** started in that year.

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Consumption

In the 2023 edition, the Finnish administration introduced the reporting of blast furnace gas in “Not elsewhere specified (Energy industry own use)” from 2015. This quantity covers the amount of blast furnace gas used to support the energy consumption of the preparation process of the PCI-coal injection.

Some consumption of **other bituminous coal** is reported for the first time in 2019 as energy industry own use. This covers the use of coal in the pilot phase of a new power plant (the amount of coal was not used for producing any useful heat or electricity).

Food, tobacco and beverages reports 1kt consumption of **coke oven coke** in 2019 after zero in 2018. This is due to rounding (2018: 0,46 kt and 2019: 0,72 kt).

Oil

General notes

In the 2024 edition, net calorific values (NCVs) lead to gains in energy terms in refineries for 2023. Finland and the IEA secretariat are currently investigating the issue and may revise NCVs in the future.

In the 2023 edition, the Finnish administration revised the output and refinery fuel use of **refinery gas** from 2007 onwards to exclude gas by-products.

In spring 2015, the Porvoo refinery had the largest shut down in its history for maintenance works. This is the reason for the large decrease in refinery throughput in 2015.

In 2014, the Finnish administration revised the time series for **refinery gas** from 2000 and included flaring of petrochemical gases under *distribution losses.*

Prior to 2002, **petroleum coke** used as *refinery fuel* was included with refinery gas.

In 1995, there is a break in time series for **oil products** trade due to the aligning of the National Board of Customs trade data collection system with the European Union’s Intrastat system.

Other hydrocarbons reported under *from other sources natural gas* correspond to hydrogen used in refineries, also represented as the output of *non-specified transformation* in the balances format.

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Supply

In the 2025 edition, the Finnish administration discontinued the reporting of non-biofuel additives supply series (imports and refinery intake) and did not input any value for 2023. Those quantities were indeed double counted in the refinery feedstocks products. Further revisions of the whole additives time series are expected in the next edition.

In 2021, refinery output declined due to a 12-week refinery maintenance outage.

Consumption

In the 2023 edition, the Finnish administration acquired more accurate information and revised the **gas/diesel** consumption in the agriculture/forestry from 2010 onwards. This also affected figures in not elsewhere specified (industry) sector as the previously unknown quantities of agricultural consumption were partly allocated to this sector.

Data on non-energy transformation of naphtha in the petrochemical sector is now available from 1990 onwards.

Due to a new calculation model, there is a break in **fuel oil** *other consumption* between 1998 and 1999.

Natural gas

General notes

There have been major changes in the natural gas operating environment in Finland during 2022 and 2023 due to changes and disruptions in the supply of natural gas and LNG.

In 2023 Finland was a net exporter of natural gas via pipelines and relied on LNG imports. Exported natural gas is regasified LNG.

From 2025 edition, on-grid liquefied biogas (LBG) amounts sold via mass-balance guarantees-of-origin certificates used in road transport have been included under the natural gas balance and excluded from the renewables biogas balance. Imported Gurantees-of-Origin LBG has been included under the natural gas balance imports and excluded from the renewables biogas balance.

Finland imports LNG since September 2016. Before 2018 there was only one company operating in this market, LNG supply data was thus confidential and excluded from the supply side flows.

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Between 1999 and 2000 there are some breaks in the time series due to a new survey system and a reclassification of the data.

Supply

Data for *international marine bunkers* consumption started being reported in 2017.

The opening and closing stock levels data are confidential and stock changes data for 2017 are estimates by the Finnish administration.

Transformation

Non-specified transformation data represent **natural gas** used for hydrogen manufacture. This hydrogen is used for hydrodesulphurization and hydrocracking in oil refineries

Consumption

In the 2025 edition gas leakage caused by Balticconnector pipeline is included under transmission losses.

In the 2025 edition, the consumption of **biogas** in *road transport* was removed due to uncertainty about the amount of **biogas** used in *transport*.

In the 2023 edition, an update to methodology related to the hydrogenation process in refineries resulted in revisions to *not elsewhere specified (transformation), oil refineries,* and *distribution losses* back to 2007.

In the 2023 edition, revisions were made to *chemical and petrochemical* and *agriculture/forestry* back to 2015.

Distribution losses include the quantities of boil-off **natural gas** originating from the natural evaporation of LNG in tanks.

Not elsewhere specified (transport) includes LNG consumption for domestic navigation.

Since 1995 data, the breakdown between *residential* and *commercial/public services* is available due to a new system of data collection.

Prior to 1989, **natural gas** consumption in *residential* and *agriculture/forestry* had been estimated by the Finnish administration.

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Biofuels and waste

General notes

In 2023 edition, **solid biofuels** trade methodology was revised. The administration reported that the new estimation method was developed in cooperation with the Natural Resources Institute Finland (Luke) and that was not possible to revise the time series before 2018. Therefore, data breaks might appear between 2017 and 2018

Prior to 2004, **industrial waste** also included other energy forms such as hydrogen, heat from chemical processes, natural gas and blast furnace gas.

Data for **biogases** and **industrial waste** are available from 1996.

Supply

Due to confidentiality, the **biodiesel** production includes trade figures and stock changes starting with 2015 data. **Biogasoline** import for the same time period covers production, exports and stock changes.

In the 2024 edition, for the first-time imports of liquified **biomethane** have been reported, for 2022.

In the 2022 final edition, the administration changed the methodology to estimate **primary solid biofuels** trade data for 2021p. For this reason, a break in the time series appears between 2020 and 2021p. In future editions, the administration will revise historical data.

Transformation

The use of **charcoal** in blast furnaces started in 2018 on a test basis.

The amount of **biodiesel** used for blending with diesel fell greatly in 2016 after record levels for the past two years. Annual variation in the consumption of biofuels is possible and caused by Finland's biofuel legislation, which gives distributors the possibility to fulfil the bio-obligation flexibly in advance.

Consumption

In the 2024 edition, the increase of **industrial waste** consumption in commercial and public services for 2022 is due to the use of plastic waste as fuel for a new plant.

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In 2023 edition, a plant consuming **industrial waste** and **municipal waste** were reclassified from ”Not elsewhere specified” to ”Commercial and Public Services” for the entire time series starting in 2000 and 2008, respectively. Starting in 2017, the large increase of biogas consumption in the paper, pulp and printing industry is due to a change in process in the industry. Wood was gasified and replaced natural gas or oil.

In the 2026 edition, several **biogas** flows were revised by Statistics Finland for the period 2018 to 2023 due to newly available information.

In the 2026 edition, 2024 data for heat and electricity plants using **biogases, non-renewable municipal waste** and **industrial waste** show variations in efficiencies due to rounding issues.

Electricity and heat

Supply

In the 2025 edition, **electricity** produced by combustible fuels for 2023 decreased with a new nuclear power plant in operation, as well as more hydro and wind capacity. CHP production of heat decreased since the demand for CHP electricity decreased given that new production from non-combustible sources became available. **Heat** production therefore shifted to heat-only plants.

In the 2025 edition Heat pumps production has been allocated to Main activity producers and Autoproducers for years 2022 and 2023 thanks to new data availability.

For the 2023 edition, heat production by autoproducers in NACE divisions 36-38 was reallocated from *Industry (non-specified)* to *Commerical and public services.*

Electricity production in Finland is affected by connection to the Nord Pool power exchange. In periods of high rainfall, it is more economic to import electricity from other Nordic countries than to produce it. Therefore, production and trade are subject to variability.

Net and gross **heat** production are equal, no own use is reported. Heat production in Finland is reported as net.

Other sources include hydrogen, purchased steam, and heat recovered from flue gas scrubbers. For 2017, the increase in heat production from other sources is due to the reporting of heat recovered from flue gas scrubbers for the first time.

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The increasing heat production from heat pumps in 2007 and 2008 is from the new Katri Vala district heating and cooling plant.

Heat from chemical processes and associated electricity generation are available from 2000.

Transformation

Biodiesel used in all plant types is reported under **gas/diesel**.

In the 2026 edition, several products – such as **industrial waste**, **non-renewable municipal waste**, **biogases** and some **oil products** – reported in different plants for 2024 out-of-range or highly variable efficiencies due to rounding small input or output values to zero decimals. The country plans to report figures with three decimal places in future cycles to avoid such distortions.

In 2022, **refinery gas** input to main activity heat plants was partially replaced by fuel gas produced from **naphtha** and **LPG**.

For 2020 onwards, data for plants containing at least one CHP unit have been reported under CHP. Prior to 2020, electricity plants data may include some CHP plants operating in electricity only mode, and heat plants data may include some CHP plants operating in heat--only mode.

In the 2017 edition, fuel inputs and heat production from **peat** main activity heat plants have been revised since 2000 as new data became available for small peat heat plant units.

In the 2016 edition, the allocation of **solar photovoltaic** between main activity and autoproducer plants was revised.

From 2014 data, an autoproducer in the field of iron and steel industry running on **coke oven gases** and **blast furnace gases** was sold and is now reported as main-activity producer.

The increase in heat production from **municipal waste** in 2014 is due to the opening of a new plant.

In 2014, the new consumption of **other liquid biofuels** in main activity electricity plant corresponds to biopyrolysis oil made from wood chips.

Data on **peat products** electricity and heat generation are available since 2008. Prior to that, they are included in **peat**.

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Heat output from autoproducer CHP plants is available starting in 1996 and from autoproducer heat plants starting in 2000; corresponding inputs may be under-reported.

Before 1999, all electricity production from autoproducers running on **fuelwood** is allocated to CHP plants.

Electricity and heat production from **biogases** are available from 1996.

Prior to 1992, outputs from the use of **combustible renewables and waste** to generate electricity and/or heat were included in peat. Therefore, the IEA Secretariat estimated the breakdown of outputs from **municipal waste** and **solid biofuels** based on reported inputs.

Inputs of **liquid fuels** and **natural gas** to CHP plants are included with the inputs of these fuels to main activity producer electricity only and heat only plants prior to 1978.

Electricity production from **biofuels and waste** is not available between 1974 and 1976.

Consumption

Electricity consumption in *road* is based on estimates by the Finnish VTT research centre, and includes all electricity consumption by electric vehicles, both 100% electric vehicles and plug-in hybrids.

In the 2017 edition and following, an extended review of NACE sector encoding by the Finnish administration resulted in the revision of the sectoral **heat** consumption time series back to 2007, leading to breaks in time series between 2006 and 2007 in some heat consumption sectors.

In 2016, the production of **heat** by autoproducers in the *oil refineries* sector ceased, following a change of ownership of some plants and their reclassification as main activity producers. This reclassification also resulted in an increase in reported heat consumption by oil refineries, as heat previously produced and consumed by *oil refineries* is now purchased.

Between 2013 and 2014, **heat** consumption in the *paper, pulp and printing* sector shows an apparent decline because a power plant came under the ownership of a paper and pulp company.

A new survey of the *agriculture and forestry* sector leads to breaks in the **electricity** consumption between 2007 and 2008.

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The split of **heat** consumption in the different industry sectors is available starting from 2007. Prior to that, it is aggregated in *non-specified industry*.

Prior to 2000, consumption of **heat** in consumption in *agriculture/forestry* and *commercial/public services* is included under *industry non-specified.*

Consumption of **electricity** in the industry sub-sector *machinery* includes consumption in *transport equipment* prior to 1995.

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France

Source

Ministère de la Transition Écologique et Solidaire, Paris.

General notes

In the 2018 edition, data for France were revised back to 2011 following changes in methodology and procedures used by the energy statistics sub-department (SDSE) within the Ministry for the ecological and inclusive transition. As a result, the revisions, to bring the reporting more in line with the international standards, impacted all fuels. Additional details are given under each fuel.

From 2012, the energy consumption is more detailed due to a more precise national survey.

From 2011 data onwards, France now includes Monaco, and the following overseas departments (Guadeloupe; French Guiana; Martinique; Mayotte; and Réunion); and excludes the overseas collectivities (New Caledonia; French Polynesia; Saint Barthélemy; Saint Martin; Saint Pierre and Miquelon; and Wallis and Futuna).

Coal

General notes

Since 2021, due to confidentiality reasons the balance of **coking coal** is merged with **other bituminous coal**. In particular, consumption of **coking coal** in coke ovens (transformation) is reported in **other bituminous coal** consumption in blast furnaces (transformation).

Due to confidentiality reasons, some demand flows have been merged for the products **coke oven coke, other bituminous coal** and **anthracite**, starting in 2020. Those aggregations are: paper, pulp and printing, food, beverage and tobacco, and not elsewhere specified (industry); iron & steel, machinery, non-ferrous metals and non-metallic minerals. Also, production of coke oven coke is merged with stock change of coke oven coke.

Due to confidentiality reasons, some demand flows have been merged for the products **lignite** and **BKB**, starting in 2020. The flows merged are iron & steel,

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chemical and petrochemical, non-ferrous metals, non-energy use and non-metallic minerals.

Due to confidentiality reasons, **blast furnace gas** includes **blast furnaces gas**, **coke oven gas** and **other recovered gases** from 2018 onwards. This aggregation may lead to unusual figures and efficiencies in the energy balance and CO2 emissions.

The losses of **blast furnace gas**, **coke oven gas** and **other recovered gases** are included under statistical difference until 2016. From 2017 onwards these losses are reported under “other energy uses”.

In 2018 edition, the calorific value of coking coal has been revised in agreement with Eurostat and the IEA. The revision was made for the period 1990 to 2016.

In the 2017 edition, the French administration undertook comprehensive revisions on sectoral coal consumption back to 2011. Starting this edition, new information became available for **anthracite**, **BKB** and **other recovered gases**.

From 2012, the energy consumption is more detailed due to a more precise national survey.

Prior to 2011, **other manufactured gases** (oxygen steel furnace gas) are included in **blast** furn**a**ce **gas**.

For 1989 to 1998, the IEA Secretariat has estimated industry consumption based on *Consommations d’Energie dans l‘Industrie*, SESSI.

Prior to 1985, consumption of colliery gas is included with the use of **coke oven gas** by autoproducers.

Hard coal data prior to 1978 may include **sub-bituminous coal.**

Supply

In the 2023 edition, for the year 2021 and preliminary 2022 data the production of **coke oven coke** has been merged with stock changes for confidentiality reasons.

Transformation

In the 2021 edition, revisions were made on the split of **other bituminous coal** between Main Activity Producer Electricity Plants and Main Activity Producer CHP Plants for the period 2011-2018.

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In the 2021 edition, following a methodological change, a power plant was reallocated from main activity producer to autoproducer. Hence, there is no more figure for **other manufactured gases** in the first. This was done for 2018 and 2019.

In 2017 the use of **other bituminous coal** into transformation for electricity increased by more than 20% to compensate lower generation from nuclear and hydro plants.

In 2016 the company that consumed **blast furnace gas** for electricity and heat generation ceased its activity.

Consumption

In the 2024 edition, the IEA Secretariat qualified all the demand of **other bituminous coal** for 2023 preliminary data as not available because it is not possible to perform some methodological adjustments regarding blast furnaces transformation use and iron and steel final consumption without the full commodity balance.

In the 2018 edition, the split of energy consumption between the residential sector and the commerce and public services sector has been revised back to 1990 by the French administration for **other bituminous coal**, **lignite**, **coke oven coke**, **BKB** and **patent fuel**.

Blast furnace gas and **coke oven gas** used for energy purposes in blast furnaces are no longer reported under the iron and steel industry. As of the 2018 edition these quantities are reported under the energy sector.

Final consumption in industry is estimated by the Secretariat from 1986 to 2001 for some products.

Oil

General notes

In the 2026 edition, the French administration revised supply and consumption data from 2010 onwards mainly for **residual fuel oil**.

In the 2021 edition, the French administration revised the deliveries of **gas/diesel oil** and **fuel oil** for *international marine bunkers* and consumption in *domestic navigation* from 2011 onwards as a result of a change in methodology and improved data for the overseas territories.

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Statistical differences observed for motor gasoline and naphtha are partly due to the absence of a specific naphtha category in the customs classification.

Statistical differences appear for other products as a result of different definitions used for this residual category between the customs, refineries, power plants and petrochemical industry.

From 2013, information is available for imports of condensates used by the petrochemical sector. These are reported under imports of NGL, interproduct transfers of NGL to other oil products, and consumption of other products.

From 1991, **additives and oxygenates** data are available.

Supply

The high statistical difference for **fuel oil** is under investigation by the French administration and revisions are expected in future cycles.

In the 2024 edition, the French administration started reporting supply and deliveries of **bio jet kerosene.**

Due to classification issues noted by the French administration, there is a large statistical difference for **other kerosene** in 2020.

Breaks in trade and transfers of refinery feedstocks, **naphtha**, **gas/diesel oil** and **fuel oil** occur in 2020 due to new reallocation following customs information obtained by the French administration.

The decrease in output of **naphtha** in 2019 is due to refinery maintenance shutdowns, particularly of the Grandpuits refinery with the drilling of the Ile-de-France pipeline (PLIF).

Higher than usual seasonal maintenance in the spring of 2018 impacted refinery intake and output.

From 2009, transfers of **kerosene type jet fuel** to **white spirit** correspond to kerosene used as a base for making white spirit.

From 2008 data, refinery intake of **refinery feedstock** and refinery output of **refinery gas** output figures exclude natural gas used in the steam reformer of the Gonfreville refinery.

From 2008 data, **ethane** refinery output is reported

From 2002 data onwards, ethylene produced in Lacq is not included in NGL.

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From 1998 data, a different treatment of transfers was adopted. Imported oil products needing further refinery processing are no longer reported as **refinery feedstock** imports but as oil product imports and products transferred. **Fuel oil** includes part of the amounts previously reported in **other oil products** from 1999 and various other products from 2001.

Transformation

Starting in 2012, separate data on main activity heat plants inputs are available.

Consumption

In the 2026 edition, the French administration revised the sectoral breakdown of oil product consumption for 2011-2023. Notably, the majority of **residual fuel oil** consumption previously reported under domestic navigation was reallocated to international marine bunkers.

In the 2023 edition, the French administration reallocated the consumption of **petroleum coke** in *non-ferrous metals* from energy use to non-energy use from 2011 onwards. There is no change to total inland demand as a result.

In the 2021 edition, the French administration revised the consumption split of **kerosene type jet fuel** between *international* and *domestic aviation* from 2011 onwards, taking into account non-commercial flights and resulting in an increase in the consumption share for *domestic aviation*.

From 2018, due to a reclassification of a power plant from the main electricity production sector to the chemicals sector, a decrease in inputs of **refinery gas** for main activity plants for CHP production is observed and complemented by an increase in its consumption for energy use in the *chemical sector.*

From 2018, consumption of **gas/diesel oil** in bakeries is reported in *food, beverage and tobacco.* In previous years, this consumption is included in *commercial and public services.*

In 2018, there is a decrease in deliveries to the petrochemical sector due to plant shutdowns for maintenance.

The breakdown between international and domestic marine bunkers is estimated by the French administration.

Between 2005 and 2006, a break is visible in **LPG** time series, as consumption from one chemical company was re-classified from energy use to non-energy use. Breaks in **LPG** time series also appear in 2001 due to improved data collection.

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From 2000 data, **petroleum coke** consumption in the non-ferrous metals industry is no longer available separately. Prior to 1982, no breakdown between energy and non-energy use is available for this product.

From 1998 data, military consumption of **kerosene type jet fuel** is reported separately from domestic aviation.

Prior to 1988, **LPG** includes ethane consumption.

Prior to 1985, the residential sector consumption **of gas/diesel oil** is reported under the commerce/public services sector, as no separate data were available.

Natural gas

General notes

Between 2017 and 2018, there are some breaks in the time series throughout consumption due to a new methodology for preparing the **natural gas** balances. Until 2007, some statistical differences reported by the French utilities were included in *distribution losses*. Since 2008, these amounts are included under *statistical differences*.

Between 1999 and 2000, there are some breaks in time series due to a new methodology for preparing the **natural gas** balances.

The data include the French overseas departments, however **natural gas** is neither produced, nor consumed in these departments.

Supply

The total *imports* and *exports* data include transit amounts.

From 1990 to 1998, *statistical difference* includes gas consumption which is not broken down by sector.

Consumption

Not elsewhere specified (transport) is consumption for maritime transport, prior to 2018 this data were included in *commercial and public services*.

In the 2020 edition, *commercial and public services*, and *residential was revised from 1990 to 1999 due to new data becoming available.*

The increase in **natural gas** consumption in the electricity sector for 2016 and 2017 has been mainly driven by the decrease in nuclear generation due to

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maintenance operations, which was compensated by gas-fired power plants. Gas for pipelines is included in *distribution losses*.

Between 2005 and 2006, there is a break in the time series of the industry sub-sectors.

Biofuels and waste

General notes

In the 2018 edition, following an analysis of **biogases** in the energy sector by the French administration, there are revisions in **biogas** indigenous production, inputs to the transformation sector, heat production and final consumption back to 2005. Electricity production from **biogases** is revised back to 2011. This causes breaks in time series between 2004 and 2005 as well as 2010 and 2011.

Indigenous production, transformation and final consumption of industrial waste are reported from 2013. In the 2018 edition, indigenous production and transformation of industrial waste were added from 2007 - 2012. It follows that there is a break in time series between 2012 and 2013.

In the 2018 edition, solid biofuels' indigenous production and inputs to main activity and autoproducer heat plants have been revised back to 2007 Electricity production has been revised back to 2013. This causes breaks in time series between 2006 and 2007 as well as 2012 and 2013.

In the 2018 edition, indigenous production and inputs to main activity heat plants have been revised back to 2007 for municipal waste. Electricity production has been revised back to 2011. This causes breaks in time series between 2006 and 2007 as well as 2010 and 2011.

Prior to 2007, production and consumption of industrial waste were included in municipal waste.

Transformation

Plants using **municipal waste** were reclassified as autoproducer CHP plants from 1995, which leads to a break in time series.

Breaks in time series in 2005 for **municipal waste** and **solid biofuels** are caused by sectoral reclassifications.

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Consumption

A revision of the **solid biofuels** and **biogases** time series created breaks in the direct use time series between 2004 and 2005.

The breakdown of the final energy consumption of **biogases** was estimated by the French administration from 1970 to 2003.

Electricity and heat

Supply

In the 2026 edition, data on auto-production of electricity and heat by sector were revised back to 2011 to incorporate updated activity code data.

In the 2025 edition, extensive revisions for electricity and heat production from autoproducers using biogas were introduced. This is due to some shifts in the status declaration by companies.

In the 2019 edition, **heat** supply and consumption data were revised due to improved information on heat production from renewables.

All **solar photovoltaic** plants with capacity above 1 MWp are considered as main activity producers, while all plants with capacity below that value are considered autoproducers.

Electricity production from *other sources* is available starting in 2007, representing production of electricity from purchased steam, and from 2018, hydrogen. The input is shown under *non-specified transformation*.

Data on electricity production from **wind** are available from 1990.

Transformation

In the 2021 edition, some main activity producers were reclassified as autoproducers.

For 2018, inputs and outputs of **coke oven gas**, and **other recovered gases** are included under **blast furnace gas** for confidentially purposes.

The methodology for reporting inputs to CHP plants is under currently under review by the French administration and historical revisions are expected.

For the 2018 edition, revisions for **heat** production in all plant types were received and accepted for many fuels from 2007 onwards, with the exception of **natural**

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gas, where the planned revisions for 2007 and 2008 are still pending implementation by the Secretariat.

In the 2018 edition, electricity production from **hydro** was revised back to the year 2000, in some cases only amounting to plant reclassification.

Electricity production from the *Bouillante* **geothermal** main electricity plant in Guadeloupe is included from 2011 onwards, when data coverage for France is extended to include the overseas departments. Electricity production from autoproducer **geothermal** started in 2011 and stopped in 2012 due to the maintenance of the only plant. This production restarted in 2016.

The amount of **heat** not sold in autoproducer plants is included in total heat production up to 2007.

In 2005, autoproducer CHP efficiencies for **biogases** drop due to the opening of a larger, less efficient plant.

From 2000 several plants have been reclassified from electricity only to CHP plants. This causes breaks in the time series between 1999 and 2000.

Prior to 2000, inputs and outputs of **oil products** are not available separately and are reported together under **other oil products**. From 2000 to 2008, there are further classification problems for inputs and outputs of electricity and heat from oil products. The French administration is working to reconcile their data collection methods for the inputs and the outputs for electricity generation.

A new method of survey and a reclassification between main activity producer electricity plants and autoproducer electricity plants may cause breaks in the time series for **other bituminous coal** between 1998 and 1999.

There was re-classification on autoproducer plants using **municipal waste** in 1995, which leads to a break in the time series.

Net electricity production by autoproducer CHP plants is available from 1989.

Net **electricity** production by autoproducers prior to 1983 includes production from combustible fuel sources only.

Consumption

In the 2021 edition, data were revised back to 2011 by the French administration to replace data from statistical surveys with new administrative data.

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In the 2019 edition, revisions for 2011 onwards were received for all **electricity** consumption flows, based on a correction to a survey. This has introduced a wider statistical difference than previously published, and is under review.

In the 2018 edition, revisions for 2011 onwards were received for all **electricity** consumption flows, based on an improved survey. This has led to breaks in time series between 2010 and 2011. Similarly, **heat** consumption from 2007 onwards was revised to account for autoproducer own use heat generation in its correct economic activity.

In the 2017 edition, the French administration undertook comprehensive revisions on sectoral **electricity** consumption time series, for some sectors revising back to 1990. Electricity consumption at railway and bus stations, shipping piers and airports is no longer included in the *transport* sector but in the *commercial and public services* sector. *Road* electricity consumption has also been revised back to 1990, following an extended review of NACE sector encoding by the administration. These revisions created breaks in time series for several sectors, which the administration anticipates to address in subsequent reporting cycles.

For the 2014 edition of this publication, the French administration revised **electricity** consumption data in the *agriculture and forestry* sector back to 2004, resulting in breaks in time series.

Electricity consumption in *Road* includes consumption by 100% electric vehicles. These amounts are estimated by the French Administration based on vehicle numbers, and expected electricity usage. Consumption includes domestic charging - however, these amounts are currently subtracted from *non-specified transport*, rather than *residential* consumption.

Consumption of **electricity** in uranium treatment plants is confidential for the period 2003 through 2010, and unavailable prior to 1980.

Data on *transmission and distribution losses* for **heat** are available only starting from 2007. Prior to that, they were included in final consumption.

Prior to 2005, all the **geothermal** heat consumption was reported as direct use. From 2005 data, some quantities are reported as output of heat plants, resulting in breaks in time series for production, transformation and consumption.

Electricity consumption in *non-specified transport* refers to ski lifts.

Prior to 2011, electricity consumption in (sub)-urban and national rail is based on high voltage electricity supply to the rail sector. From 2011 onwards, consumption

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in (sub)-urban rail is based on electricity used for propulsion by the main operator, and estimates for the other operators.

Consumption of **electricity** for *oil and gas extraction* includes that used in *oil refineries* from 1988 to 2000.

Non-specified other consumption includes exports to Monaco prior to 1992 and defence-related activities, among others.

The industry classifications used by the French administration were changed in 1986.

There are major breaks in the time series in 1965 when more detailed breakdown of data on **electricity** consumption became available.

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Germany

Source

Federal Ministry for Economic Affairs and Energy, Berlin.

General notes

Data starts in 1960. German data include the new federal states of Germany from 1970 onwards.

Coal

General notes

Comprehensive official data are only collected for the aggregate of hard coal. Due to the unavailability of detailed data, the split into **anthracite**, **coking coal** and **other bituminous coal** is partly estimated by the national administration.

Generally, demand data for the latest reporting year are not available at the time of the initial data collection and are estimated by the German administration. Therefore, every cycle the German administration revises several flows in transformation, energy industry own use and final consumption, as it happened for 2020 figures in the 2023 edition.

In the 2014 edition, significant revisions were submitted for all primary coal types, derived products and manufactured gases for the period 2003 to 2011 as previous estimations were updated with more accurate information. Revisions primarily affected consumption, including industry and other sectors; but also supply, statistical differences and weighted calorific values.

Up to 2002, other bituminous coal includes anthracite.

Between 1998 and 2005, breaks in time series may occur for **coke oven gas** and **blast furnace gas**.

Between 1990 and 1992, breaks in time series may occur due to earlier reclassification of several sectors by the German administration; this particularly affects **BKB**, **lignite** and **coke oven coke**.

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Supply

Hard coal mining in Germany ceased in 2018 with the last two hard coal mines being closed on December 21, 2018 due to profitability reasons. **Anthracite**, **coking coal** and **other bituminous coal** show null production in 2019.

Data on stock changes in the coal production sector (provided individually for all coal products) are no longer available from 2019 onwards as the companies in this sector no longer operate. For the other sectors (electricity and heat producers, and industry), data on stock changes are only available for **hard coal** as an aggregate, and that is all reported under **other bituminous coal**.

Transformation

Breaks in time series between 2014 and 2015 for **coke oven gas** and **blast furnace gas** are due to a reclassification of main activity producers and autoproducers.

In 1997, BKB inputs to gas works plants stopped.

For some years of the period 1990-2002, discrepancies can appear between the publications *Coal Information* and *Electricity Information* in Electricity and CHP plants for the products lignite, gas works gas, coke oven gas and blast furnace gas.

Consumption

Consumption of **non-renewable municipal waste** and **other solid biofuels** as a reductant occurs in German blast furnaces, but is not currently quantified. Likewise, **coal tar** is a by-product of coke ovens, but not currently reported.

The data providers for the *commercial* and *residential* sectors were coal producers and import statistics, the first reporting the biggest amounts. As the **hard coal** production ceased in Germany, coal producer do not longer operate, and this data is not available from 2019. As consequence, the year 2019 shows a significant decrease in consumption in these sectors. In 2019, there was no increase in the imports delivered to these sectors.

Oil

General notes

In 2018, there are breaks in time series for several products due to methodological changes involving the inclusion of companies with olefin plants into the reporting

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group and the possibility to identify semi-finished products as deliveries to the market.

In 2016 the German administration reclassified the consumption of a chemical company from **fuel oil** to **other oil products**. This leads to a decrease in the supply and consumption of fuel oil with a corresponding increase for other oil products. Due to the assumptions made by the German administration about the energy consumption of the respective products, this also creates a break in time series in the split between energy and non-energy consumption for the chemical sector.

In 2016 there are breaks in time series for **white spirit** due to improved data coverage.

From 2000 data, part of the product *Andere Rückstände* (other residues) is included with fuel oil instead of other oil products.

Starting from 1994 data, there has been a reclassification of jet gasoline to kerosene type jet fuel.

Prior to 1979 data, **other products** include **paraffin waxes**, **bitumen**, **white spirit** & **SBP** and **lubricants** for eastern Germany.

The methodology to determine net calorific values has been changed for 2015 data. The values for crude oil and refinery feedstocks were revised back to 2003.

Supply

In the 2026 edition, for 2024, several products and flows are confidential due to the low number of companies in these markets. This includes data for the following products: **bitumen**, **other kerosene**, **paraffin wax**, **white spirit**, **aviation gasoline**.

Transformation

In 2018, owing to methodological changes, inputs of **motor gasoline** for transformation use in the *petrochemical industry* are reported for the first time.

Consumption

Starting from 2024, consumption of **other kerosene**, **paraffin wax**, and **aviation gasoline** is confidential and included under **other oil products.**

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In 2018, owing to methodological changes, consumption data for **motor gasoline** in the *chemical and petrochemical industry* as well as in *non-specified industry* are reported for the first time.

In 2018, consumption data for **motor gasoline** and **gas/diesel oil** in *construction* and *agriculture/forestry* are reported where they had previously been subsumed within the *commercial and public services* sector.

Between 2002 and 2003, breaks in time series in consumption data are due to structural changes in energy statistics following the newly introduced Energy Statistics Act.

In 1995 data, a break in **gas/diesel oil** consumption occurs as a result of an alignment with the Classification of the Economic Activities in the European Community (NACE).

Beginning in 1994, final consumption by individual sector has been improved due to new survey methods instituted by the *Mineröl*wirtschaftsverband.

In 1989, end-use consumption of **gas/diesel** oil decreased due to an exceptionally warm winter and a lowering of consumer stocks.

Prior to 1980 data, consumption of **fuel oil** in blast furnaces was included in the iron and steel sector

Prior to 1970 data, consumption of **refinery gas** in the chemical industry is included with refineries' own consumption.

Natural gas

General notes

In the 2025 edition, several flows were revised in supply, transformation, final consumption and non-energy use for 2022 due to values being preliminary in 2024 edition.

Between 2009 and 2010, there is a break in time series due to a new, more comprehensive legal framework that resulted in methodological changes for production and new calorific values for **natural gas**.

Supply

Starting in 2016, due to a change in the reporting methodology, *Imports* and *Exports* no longer include transit volumes, as was the case up until 2015.

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Since 2018 onwards, indigenous production is being phased out, leading to a decrease in *non-associated gas.*

The import flows have fundamentally changed after the end of imports from Russia.

Transformation

For 2021 data onwards, the methodology of reporting *main activity producer CHP* plants was updated to include **biomethane** that is injected into the **natural gas** grid.

In 2003, there is a break in time series for input to electricity and CHP plants (both autoproducers and main activity producers).

Prior to 1995, inputs of **natural gas** for *main activity producer heat* plants are included with *main activity producer CHP* plants.

Consumption

In the 2025 edition, biogas usage in Road consumption submitted for the first time for 2022 and 2023.

There exists an overall decline in gas consumption due to gas saving efforts and a relatively mild winter at the end of 2022.

Between 2021 and 2022, there is a break in the time series for *agriculture/forestry* due to an adjustment to the methodology.

Since 2018, gas distribution networks are included in *pipeline transport*, while it was only covering transmission networks before.

Since 2003, consumption in *non-specified other*, which were previously estimated, are no longer shown, and losses data have been included in *statistical differences*.

Since 2003, gas consumption in *coke ovens (transformation)* was negligible.

Between 2002 and 2003, there are breaks in time series for some sectors due to modifications in reporting methodology.

Between 1994 and 1995, there are some breaks in time series due to the fact that the industry sub-sector breakdown is based on the 1995 NACE classification.

Also, prior to 1995, end-use consumption data are based on Arbeitsgemeinschaft Energiebilanzen.

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Before 1970 there is no detailed breakdown available for the *industry* sector with the exception of *iron and steel* and *chemical and petrochemical* industries.

Biofuels and waste

General notes

Generally, data for the latest reporting year are preliminary and likely to be revised in the following publication. For example, this is the case of the many revisions for 2021 figures in the 2024 edition.

In the 2024 edition, the German administration submitted **solar photovoltaic** capacity according to the new categories PV<30 kW and PV 30-1000 kW only for the years 2021 and 2022, causing a break in the time series between 2020 and 2021. For the years before 2021 the data are likely to be revised in the next cycle.

Germany started to report injection of **biogas** in the natural gas grid in 2021 only. Previously, the biogas blended with natural gas was reported under biogas. For this reason, several energy flows dropped significantly in 2021.

In the 2020 edition, there was a revision of nearly all renewables data back to 2003, basically related to error correction and new information. This leads to a break in series between 2002 and 2003.

Starting with the 2020 edition, final consumption in the *agriculture* sector is now reported separately. Previously, it was included in *commercial and public services*.

Starting in 2008, **municipal waste** and **industrial waste** data were collected separately. This leads to breaks in the time series between 2007 and 2008.

Between 1996 and 1997, a new survey for renewables causes breaks in the time series.

Supply

In the 2024 edition, the German administration revised the production figures of **renewable industrial waste** (part of solid biofuels) for 2021, increasing it considerably, due to the availability of more detailed information. This causes a break in the time series between 2020 and 2021.

Trade data for **biogasoline** are available from 2004 and for **biodiesels** from 2003.

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Consumption

Increased consumption of **industrial wastes (non-renewable**) in the non-metallic minerals sector in 2018 is related to increased cement production due to a high level of activity in the construction sector.

For **solid biofuels** consumption in the commercial and public services sector, new data were derived in cooperation with the Federal Research Institute for Rural Areas, Forestry and Fisheries by applying a different calculation approach based on the total demand for material and energy use of the resource wood in Germany. This had resulted in break in time series between 2013 and 2014.

Electricity and heat

General notes

For 2024, German data reflect the complete shutdown of all nuclear power plants.

In the 2014 edition, the German administration performed some major revisions back to 2003. This led to breaks in the time series between 2002 and 2003.

The German administration has changed the methodology for reporting **heat** over time:

Starting in 2007, more information is available on main activity heat plants and additional inputs started to be reported for this category. This causes breaks in time series between 2006 and 2007.

Between 2003 and 2006, autoproducer **heat** output was provided, but no inputs.

Between 2002 and 2003 and between 2003 and 2004, breaks in time series occur, due to the implementation of the Energy Statistics Act, collection concerning **heat** produced in heat plants and district heating plants became more efficient and more complete.

Prior to 1970, **heat** production and consumption have been estimated by the Secretariat based on *Energie-bilanz der Bundesrepublic für das Jahr* 1990 provided by the German Institute for Economic Research.

Supply

From 2018 onwards, own use of electricity at main electricity **geothermal** plants includes electricity used for pumping.

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In some instances, **electricity** generation from **nuclear**, **hydro**, **solar**, **wind** and **biogases** in autoproducer electricity plants is confidential or not available and therefore is included in main activity producer electricity plants.

For 2017 onwards, own-use consumption of electricity by **wind** plants is assumed to be 2% at onshore and 1.5% for off-shore wind farms. For prior years, own-use only included electricity drawn from the grid while the turbines were not in operation.

Since 2011, due to a reclassification of **wind** energy and **solar photovoltaic** in the official data of the German Federal Statistical Office, the production is now only reported under main activity producer plants.

Electricity production *from other sources* is available starting in 2003. This refers to the production of electricity from turbines which are located at pressure drops in fluid transport and from purchased waste heat.

Electricity trade with Denmark, Sweden, Switzerland, Luxembourg and Norway is confidential, respectively since 2013 for the first three countries, 2018 for Luxembourg and 2020 for Norway.

Prior to 1991, **electricity** trade data includes only trade of the Former Federal Republic of Germany.

Data on electricity production from **wind** and **solar** are available from 1986 and 1990, respectively.

Starting in 1984, small amounts of **heat** have been exported to Denmark.

Transformation

In the 2026 edition, **solar**, **LPG**, **hydro**, and **biogases** show a reallocation from main activity producers to autoproducers due to new sources available from 2023 onward.

In the 2026 edition, **anthracite** fuel input (in kilotonnes and terajoules) and heat output to main activity producer heat plants in 2023 and 2024, has been estimated by the IEA Secretariat to avoid inconsistencies in efficiencyies of transformation.

For 2022, the decrease in electricity output from **nuclear** was due to the closure of the Grohnde, Gundremmingen C and Brokdorf power plants.

For 2018, the increase in electricity output from **solar PV** was in part due higher than average solar radiation during that year.

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For 2018, the increase in heat output from **biogases** was mainly due to an increase in survey coverage following an amendment to the Energy Statistics Law in 2017

Electricity inputs to both mixed **hydro** and pure pumped storage pumping plants are reported under inputs to pure pumped storage.

Detailed data by fuel are not available for total **heat** production. The non-allocated part is reported as heat production from **non-specified combustible fuels**.

Weather conditions were not favourable for **wind** and **solar** generation in 2016.

In 2015, a reclassification of some main activity producer electricity and CHP plants to autoproducer **CHP plants** powered by **coke oven gas** results in a break in time series for this period. Similarly, a reclassification of **blast furnace gas** main activity **electricity plants** into autoproducer plants results in a break in time series for the same period.

From 2003 onwards, all **heat** production in autoproducers is considered as non-sold (i.e. for self-use) and, therefore, not reported. Inputs for this heat production are no longer reported in the transformation sector.

For 2002 and 2003, the German administration did not submit the breakdown of electricity and heat production from **combustible fuels**. The data were estimated as follows: renewables and waste were taken from the Renewables and Waste Questionnaire and the other combustible fuels were estimated pro rata based on 2001 estimates.

Prior to 2003, **electricity** production in electricity plants includes production from CHP plants and heat production in CHP plants includes production from heat plants.

Due to the implementation of the Energy Statistics Act, collection concerning heat produced in **heat** plants and district heating plants became more efficient and more complete. This leads to breaks in time series between 2002 and 2003 and between 2003 and 2004.

A new survey for the renewable products can cause breaks in the time series between 1998 and 1999.

Prior to 1993, all heat production from **BKB**/**peat briquettes** is included in main activity producer CHP plants.

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Consumption

Increases in 2016 **electricity** generation by auto-producers within the *transport equipment* sector are due to reclassification from main activity generation, rather than development of new plant.

More information on district heat became available, causing breaks in the time series between 2006 and 2007.

Data on **geothermal heat** production and direct consumption are only available starting in 2003.

Data for **electricity** consumption in the *commercial and public* services sector include the *construction* and *agriculture/forestry* sectors (prior to 2010), as well as the fishing sector (all years).

In 2000, revisions from the German administration to the **electricity** consumption data may cause breaks in the time series.

In 1995, the German Federal Statistics Office reclassified some industrial branches which may cause a break in time series in industry sub-sectors.

Between 1971 and 1980 **electricity** consumption in coal mines includes consumption in coke ovens and BKB plants.

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Greece

Source

Ministry for Environment and Energy, Athens.

Coal

Supply

In 2019 data there was a significant decrease in **lignite** production and consumption due to less power generation in the country using this fuel.

Consumption

In the 2023 edition, the Greek administration reallocated the industrial consumption of **other bituminous coal** and **lignite** in non-metallic minerals sector to mining and quarrying from 2017 to 2020, due to the change of a NACE code of a company.

Oil

General notes

In the 2026 edition, **biofuels** supply and demand were estimated by the IEA Secretariat from 2022 onwards.

In the 2016 edition, the Greek administration reclassified gasoline-type jet fuel as aviation gasoline starting from 2009 data.

Between 2012 and 2013, breaks time in time series for biodiesel, lubricants and stocks appear due to the introduction of a new reporting system.

Supply

Crude oil production stopped on 30 November 1998 and started again in December 1999.

From 1986 data onwards, information on **refinery feedstocks** is available.

Transformation

From 1990 onwards, there has been an increased use of **refinery gas** in electricity generation, replacing **fuel oil**.

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Consumption

In 2021, due to improvements by the Greek administration, the share of **LPG** consumption in Non-specified (industry) declined due to better allocation into the various specific sub-sectors within the industry.

In 2020, consumption of **gas/diesel oil** in electricity/CHP/heat plants (energy sector) refers to quantities used to support operations of a lignite plant. For previous years, they are reported in the transformation sector as inputs for CHP production in main activity plants.

In 2013 data, the drop of **gas/diesel oil** residential consumption is linked with changes in the taxation of heating oil.

From 1993 data onwards, more information is available on the allocation of fuel oil to specific industrial sub-sectors. Fuel oil consumption in the agriculture and residential sectors has been replaced by **gas/diesel oil** starting in 1993.

Prior to 1987 data, consumption in the commerce/public services sector is included with residential. Peaks in residential sector consumption in 1978 and 1982 are due to unusually cold winters.

Natural gas

General notes

Natural gas produced in Greece has a higher than average gross calorific value due to a high content of C_2/C_4 hydrocarbons.

In the 2020 edition, due to more disaggregated data and a revised methodology, years 2017 and 2018 are not comparable to time-series prior to this.

Supply

The significant increase of Total Exports in 2022 is due to the regasificaiton and subsequent export of LNG Imports.

Stocks (Held abroad) refers to stocks of natural gas held in underground storage facilities in Italy and Bulgaria.

In November 1998 the *indigenous production* of **natural gas** stopped in and started again in December 1999.

In 1997, Greece started importing natural gas as a result of a new operational pipeline between Russia and Greece.

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In 2020, the Trans Adriatic Pipeline (TPA) became operational, running through Greece to Albania and Italy. Moreover, the Interconnector Greece – Bulgaria (IBG) pipeline was connected to the TPA and became operational in 2022.

Consumption

Prior to 2017, consumption of *liquefaction (LNG) / regasification plants* is included in the *transmission and distribution* losses flow.

Between 2021 and 2020 there is a break in the time series for many flows in the *industry sector* due to more detailed data becoming available.

In 2011 there is a break in time series for the *non-ferrous metals* due to a new methodology for measuring gas consumption in this sub-sector.

For 1998 data, consumption in the *residential* sector is included with *commercial/public services*.

Biofuels and waste

General notes

New information on **solid biofuels** is available from 1996 and leads to breaks between 1995 and 1996.

Data for **biogases** are available from 1990 and data for **industrial waste** from 1992.

Starting from 2021, liquid biofuels data have been estimated by the IEA Secretariat.

Supply

Indigenous production and domestic supply of **industrial waste** have been estimated by the IEA Secretariat for 2019p.

Indigenous production of **solid biofuels** is estimated by the IEA Secretariat for 2015 based on consumption.

Transformation

The big increase in delivery of **industrial waste** to autoproducer CHP plant in 2010 is mainly due to the opening of a new plant.

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Inputs of **solid biofuels** to **charcoal** production are estimated for 2007 to 2010 by the IEA Secretariat assuming an efficiency of 40%.

Industrial waste used in autoproducer CHP plants decreased substantially in 2006 because a plant closed.

Consumption

Solid biofuels consumption in commercial/public services is included in residential until 2011.

The consumption of **solid biofuels** in the paper, pulp and printing industry is not available from 2003 to 2012.

Electricity and heat

Supply

In the 2020 edition, revisions for 1998 – 2017 of the indigenous production of **solar thermal** are the result of a revision of the latest data on **solar thermal** efficiency.

For 2016, gross electricity generation from **combustible fuels** in main activity electricity and autoproducer CHP units was estimated by the IEA Secretariat, based upon the gross to net ratio for combustible fuels for these plant types in 2015. This increase in production was assigned to **lignite**-fired and **natural gas**-fired plant.

Transformation

Prior to 2020, use of **gas/diesel oil** to support operations (rather than generate power) at **lignite-**fired Main CHP plant operations was reported as a transformation input.

Data on heat outputs from **natural gas-**fired Autoproducer CHP plants are available from 2020.

In 2008 a new plant using **refinery gas** started operating in an experimental phase, causing a low efficiency.

Production and consumption of distributed heat (heat sold) that is produced from **lignite** is available from 1997.

Data for **biofuels and waste** input and output to transformation are available from 1992.

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Consumption

In 2018, breaks in consumption occur across several sectors due to improved disaggregation. This allowed consumption previously reported under *industry (non-specified)* to be reported in the appropriate subsectors.

In 2018, the increase in efficiency at **industrial waste-**fired autoproducer CHP plants was due to increased generation of unsold heat.

Prior to 2018, **electricity** consumption in the *fishing* sector was included in *agriculture and forestry*, and/or *industry – non-specified*.

Transmission and distribution losses of electricity increased from 2013 onwards due to growth in non-technical losses. Reported losses for 2017 deviate from this trend, showing a noticeable decline compared with adjacent year however, data for 2017 are under review.

Electricity consumption in *road* is available from 2013. This refers to consumption by public transport vehicles (e.g. trolley buses). Electricity consumption by private electric vehicles is insignificant and not included.

A break in time series exists between 1991 and 1992 for **electricity** consumption in *transport*.

Direct use of **geothermal** heat in residential is available starting in 2004.

Electricity consumption in *iron and steel* and in the *non-ferrous metals* industry prior to 1971 has been estimated by the Secretariat.

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Hungary

Source

Hungarian Energy and Public Utility Regulatory Authority, Budapest.

General notes

Data are available starting in 1965.

The Hungarian administration submitted questionnaires to the IEA Secretariat for the first time with 1993 data.

Coal

General notes

The main iron and steel company in Hungary has decreased its operations in 2022, leading to a drop in **coking coal** and **coke oven coke** use in transformation and in **coke oven gas** and **blast furnace gas** production and consumption.

In the 2023 edition, the IEA Secretariat has further aligned the reporting of calorific values to the figures provided by the Hungarian administration. This led to revisions in energy terms of main activity producer electricity and CHP plants for **lignite** and of **BKB** imports and industry consumption from 2017 to 2020.

In the 2020 edition, revisions back to 2014 were done for **blast furnace gas** to report separately the energy consumption for the support of blast furnaces. Previously, this consumption was reported as final consumption in the industry iron & steel.

From 1992, the production of **sub-bituminous** coal has been included with **lignite** due to the low quality of the coal. From 1990 to 1999, the use of this domestic coal in main activity producer electricity and CHP plants has also been reclassified to **lignite**. Since 2017, imports, transformation and consumption of **sub-bituminous coal** was reclassified as **lignite** by the Hungarian administration to align with foreign trade statistics.

Transformation

Some CHP units consuming **blast furnace gas** and **coke oven gas** were under maintenance in 2018.

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In 2017, a main activity CHP plant using **other bituminous** coal was merged with an industrial unit of the pulp, paper and print sector and was since reclassified as an autoproducer.

Autoproducer heat and power plants using **coke oven gas** and **blast furnace gas** were reclassified in 1998 as main activity power plants.

Consumption

In the 2022 edition, revisions back to 2017 were made for the non-metallic minerals industry, by reallocating some quantities previously reported as **lignite** to **BKB**.

The cement industry in Hungary is progressively replacing the consumption of coal by waste. This situation is translated to a decreasing trend in consumption of other bituminous coal in the non-metallic minerals industry.

The consumption of coal tar in the category Non-Energy Use (petrochemical sector) increases in the year 2019. In previous years, CO2 quotes prevented companies of this sector from using more coal tar, but in 2019 they installed new CO2 filters, that enabled them to use more coal tar keeping CO2 emission on the same level.

Oil

General notes

From 2010, *from other sources - natural gas* of **other hydrocarbons** correspond to hydrogen used in refineries for hydrodesulphurization, also represented as the output of *non-specified transformation* in the balances format.

Starting from 1998, data for additives and aviation gasoline are available.

Starting with the 2022 edition, **other oil products** include ethylene, toluene, sulphur and FCC residue from 2012 onwards.

From 1994 onwards, other products include aromatics and other products that were previously included mainly under white spirit. Prior to 1993, **white spirit** is included in motor gasoline. Data for **refinery gas**, **paraffin waxes** and **lubricants** are partly estimated by the Secretariat.

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Supply

In 2020, changes in the national legislation mandated an increase in the minimum blending of **biofuels.**

Consumption

In the 2016 and 2017 editions, revisions to consumption data back to 2010 were provided by the Hungarian administration following a survey introduced in 2014. This results in breaks in time series between 2009 and 2010.

Natural gas

General notes

Since 2022, one *CHP plant* has been reclassified to an *autoproducer electricity plant.*

Between 2012 and 2013 there are some breaks in time series for the *energy, transport and industry sectors* consumption due to a new methodology. Historical revisions are pending.

Between 1996 and 1997 some breaks in time series exist due to a new methodology applied by the Hungarian administration.

Supply

In 2025 edition higher stock levels are due to storage level obligations of the EU and energy security concerns.

The imports by origin data are based on estimates of natural gas flow models. In the 2025 edition, the methodology was further improved by reallocating higher amounts from Not elsewhere specified to the likely origin countries.

In 2022, the value reported for s*tock change (cushion gas)* in TJ is due to a technical reclassification.

Between 2015 and 2016 there is a break in the time series for *Imports* and *Exports* due to a new methodology which eliminates the reporting of transit trade.

Transformation

Since 2010, data reported for *non-specified transformation* represent **natural gas** used for hydrogen manufacture used in refineries for hydrodesulphurization. Prior to this year, these quantities are reported under *oil refineries*.

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Since 1997 two *autoproducer heat* plants have been reclassified to *main activity producer heat* plants.

Consumption

Beginning in 2016, electricity consumption under the *non-specified other* sector includes military usage, following recent clearance to disseminate these data.

Prior to 2004 *iron and steel* consumption includes transformation of natural gas in *blast furnaces (transformation)*.

Biofuels and waste

General notes

Data for **biogases** are available from 2000; **for industrial waste** from 2003; for **biodiesel** production from 2007.

Supply

In the 2025 edition, the decrease in production of **primary solid biofuels** for 2023 is caused by a significant drop in electricity generation from biomass as well as demand for heating.

In the 2024 edition, the Foreign Trade Statistics improved the data coverage of **primary solid biofuels** imports and exports. That led to increased trade volumes for 2022.

A 2012 change in **biogasoline** reporting methodology results in break in time series between 2011 and 2012.

Consumption

In 2019, increased consumption in the *non-metallic minerals* sector for **solid biofuels** and **municipal wastes** is related to fuel switching from coal.

In the 2018 edition, the Hungarian administration has revised **solid biofuels** consumption in other sectors back to 2005 based on the new survey from Hungarian Central Statistical Office (HCSO). This resulted in break in time series between 2004 and 2005.

A new reporting methodology for the direct use of **geothermal** energy was applied from 2014 resulting in break in time series between 2013 and 2014.

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Electricity and heat

Supply

For 2017 onwards, inputs and outputs from power plants are reported at a unit level, while for prior years, data are reported at a plant level. As a result, breaks in series are observed between 2016 and 2017. In particular, for electricity output from main activity producer CHP and main activity producer **nuclear** power plants, and for heat output from **industrial waste** at autoproducer CHP and autoproducer heat plants.

In 2017, a main activity producer CHP plant was reclassified as an autoproducer. As a result, declines are observed in heat production from other bituminous coal and industrial waste, as heat reported as previously sold may now be considered as used onsite.

Other sources electricity and heat production is available from 2013 and represents generation from residual tail gases from the manufacturing of soot as well as from hydrogen.

Geothermal heat production from main activity producer heat plants is available from 1995.

Nuclear electricity production in main activity producer electricity plants is available from 1983.

Transformation

In 2022, the decrease in electricity output from **geothermal** was due to the plant not being in operation for several months.

In 2020, the efficiency of **blast furnace gas**- and **coke oven gas-**fired main heat plants was revised downwards back to 2017 to better reflect trade of coal gases and hot air between adjacent facilities.

In 2019, some breaks in series occur for plants fired by **biogas** and **solid biofuels** due to changes in plant classifications, and CHP methodologies.

In late 2017, a new **geothermal** power plant began operations.

For 2017, the decline in heat production from **industrial waste** is partly due to the reclassification of a main activity producer as an autoproducer.

Heat and **electricity** consumption by military services is reported under *Other sectors - non-specified* for the first time in 2015. The change is due to the recent

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authorization to disseminate these data. Previously they were included under *Commercial and public services*.

From 2014 data onwards, more data suppliers were involved in submitting energy data to the national administration, causing new autoproducer time series to appear for **geothermal** and **industrial waste** plants.

In 2014 data, some CHP plants running on **solid biofuels** produced only heat and were reclassified to heat plants.

The Hungarian administration reclassified some of their plants between 1996 and 2000, which may lead to breaks in the time series.

Prior to 2000, electricity output from **sub-bituminous coal** is included with **lignite**.

Data on electricity and heat production from **solid biofuels** in autoproducer CHP plants are available from 1995.

Autoproducer electricity, CHP, and heat plants using **coke oven gas** and **blast furnace gas** were reclassified as main activity power plants in 1998.

Consumption

For 2020 onwards, electricity consumption in *Road* also includes plug-in hybrid electric vehicles (PHEV).

Data for direct use of **solar thermal** heat are available from 2001 and from 1990 for **geothermal** heat.

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Iceland

Source

Icelandic Environment and Energy Agency, Reykjavik.

General notes

Prior to 1970, final consumption includes inputs and outputs to heat production.

The industrial classifications used by the Icelandic administration were changed in 1987.

Coal

General notes

The IEA Secretariat has estimated preliminary data for 2024p for all the products because no official mini-questionnaire submission was received by the time the database was finalised.

Data on stock changes of **anthracite** and **coke oven coke** are not available. The statistical difference could include that flow.

For **anthracite** and **coke oven coke**, preliminary 2023 data on imports and inland consumption are estimated by the IEA Secretariat based on trade data of international sources.

The industrial classifications used by the Icelandic administration were changed in 1987.

Hard coal data prior to 1978 may include **sub-bituminous coal**.

Prior to 1970, final consumption includes inputs and outputs to heat production.

Consumption

Anthracite is used as a carbon donor in silicon metal and ferrosilicon production plants. In the 2021 edition, the quantities involved in these processes were reallocated from TFC/Iron & Steel to Non-Energy Use Industry/Transformation/Energy for the period 2016-2018.

Coke oven coke is used as carbon donor for ferrosilicon production. In the 2021 edition, the quantities involved in this process were reallocated from TFC/Iron &

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Steel to Non-Energy Use Industry/Transformation/Energy for the period 2016-2018.

Final consumption increased in 2000 as a new iron and steel plant came on-line.

Oil

General notes

In the 2023 edition, the Icelandic administration provided data for **petroleum coke** imports and non-energy use in non-ferrous metals from 1990 to 2009.

In the 2024 edition, stock breaks appear for the following products in the following years: **LPG** (between 2019 and 2020), **gas/diesel oil** (between 2018 and 2019) and **fuel oil** (between 2016 and 2017). Revisions are expected next cycle.

In the 2022 edition, some supply flows from 2015 to 2019 are estimated by the IEA Secretariat, in particular stock changes and imports.

Between 2015 and 2016, there are breaks for several products due to a change in the methodology by the Icelandic administration.

In 2014, the Icelandic administration revised petroleum coke data from 1990 to exclude imports of anodes for the aluminium industry.

Oil supply and consumption data for 2008 and 2009 are estimated by the IEA Secretariat.

Consumption

The use of fuel oil in Iceland territorial waters was banned in 2020 unless scrubbers are used. This explains the decrease in **fuel oil** consumption for energy-use in the fishing industry.

Biofuels and waste

General notes

In the 2023 edition, **municipal waste** was significantly revised from 1993 to 2013 according to new data coming from the Environment Agency of Iceland.

2021 **biodiesel** data are zero since the product was imported blended with fossil fuels products.

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In the 2020 edition, the time series for **solid biofuels** was revised.

2013 is the first year of data availability for the supply and consumption of **solid biofuels**.

Consumption

Biodiesel consumption data for 2014 are estimated by the Icelandic administration based on 2013.

Biogases used for transport purposes were reported for the first time in 2007.

Electricity and heat

General notes

For the 2022 and 2021 editions, the Icelandic Admistration revised data back to 2007 due to improved methodologies.

Supply

In the 2022 and 2023 edition, **geothermal** data related to the demand side of the commodity balance were revised starting from 2007. Therefore, data breaks might appear between 2006 and 2007.

The rise in **heat** supply in 2018 is due to an increase in the number of residential and commercial connections to new and existing district heating networks.

The increase in **hydro** and **geothermal** electricity production from 2007 is due to the expansion of the aluminium industry.

The increase in **geothermal** electricity production in 2018 is due to a new 90MW power plant, half of which came online in 2017, and half in 2018.

From 2016 onwards, the decline in electricity production from *wind* is due to a combination of lower wind speeds and lower installed capacity.

Transformation

In the 2026 edition, electric boilers show efficiencies within an acceptable range for 2024. A revision for earlier years is planned in upcoming cycles.

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For 2016, access to improved data revealed considerably better heat plant efficiencies than previously inferred, with increases in heat production seen during this period.

From 2013 data, the *Hellisheidi* **geothermal** power plant, previously reported under main activity electricity plant, was categorised as main activity CHP plant.

Heat production from **municipal waste** is available from 1993 and stops in 2010.

In 1998, 60 MW of generating capacity was installed in the **geothermal** CHP plant at *Nesjavellir*. Since the plant was inoperable for four months, production of **geothermal** heat decreased compared to 1997. The extra electricity capacity caused electricity production from **geothermal** to almost double over the same period.

Electricity production from **geothermal** sources in main activity producer CHP plants is available from 1992.

For **geothermal** autoproducer heat, data for 2022 and 2023 were estimated by the IEA Secretariat. For 2024, **geothermal** autoproducer heat and **geothermal** main activity producer heat data were estimated by the IEA Secretariat to ensure consistency of efficiencies across the time series.

Consumption

The increase in electricity consumption in the *non-metallic minerals* sector from 2017 onwards is due to the opening of a silicon production facility, PCC Bakki.

The significant increase in electricity consumption in the *commercial and public services* sector from 2015 onwards is due to the growth of cryptocurrency mining.

In the 2015 edition, the **heat** consumption breakdown by sector for the years 1990 onwards has become available following reviews by the Icelandic administration. In addition, heat consumption was revised significantly upwards as more information became available. This has caused large breaks in time series across the heat balance between 1989 and 1990.

Direct use of **geothermal** in the industrial sector is reported under *non-specified industry*, as the Icelandic administration decided not to estimate the allocation amongst the sub-sectors of industry.

Revisions in direct use of **geothermal heat** starting in 2013 create breaks in time series between 2012 and 2013.

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Electricity consumption in *non-specified transport* includes consumption for ferries and cruise lines.

Non-specified consumption of **electricity** within the energy sector refers mainly to the use of electricity by the **geothermal** industry to pump hot water from underground sources, and from 1991, also includes electricity used for the transport by pipeline of hot water from Nesjavellir to Reykjavik.

The increase of **electricity** consumption in the construction sector from 2004 to 2007 is due to the drilling of tunnels for the Kárahnjúkar power plant.

The consumption of **electricity** reported in *non-specified other* corresponds to a NATO base at Keflavik airport which closed in 2005.

Prior to 1990, all **heat** for space heating was reported in residential.

The residential sector includes agriculture prior to 1983.

Prior to 1970, total final consumption includes inputs to and outputs from **heat** production and non-energy use. After 1970, data on inputs and outputs in CHP plants and in main activity producer heat plants (district heat plants) and for non-energy use are separately specified.

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Ireland

Sources

Department of Communications, Energy and Natural Resources, Dublin.

Sustainable Energy Authority of Ireland, Cork.

Coal

General notes

As of 2024, **peat** is no longer used as input into electricity production. Furthermore, the last peat briquette plant closed in 2023, resulting in zero **peat products** production in 2024.

In the 2023 edition, **other bituminous coal** demand statistics were revised from 1990 to 2020 as a result of the business Energy Use Survey run by the Central Statistics Office (CSO). Furthermore, also the calorific values and energy inputs of **other bituminous coal** imports and input to main activity producer electricity plants were revised from 2013 onwards due to a review of the data under the Emission Trading Scheme.

In the 2023 edition, SEAI revised of **anthracite** and **BKB** imports, stock change (only for anthracite) and residential consumption due to new available information.

In the 2022 edition, the Irish administration modified the methodology to estimate supply of solid fuels. Consequently, revisions were made back to 2011 for **anthracite**, **other bituminous coal** and **BKB**.

In the 2021 edition, SEAI revised their methodology for **anthracite** imports. The figures for the years 2012 to 2018 were revised up and are now aligned with those from the Central Statistics Office of Ireland. The difference with the old values was assigned to the residential sector.

In the 2021 edition, SEAI revised **other bituminous coal** consumption by sector for the period 2005-2011. The same methodology that was used from 2012 was applied to the period 2005-2011 to align the time series.

Due to confidentiality reasons, **patent fuel** quantities are reported aggregated to **anthracite** figures.

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Due to confidentiality reasons, inputs of **anthracite**, **other bituminous coal** and **peat briquettes** for patent fuel transformation are reported with residential consumption.

Prior to 1990, any imports of **BKB** were included with imports of **peat products**, as is the case for consumption.

The calorific value for **peat** production is weighted according to the origin: sod peat and milled peat. Sod peat has a higher calorific value than milled peat. In 2019, the production of milled peat decreased while sod peat stayed stable; this resulted in an overall higher weighted value.

Supply

In the 2025 edition, preliminary data for 2024p supply of **peat** was estimated by the IEA secretariat as no official data were received by the time the database was finalised.

Ireland stopped harvesting lower value milled **peat** in 2020 and will phase out production of **peat briquettes** by 2024.

Due to confidentiality reasons, **anthracite** imports include **patent fuel** imports.

Rainfall in 2012 led to the lowest **peat** harvest since IEA records began in 1960, requiring large stock drawdown and increased use of **biofuels** for electricity generation. In 2013, production targets were met before the end of the year however production continued in order to further build stocks to alleviate the potential impacts of future weather events.

Low production of **peat** in 1985 was due to a poor “harvest”, due to an unusually wet summer.

Production data for **peat products** (briquettes) are available from 1975.

Transformation

From 2018 the consumption of **other bituminous coal** decreases significantly as a result of the decline in coal-fired power generation. Imports of this product decrease accordingly.

A reclassification caused a break in the time series for **peat** consumption in the energy industry own use in **BKB/peat product** plants from 1989 to 1990.

The production of **gas works gas** ceased in 1987 due to fuel switching to **natural gas**.

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Other bituminous coal inputs to main activity producer electricity plants increased from 1986 due to three new generating units at Moneypoint coming on-line.

Consumption

Disaggregated final consumption for 2022 has been estimated by the IEA Secretariat based on the final consumption share by sector in 2021.

The decrease in residential consumption of **anthracite** in 2019 is consequence of warmer weather, among other reasons.

The consumption of **other bituminous coal** and **peat** in the food, tobacco and beverages industry stopped in 2019.

Oil

General notes

In the 2025 edition, the Irish administration revised data from 1990 onwards based on new available information.

Ireland started the production of co-processed **biodiesel** in 2021 which results in refinery intake of biofuels. In the 2025 edition this is reflected for the first time for 2023, 2022 and 2021.

In the 2018 edition the Irish administration revised the methodology for reporting final consumption of oil products. This leads to some breaks in series between 2015 and 2016.

From other sources - natural gas of **other hydrocarbons** correspond to natural gas blended with refinery gas.

For confidentiality reasons, inputs of **petroleum coke** into patent fuel transformation are reported with residential consumption.

Supply

In the 2020 edition, the Irish administration revised **gas/diesel oil** and **fuel oil** consumption in *international marine bunkers* from 2006 onwards.

Consumption

In the 2025 edition, demand flows for 2024p are estimated by the IEA Secretariat.

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In the 2024 edition, the Irish administration reviewed its methodology for **gas/diesel oil** which leads to an important increase for agriculture/forestry in 2022. Revisions are expected next cycle as quantities will be reallocated to the residential sector.

In the 2021 edition, oil consumption data were revised back to 1990 by the Irish administration to incorporate the results of the Business Energy Use Survey (BEUS), which provided a level of detail not previously available.

In 2014, the drop of fuel oil consumption in non-metallic minerals sector is linked with the replacement of HFO boilers by natural gas boilers as the primary source of steam for alumina production.

In 2013 and 2014, bitumen consumption data are not available and calculated as residual.

Between 2008 and 2009, there is a break in time series for **gas/diesel oil**, **LPG**, **kerosene-type jet fuel** and **petroleum coke** due to a new methodology being applied to sectoral demand by Sustainable Energy Ireland (SEI). This change also explains breaks between 2006 and 2007 for **bitumen**, **lubricants**, **white spirit**, and **paraffin waxes**.

Between 1989 and 1990, breaks in time series appear for consumption of **gas/diesel oil**, **LPG**, **other kerosene** and **fuel oil** as a result of a detailed consumption survey done for 1993. Data for historical years back to 1990 were revised by the national administration based on the results of this survey.

From 1986, **gas/diesel oil** consumption in the agricultural sector is available.

From 1970 to 1977, the split between commercial and public services and agricultural use of **other kerosene** has been estimated by the Secretariat. Consumption in commercial/public services includes quantities used by state-owned agricultural companies.

Natural gas

General notes

Since April 2017 there is no gas storage facility in Ireland.

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Supply

Natural gas production has been increasing since 2015, as the Corrib Gas field began production at the end of that year. Production from the field peaked in 2017 and is expected to decline through the 2020s.

Since 1996, the increase in imports is due to the depletion of the Kinsale gas field and the availability of a new pipeline system to the United Kingdom.

Transformation

Since 2006, a different methodology for allocating unsold steam from *autoproducer CHP* is used.

Non specified transformation corresponds to **natural gas** blended with **refinery gas**.

Consumption

In the 2026 edition, the Business Energy Use Survey (BEUS), published by the Central Statistics Office, led to significant revisions in energy use values which affected the time series from 2010 until 2023.

In the 2020 edition, the results of the Business Energy Use Survey (BEUS) from 2009 to 2017, published by the Central Statistics Office, were used as a new basis for the breakdown of energy use in the consumption sector. Additionally, data was revised for the 2001 to 2009 period in order to avoid a timeseries break.

In the 2019 edition, the Irish administration revised the *distribution losses* based on new data coming from the Emissions Trading Scheme (ETS), which had a knock-on effect in the final consumption data, primarily for the *industry sector*.

In 2011 the increase in *non-ferrous metals* consumption is due to a fuel switch to **natural gas**.

Since 2009, the disaggregation of consumption into all the industry sub sectors excluding *non-ferrous metals* is done according to data from the Census of Industrial Production (CIP). The last energy consumption data available from the CIP are from 2009 and therefore the 2009-2015 subsector breakdown is the same every year.

In 2007 the increase in *machinery* consumption is due to changes in industry sub-sector structure and fuel usage.

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In 2004, there is a break in the time series in *food, beverages and tobacco* consumption due to a change in methodology.

In 2003, feedstock use in the *chemical and petrochemical* industry stopped due to the shutdown of a fertiliser plant.

In 2001, **natural gas** consumption in the *iron and steel* industry stopped due to the shutdown of Ireland's main steel plant.

Prior to 1986, detailed consumption figures for the use of **natural gas** in *industry* and *other sectors* are not available.

Biofuels and waste

General notes

Data for **municipal waste** are available from 2009.

Data for **solid biofuels** and **biogases** are available from 1990.

Supply

In 2022 edition, **biogasoline** production figures were revised. The production started in 2017.

In 2020, a new **biodiesel** plant began to produce.

Due to increased demand from a second waste to energy electricity plant which began operation in 2017, production of **municipal waste** increased sharply starting in late 2017.

Prior to 2011, production and trade of **biogasoline** and **biodiesels** cannot be distinguished due to confidentiality issues.

Transformation

In 2022 edition, 2019 **solar PV** generation figures were significantly revised.

In 2020, **biogas** started to be blended with natural gas in the main network.

Starting in 2016, the increase of electricity production of **solid biofuels** is a result of a decarbonisation programme and comes from a plant which is co-firing peat and biomass.

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In 2012 and 2013, the renewable fraction of tyre-derived fuel (12%) used by a cement plant was reported by the administration under **renewable municipal waste**; the non-renewable fraction (88%) was reported under **industrial waste**.

Consumption

In the 2021 edition, there were revisions to the *residential sector* for **solid biofuels (excluding charcoal)**.

In the 2020 edition, Ireland started reporting Pipeline transport based on the Emissions Trading Scheme data, available since 2005. The increase in 2016 is due to the coming on stream of the Corrib gas field.

The Biofuels Obligation Scheme places an obligation on suppliers of mineral oil to ensure that 8.695% (by volume) of the **gas/diesel oil** they place on the market in Ireland is produced from renewable sources, e.g. **bioethanol** and **biodiesel**. The obligation was increased from the 1st January, 2017, from the previous level of 6.383%.

Despite the Biofuels Obligation Scheme, **bioethanol** consumption decreased in 2017 because there was a reduction in overall motor gasoline use and of fuel tourism.

Increases in **biodiesel** consumption in 2017 are related to the Biofuels Obligation Scheme and to increases in road freight, which is heavily dependent on **diesel oil**.

The consumption of pure **biodiesel** in the industry sector and in road transport refers to one site, which is no longer in operation since 2014.

Electricity and heat

Supply

In the 2025 edition, some revisions were introduced from 2009 in the Electricity production from Autoproducers – Residential and Commercial sectors, due to new data available.

In the 2019 edition, revisions were made by the Irish administration for the indigenous production of **solar thermal** for the years 2011 – 2016.

Electricity production from wind begins in 1992 and from biogases in 1996. For wind, data for autoproducers are included in main activity producers prior to 2002 for confidentiality reasons.

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Transformation

In 2018 and 2019, electricity output from **other bituminous coal** declined due to a shutdown at Moneypoint power station.

In 2017, a new **municipal waste**-fired main activity producer electricity plant (Dublin waste-to-energy) began operations.

In the 2016 edition, revisions were introduced in the **electricity** generation by fuel from 2010 due to improved data available from the transmission system operator.

In 2015, a new combined cycle gas turbine plant began commercial operations at Great Island power station, replacing the existing heavy fuel oil power plant.

In 2012, a new **municipal waste**-fired main activity producer electricity plant (Meath waste-to-energy) began operations.

In 2011, very little electricity was produced from **pumped hydro** following Turlough Hill, Ireland's pumped storage station, being taken offline in late 2010 up until February 2012. The 2011 values appear as zero due to rounding.

From 1984 to 1989, inputs of **hard coal** in autoproducer CHP plants have been estimated by the Secretariat.

Consumption

Not elsewhere specified in industry refers to Other Manufacturing (NACE 31-33, 12 & 15) and Rubber and Plastic Products (NACE 22)

In the 2024 edition, electricity consumption data were revised back to 1990 thanks to the Central Statistics Office of Ireland gaining access to the metered electricity data, which allowed them to reweight a number of categories.

In the 2021 edition, electricity consumption data were revised back to 1990 to incorporate the results of the Business Energy Use Survey (BEUS), which provided a level of detail not previously available.

In 2004, the increase of **electricity** consumption is due to the new light rail transit system in Dublin.

The decrease of **electricity** consumption in the *iron and steel* sector from 2001 onwards is due to Ireland's main steel plant ceasing production.

Prior to 1990, **electricity** consumption in *agriculture/forestry* is included with residential.

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Electricity consumption in the *iron and steel* industry includes consumption in the *non-ferrous metals* industry prior to 1990.

Data for direct use of **geothermal heat** and **solar thermal heat** are available from 1989 and 1990, respectively.

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Israel

Source

Israel Central Bureau of Statistics, Jerusalem.

General notes

Data are available starting in 1971.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli administration. The use of such data by the OECD and/or the IEA is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Due to the unavailability of data for certain fuels, IEA estimations are also present in Israel data. In particular this is valid for oil data in 2014 and 2015, **natural gas** data from 2012 onwards, **renewables and waste** data in 2013.

Coal

General Notes

Transformation

Since 2023 **oil shale and oil sands** supply and demand data has been estimated by the IEA Secretariat.

In 2018 (data year) the methodology for calculating consumption in the transformation sector (electricity and heat producers) was modified. This creates a break in the time series between 2017 and 2018.

Oil

General notes

Supply data for 2013 to 2020 have been provided by the Israel Central Bureau of Statistics. Demand data for 2013 to 2020 was revised and estimated based on Israel's national energy balance and the partial data made available by the Israel Central Bureau of Statistics. As a result, breaks in time series may appear between 2012 and 2013.

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Israel's national energy balance aggregates bitumen, petroleum coke and other oil products. The split of these products was estimated by the IEA secretariat for all flows.

The split of refinery output and consumption between kerosene type jet fuel and other kerosene was also estimated by the IEA Secretariat.

Supply and consumption of kerosene type jet fuel for 2011 and 2012 have been estimated by the IEA Secretariat.

From 2007 to 2009, oil data are estimated by the IEA Secretariat based on information from the Ministry of National Infrastructures.

Supply

In 2023, the increase in **crude oil** production is a result of higher condensates production from associated natural gas production.

In 2018 the CDU 3 unit and hydrocracker facility at Bazan refinery was under maintenance. In 2017 the catalytic reformer unit underwent maintenance.

Quantities of **other hydrocarbons** represent **natural gas** used in refineries, including for the operation of the cogeneration power stations.

From 2010 onwards, white spirit is included in other products.

Other oil products include white spirit, lubricants, bitumen, paraffin waxes, petroleum, sulfur, aromatics, gases and olefins such as propylene.

Transformation

In 2017 Bazan refinery underwent maintenance to upgrade its continuous catalytic reformer, isomerization units and the naphtha catalytic hydrotreating unit.

Consumption

From 2015, energy use of **gas/diesel oil** and **other kerosene** in Not elsewhere specified (Other sectors) are estimated by the IEA Secretariat.

From 2013, consumption data are based on a new and detailed classification system and on estimations made by the Israeli administration.

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Natural gas

General notes

Since 2012, all natural gas data, except inputs to electricity production and oil refineries, have been estimated by the IEA Secretariat.

The 2021 edition includes 2019 data and revisions in consumption based on the Energy Balances published by the Israeli Central Bureau of Statistics (CBS). As a result, breaks in time series appear between 2012 and 2013. More specifically, this revision impacted *oil refineries*, the *industry sector* and *other sectors*. Finally, all *industry* is categorised as *non-specified industry* and all *other sectors* as *non-specified other,* because no disaggregation is available.

Supply

Imports of **natural gas** began in 2008.

Transformation

In the 2017 edition, the Israeli administration revised *transformation sector* data back to 2013, introducing breaks in the series between 2012 and 2013.

In the 2019 edition, the *not elsewhere specified (transformation)* since 2013 refers to quantities of **natural gas** used for the generation of hydrogen, which is subsequently used for hydrodesulphurization in oil refineries. In the previous editions, these figures were reported as energy consumption of gas in *oil refineries*.

In the 2019 edition the 2016 and 2017 data for inputs to electricity production were estimated by the IEA Secretariat.

Biofuels and waste

General notes

In the 2025 edition, the 2024p data have been carried forward from the previous cycle due to the absence of a data submission from the country.

Data on imports and consumption of charcoal are estimated since 1992 using data from the Forestry Production and Trade database from the Food and Agriculture Organization of the United Nations.

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Electricity and heat

Supply

Electricity production from **wind** begins in 2001.

Autoproducer electricity generation from **chemical heat** (production of sulphuric acid) occurs, but is not reported separately or included elsewhere in national totals, prior to 2017.

For 2020, transmission and distribution losses for electricity include losses incurred during the operation of **pumped hydro** facilities.

Transformation

For the 2018 reporting cycle, Israel revised their methodology to better reflect actual plant classifications. As a result, breaks in series occur between 2017 and 2018 for output from all plant types.

Prior to 2018, inputs to *autoproducer CHP plants* (then reported under auto electricity plants) included inputs used to generate unsold heat. As a result, there is an apparent increase in efficiency for some fuels between 2017 and 2018.

For 2017 data and onwards, due to confidentiality concerns, electricity production reported under auto producer **wind** includes generation from main activity **wind,** total **hydro,** and autoproducer **biogases.** Similarly, for 2016 data, reported auto producer solar PV generation includes total generation from **hydro** and **wind**.

For 2013 and 2014, **other oil products** inputs to autoproducer electricity plants were estimated by the IEA Secretariat.

Data on **heat** production from main CHP plants are not available.

Consumption

For 2022, **Electricity** *transmission and distribution losses* were estimated by the IEA Secretariat.

Solar thermal indigenous production and direct consumption have been estimated by the IEA Secretariat from 2012 to 2017, using data published in the IEA-Solar Heating and Cooling Programme Annual Report. These estimations may create breaks in time series between 2011 and 2012 as well as 2017 and 2018.

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For 2013 onwards, for reasons of confidentiality, electricity consumption in *non-metallic minerals* is included under *mining and quarrying*, and consumption in *chemical (including petrochemical)* and *construction* is included under *not elsewhere specified (industry)*.

For 2013, and 2015 onwards, the split of **electricity** consumption in industry has been estimated by the IEA Secretariat. In addition, electricity consumption in *agriculture and forestry* for 2015 onwards has also been estimated by the IEA Secretariat.

Electricity own use, as well as *transmission and distribution losses* were estimated by the IEA Secretariat from 2010 to 2012.

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Italy

Sources

Ministry of Environment and Energy Security (MASE), Rome

Gestore dei Servizi Energetici GSE S.p.A., Rome

Acquirente Unico S.p.A., Rome

Terna S.p.A., Rome

General note

A change in methodology lead to breaks in time series for industry and transformation between 2003 and 2004.

Coal

General notes

In the 2026 edition, the use of a new data source by the Italian administration led to increases of several **anthracite** demand flows for the reporting year 2024.

The increase in production of **coke oven gas** in 2012 was the consequence of improvements in scope of reporting. As such, coke oven gas data in prior years should be viewed as under-representing production and consumption, and coke oven efficiencies will likewise appear lower than actual.

Due to a change in the survey system, breaks in time series may occur between 1997 and 1998 for final consumption.

From 1986 onwards, figures from **lignite** are given using the same methodology as in the *Bilancio Energetico Nazionale*.

Supply

In the 2024 edition, preliminary **blast furnace** and **other recovered gas** production for 2023 has been estimated by the IEA Secretariat due to low reported blast furnace efficiency.

In the 2018 edition, production of **coke oven coke**, **coke oven gas, coal tar** and **other recovered gases** was revised back to 2014 due to new available

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information. The revisions increased efficiencies of coke ovens and blast furnaces and led to breaks between 2013 and 2014.

Other bituminous coal production ceased in 2016 due to the closure of the one coal mine in 2015.

Transformation

Breaks in the time series between 2014 and 2015 for **coke oven gas**, **blast furnace gas** and **other recovered gases** are due to a reclassification of main activity producers and autoproducers.

Prior to 2009, sub-bituminous coal used in main activity electricity plants was included with other bituminous coal consumption.

For data since 2001, calorific values for imports of other bituminous coal and sub-bituminous coal are derived from inputs to main activity electricity generation.

Consumption

In the 2023 edition, final consumption of **anthracite** is reported for 2021 for the first time due to improvements in the collection of data by the Italian administration.

In 1991, all industrial activities were reclassified on the basis of ISTAT/NACE 91. This has implied some transfers of activities which may result in some anomalies between 1991 and earlier years.

Oil

General notes

For **crude oil**, statistical difference may arise as trade corresponding to stock held for Austria and Germany in the Port of Trieste are not included.

Inputs to electricity and heat generation have been estimated by the IEA Secretariat for the years 1984 to 1997 based on submissions of the Electricity and heat Questionnaire. All other data for the years 1992 to 1997 and the detailed consumption breakdown for other years have been estimated by the IEA Secretariat based on *Bilancio Energetico Nazionale*.

Supply

Primary products receipts of LPG starting in 2023 correspond to bio-LPG, for which the IEA currently does not have any specific nomenclature. On the primary

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products side, these quantities are included in the additive - biofuels totals, summed with biogasoline and biodiesel flows.

Due to an improvement of reporting by the Italian administration, indigenous production of **NGL** is reported separately from **crude oil** starting in 2020.

Indigenous production of **other hydrocarbons** in 2020 is from the Gorgoglione field in Basilicata.

In the 2021 edition, due to a new calculation methodology adopted by the Italian administration, product transfers appear for the first time in 2019 for **motor gasoline**, **kerosene type jet fuel**, **gas/diesel oil** and **fuel oil.**

In 2016 and 2017, the closure of the Val d'Agri oil centre lasting several months led to a decrease in production of **crude oil**.

From 2009 onwards, transfers of **lubricants** could not be disaggregated from refinery output data.

From 2004 onwards, increased production of **non-specified oil** products is due to methodological changes.

A new survey to determine the split between international marine bunkers and domestic navigation caused a break in time series for **gas/diesel oil** in 1999 and **fuel oil** in 1996.

Consumption

Due to methodological change, breaks appear between 2020 and 2021 for sectoral demand data of **refinery gas.**

For **gas/diesel oil**, non-specified use is included in commercial/public services.

Between 1998 and 1999, due to new surveys, breaks appear in the consumption time series.

Natural gas

Supply

In 2021, Exports increased substantially due to the TAP pipeline beginning operations.

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Transformation

Prior to 2008, inputs of **natural gas** to all heat production in *industry* were reported in final consumption.

Between 2003 and 2004 there are breaks in time series in *industry* and *transformation* due to a new data reporting methodology

From 2000 to 2002, for confidentiality reasons, autoproducers are included in main activity producer plants.

In 1996 the production of **gas works gas** from **natural gas** in *gas works (transformation)* ceased.

Consumption

Between 2020 and 2021 there is a break in the time series across total final consumption due to a change in methodology to improve data quality and align data between natural gas TSOs and operators collecting data in the distribution network.

In the 2021 Edition, following a new source of data and a change of methodology, the flows *oil and gas extraction* and *gas inputs to oil refineries* were revised from 2011 onwards.

Since 2007, a more detailed breakdown of consumption for *energy industry own use* is available.

Biofuels and waste

Supply

Biogasoline includes bio-ETBE.

From 2014, a distinction between trade and production became available for **other liquid biofuels**.

Transformation

The revisions to the transformation sector for many fuels for 2021 and the break in the time series with 2020 are due to the change in methodology for reporting main activity producers and autoproducers consumption described in the electricity section.

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In 2018, a new biomethane plant was installed leading to increases in **biogas** blending with **natural gas**.

2017 is the first year that biogas is blended with natural gas.

In 2008, data for biofuels and waste were reclassified, which results in several breaks in the time series for transformation.

Consumption

In the 2026 edition, there is a significant increase in the consumption of **biogases** in road, due to the newly available tracing of pure biomethane.

The increase in consumption of **biogasoline** in 2023 is due to better administrative data compared to previous years.

In the 2025 edition, for the first time the Italian administration reported quantities of bio-LPG blended with liquid fossil fuels and consumed in road transport for 2023, in the product **other liquid biofuels**.

In the 2025 edition, non-energy use of **primary solid biofuels** in chemical and petrochemical industry non-energy use for 2022 and 2023 and energy use in commercial and public services in 2023 is estimated by the IEA Secretariat.

Starting in 2022, the drop observed in residential consumption of **primary solid biofuels** reflects the results of a new survey methodology introduced in 2024 on energy consumption in households.

In the 2024 edition, the new reporting of **primary solid biofuels** in not elsewhere specified in the energy sector for 2021 and 2022 refers to NACE codes 35.1/35.11/35.30.From the 2018 data onwards, the increase in **biodiesel** demand is related to blending obligations.

The final consumption of **biogas** has been constant from 2013 to 2015, as these figures are the result of a survey which is not carried out annually. Figures are expected to be revised after the next survey.

In the 2016 edition, the methodology used to calculate **solid biofuels** consumption in the residential sector for 2002 to 2014 was updated and this created a break in time series between 2001 and 2002. This also affects the indigenous production of **solid biofuels**. The revisions were limited backwards to 2002 because of reliability issues.

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Electricity and heat

General notes

As of 2021, an alignment with international energy statistics standards in the definition of main activity producer and autoproducer caused a shift of production from main activity producer to autoproducer and vice versa. This leads to breaks in time series.

Prior to 2021, **heat** produced by Autoproducer includes all **heat** produced and auto consumed. As of 2021, **heat** sold only by Autoproducers is reported. Breaks may occur in time series.

Supply

In the 2026 edition, the IEA secretariat has adjusted the value for *used for heat pumps* in 2024 using the value from the Renewable Questionnaire due to out-of-range values reported by the country in the Electricity and Heat Questionnaire.

Prior to 2021, electricity generated by autoproducers using **solar PV** is included under main activity producers.

Prior to 2021, data on *transmission and distribution losses* of **heat** consisted of **heat** units only. As of 2021, also *transmission and distribution losses* from CHP units are included. This leads to breaks in time series between 2020 and 2021.

For 2020, electricity output from autoproducer **wind** was reported for the first time in several years due to a reclassification of the producer type.

For 2017, more information became available on **fossil fuel** use in heat plants allowing additional inputs to be reported for this category. This causes breaks in time series between 2016 and 2017.

The production of electricity reported in the category *other fuel sources* refers to electricity produced from turbines which are located at pressure drops in fluid transport.

The methodology of data collection for **solar photovoltaic** electricity production changed in 2009 and the distinction between main activity and autoproducer plants could not be determined, causing a break in the time series.

Due to the aggregation of rounded values, from 2007-2016, total **electricity** output may differ slightly from the sum of the output from the individual fuels.

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Transformation

For 2018, the decrease in electricity output from **solar PV** was due to lower than solar radiation.

Prior to 2000, **electricity** used for pumped storage (mixed plants) is included under used for pumped storage (pure hydro pumping plants).

In 2016, the decline in autoproducer **electricity** generation and sold **heat** production by oil refineries is partly due to the activities of these units being split off and reclassified as main activity enterprises.

The methodology of data collection for the **geothermal** sector changed in 2010, causing a break in time series between 2009 and 2010.

Prior to 2009, **sub-bituminous** coal used in main activity electricity plants was included under other bituminous coal.

With the introduction of a new survey in 2008, amounts of **naphtha** and **other kerosene** that were previously included in *other oil products* have been reported separately in autoproducer CHP plants.

Prior to 2004, **electricity** production from **orimulsion** is confidential and is included with **fuel oil**.

Heat production is reported starting in 2004 and includes self-generation in industry.

From 2000 onwards, the Italian administration defines **electricity** and **heat** production from autoproducers as generation from producers that consume more than 70% of their own electricity production. However, for the 2000 to 2002 period, all electricity production from autoproducers is reported with main activity producers.

The breakdown of **renewables** and **waste** inputs into electricity, heat and CHP plants is available from 1989 only. Prior to that year, the total of the different fuels involved is reported as non-specified renewables.

Prior to 1984, net electricity production by autoproducers includes production from combustible fuel sources only.

Consumption

Prior to 2021, **heat** consumed by Autoproducer includes heat which is auto consumed. As of 2021, purchased **heat** only is reported.

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For the 2021 edition, the Italian Administration changed system of reporting used to categorise consumption based on economic activity (from ATECUE95 to ATECO2007). As a result, breaks in series occur between 2018 and 2019. Historical revisions are pending.

Some breaks in time series for **heat** consumption are observed between 2017 and 2018. This is because some large heat producers reported consumption of **heat** in 2018 in sectors different to those they had reported in previous years.

Non-specified energy industry own use includes **electricity** consumption for blast furnaces. From 2000, it also includes consumption for the distribution of gas and prior to 1989 consumption for uranium extraction.

The breakdown of **heat** consumption by sector is estimated by the Italian administration.

Revisions of the final consumption of **heat** by the Italian administration led to breaks between 2010 and 2011.

From 1981, consumption of **electricity** in transport includes electricity used for pumping in oil pipelines.

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Japan

Source

The Institute of Energy Economics Japan, Tokyo.

General notes

In the 2019 edition, data for Japan were revised back to 1990 based on new methodology. Additional details are given under each fuel.

From 1990, data are reported on a fiscal year basis (e.g. April 2015 to March 2016 for 2015).

Consumption data for commercial/public services may include consumption in small and medium-sized industries. The Japanese administration expects that this shortcoming will be corrected in the near future.

Coal

General notes

Other bituminous coal includes sub-bituminous coal.

The net calorific values for **coal** and **coal products** have been recalculated by the IEA Secretariat based upon gross values submitted by Japan.

In the 2023 edition, the Japanese administration revised several flows for **anthracite**, **other bituminous coal** and **coke oven coke** for 2020 due to new available information. **Hard coal** data prior to 1978 may include sub-bituminous coal.

Supply

In the 2022 edition, revisions were made by the Japanese administration to imports by origin and exports by destination, back to 1990.

In the 2020, revisions were made by the Japanese administration to the imports of other bituminous coal for the years 1991, 2015 and 2017.

Statistical differences for **hard coal** include stock changes since 2001. Large positive differences for several years since 2004 are partly due to stock build by final consumers.

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Transformation

Coke oven coke preliminary use in the transformation sector for 2023 has been estimated by the IEA Secretariat. The inputs of **coke oven coke** to blast furnaces as well as the final consumption of **coke oven coke** in the iron and steel industry have been estimated by the IEA Secretariat since 1990.

From 1998, inputs of **coke oven gas**, **blast furnace gas** and **other recovered gases** into autoproducer electricity plants include the amount used to produce electricity with TRT technology (Top pressure Recovery Turbines) which was previously included in industry.

Inputs of manufactured gases (**coke oven gas**, **blast furnace gas** and **other recovered gases**) to main activity electricity and heat plants are calculated based on outputs and using efficiencies of main activity producers from other fuels. For autoproducers, the specific inputs are known, however the specific electricity production by each gas is estimated based on a pro-rata of the total electricity generation from all gas types.

Coal injected in blast furnaces (PCI) is classified as **coking coal** in order to be consistent with Japanese trade statistics.

In 2016 the liberation of the power market resulted in electricity autoproducers becoming main activity producers.

Consumption

In the 2023 edition, non-energy use in *chemical and petrochemical* sector of **coke oven coke** was revised from 1994 to 1998 due to new available information.

In the 2020 edition, **anthracite** consumption in *agriculture/forestry* has been revised.

In the 2020 edition, after investigation by the Japanese administration the **coal tar** previously reported under *total final consumption* in the chemical sector has been reallocated under the category non-energy use.

In the 2019 edition coal tar consumption in the *chemical and petrochemical industry* was estimated by the IEA since 1990.

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Oil

General notes

In the 2026 edition, data for Japan were revised back to 2010 by the Japanese administration due to revisions in Japan's Energy Balance Table.

In the 2022 and 2023 editions, data for Japan were revised back to 1990 by the Japanese administration due to revisions in Japan's Energy Balance Table.

In the 2021 edition, the Japanese administration revised several NCVs of both primary and secondary oil products back to 1990 as a result of improved calculation methods. The Japanese administration reviews calorific values every few years, with the other recent revisions occurring in 2005, 2013 and 2016.

Supply

In 2018 refinery runs were impacted by heavier than usual maintenance season.

The high statistical difference for **crude oil** in 2013 and 2014 is explained by large amount of stocks held on board incoming vessels in port or at mooring in March 2014 (end of Japan’s 2013 financial year). These amounts are included in the stock change but not in the imports in 2013 annual data.

Orimulsion was imported for electricity generation between 1991 and 2006.

Transformation

Other hydrocarbons in *non-specified transformation* represents orimulsion burnt for power generation. Historical revisions are pending.

In 2016 the liberalisation of the power market resulted in electricity autoproducers becoming main activity producers.

Consumption

Due to the data being in fiscal years, the impact of COVID-19 is visible in 2019 as oil consumption in some sectors decreased between January and March 2020.

Oil consumption continued to fall in 2018 as more nuclear capacity came back online.

Demand for heating oil and other kerosene fell driven by a warmer than usual winter in 2018.

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Road consumption, is based on the “Automobile fuel consumption survey” from the Ministry of Land, Infrastructure, Transport and Tourism (MLIT).

Lubricants consumption is estimated by the Japanese administration since 2000.

Natural gas

General notes

The 2022 edition contains minor revisions to time series which go back to 1990 for *imports* and *stock levels*. These reflect the revisions in the Energy Balance Table from the Ministry of Economy, Trade and Industry, which is the data source.

The 2019 edition contains major revisions to time series which go back to 1990. These reflect the revisions in the Energy Balance Table from the Ministry of Economy, Trade and Industry, which is the data source.

Since 1990 most of the **gas works gas** production and consumption has been included with **natural gas**.

Supply

In the 2019 edition, *indigenous production*, *receipts from other sources*, import data, *stock changes* and stock levels were revised back to 1990.

Transformation

In the 2019 edition, *main activity* and *autoproducer electricity* plants were revised back to 1990. Similarly, flows of the *energy sector* were revised back up to 1990.

Consumption

In the 2019 edition, own consumption in *electricity, CHP and heat* plants was subject to a major revision since 1990.

In the 2019 edition, all the *transport sector*, *industry sector* and *other sectors* flows were revised back to 1990.

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Biofuels and waste

General notes

In the 2024 edition, the Japanese administration revised several supply and demand flows for **industrial waste**, **municipal waste** and **primary solid biofuels** for variable time periods, even starting in 1990, due to new available information.

For the 2024 edition, zero production of biogasoline in 2021 and 2022 was confirmed by the Japanese administration.

In the 2019 edition, data for Japan were revised back to 1990 based on new methodology.

There was a large revision in **municipal waste** data in the 2016 edition of this publication. This revision has removed data for **municipal waste** for the entire time series up to 2010.

For **municipal waste** data, the breakdown between renewable and non-renewable **municipal waste** is estimated by the IEA Secretariat assuming a 50% split in transformation and supply.

Transformation

Input data of **solid biofuels** to charcoal production are estimated by the IEA Secretariat assuming an efficiency of 40%.

In the 2024 edition, the amount of **biogases** blended with natural gas in the gas grid in 2022 is estimated by the Japanese administration as equal to 2021, because the actual quantity is unknown by the time of the publication. This is likely to be revised in the next publications.

The **industrial waste** consumption in the *non-specified transformation* sector surged in 2013, because of the increase in use of waste plastics for coke production.

Consumption

In the 2020 edition, there are revisions in the consumption of **solar thermal** in the commercial and public services and residential sectors in 1990 - 2004.

In the 2025 edition, **solar collectors' surface area** data from the time series starting in 2001 up to 2022 was used with indigenous production from **solar thermal** to derive a ratio for all years. The ratio in 2022, which was the same for

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previous years as well, was used to derive the estimated solar collectors' surface area for 2023.

Electricity and heat

Supply

In the 2019 edition, **electricity** data were revised back to 1990 to include additional autoproducer production previously excluded.

Due to the liberalisation of the **electricity** market in April 2016 some generation previously reported under autoproducer plants is reported as main activity producer from 2016 onwards. As a result, breaks in series occur between 2015 and 2016. In particular, for **solar PV** and **wind**.

In the 2019 edition, the methodology used to estimate **heat** production from other sources was revised.

Generation of electricity and heat from **combustible fuels** is calculated by removing electricity and heat generation from other sources, such as wind, solar and nuclear, making it a residual item. Splits between combustible fuel types and consumption flows are also calculated.

Due to the events related to the March 2011 tsunami, the Japanese administration decided to scale back the level of their **nuclear** programme. As a consequence, there was no nuclear electricity generation in 2014. The nuclear electricity generation started again at a greatly reduced scale in 2015, while significant increases were observed in 2017 and 2018, with generation resuming at several facilities (2017: Takahama 3 and 4, Ooi 3, and Genkai 3; 2018: Genkai 4, Ikata 3, Ooi 4). In 2020, output decreased due to inspections at some plants.

Other sources electricity represents electricity generated with purchased steam. Other sources heat represents heat derived from waste heat.

Net and gross electricity generation from autoproducers are equal, as no information is collected concerning autoproducer own use.

Own use at main electricity plants has been constant since 2015, as data are no longer available following liberalisation.

Data for **electric boilers** include **heat pumps**. For this reason, calculated efficiencies exceed 100% for some years.

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Autoproducer **solar photovoltaic** capacity is derived from data from the Japanese administration as well as the IEA Photovoltaic Power Systems Programme (IEA-PVPS) national survey reports, published yearly, and IRENA data.

In the 2025 edition, the IEA Secretariat revised **solar PV** capacity values for 2022 showing the AC total from IRENA and the DC total from the IEA-PVPS. Data on electricity production from **wind** began in 1992.

Heat produced for sale in main activity producer heat plants from **waste heat** and from **electric boilers** is available from 1977 and 1983, respectively.

Transformation

In the 2025 edition the Japanese administration made revisions of autoproducer electricity from 2006 onwards and for other types of producers from 2016, due to new available information and corrections of statistics reported by utility companies. It is likely that additional changes will be implemented in the next cycle.

The Japanese Administrations attributes **heat** outputs (with the exception of heat from electric boilers) to individual fuels based on their share of inputs, assuming efficiencies are 100% or less. As a result, fuel specific transformation efficiencies may not reflect actual efficiencies.

Data on **heat** produced for sale by autoproducer heat plants are not available.

Fuels used and corresponding electricity and heat produced in CHP plants are not included in the CHP data time series, but instead are reported as separate **electricity** or **heat** components, leading to some plant efficiency figures not to be accurately calculated. Inputs of **biofuels and waste** for electricity production and related outputs are available from 1982.

Net electricity production by autoproducers prior to 1982 includes production from **combustible fuel** sources only.

Between 1972 and 1976, the use of **combustible fuels** in main activity producer heat plants is included in non-specified.

Consumption

In the 2025 edition the Japanese administration revised **heat** final consumption from commercial and public services to not elsewhere specified (Other) to better reflect the lack of information of the underlying data.

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In the 2020 edition, there are revisions in the consumption of **solar thermal** in the *commercial and public services* and *residential* sectors in 1990 - 2004.

Consumption of **electricity** in *non-specified industry* includes *wood and wood products* and *construction* prior to 1982.

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Korea

Sources

Korea Energy Economics Institute, Ulsan.

Korea National Oil Corporation, Ulsan.

General notes

Data are available starting in 1971.

Until the 2023 edition, data for 2002 onwards had been reported on a different basis, causing breaks in time series between 2001 and 2002, especially for inputs and outputs to electricity generation and consumption in the iron and steel industry. For the 2024 edition, the Korean administration has undertaken a major historical revision, erasing most of these time breaks.

Heat and power plants with secondary oil products may show implausible transformation efficiencies or encounter missing inputs/outputs. This can be attributed to different sources when compiling commodity statistics. Oil statistics are based on standards by the Korea National Oil Corporation whereas electricity statistics rely on surveys from heat and power plants.

Coal

General notes

In the 2026 edition, the Korean administration implemented major revisions to coal balance. These changes affected supply and consumption for **coking coal**, **other bituminous coal**, **coal tar** and **coal-derived gases**.

Data for **coal** and **coal products** from 1971 to 2001 are based on information provided by the Korean administration, as well as information from the *Yearbook of Energy Statistics 2002*, the *Yearbook of Coal Statistics 2001* (both from the Ministry of Commerce, Industry and Energy), and *Statistics of Electric Power in Korea 2001* (from the Korea Electric Power Corporation). During this period, import data by coal type were estimated by the IEA Secretariat, based on statistics of the exporting countries.

Hard coal data prior to 1978 may include **sub-bituminous coal**.

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Transformation

From the 2024 edition of the database, the Korean administration revised the reported quantity of coke oven coke in the output of coke ovens to ensure that the energy efficiency of coke ovens remains below 100% for the year 2015 and for years prior to 2010.Statistical differences for **manufactured gases** for 2012 are partly the result of classification issues. The Korean administration is working to improve reporting of coal-derived gases production and consumption.

Consumption

In the **anthracite** balance, the category Non-specified (Industry) includes manufacture of cement, lime, plaster and its products, and small businesses. Currently the breakdown of those is not available.

The consumption of **other bituminous coal** in the Food, beverages and tobacco industry stopped in 2018.

Data on **blast furnace gas** used for energy purposes in blast furnaces prior to 2007 are reported in the iron and steel industry.

Consumption of imported **coke oven coke** starting in 2002 is reported under *non-specified industry*.

Consumption of **manufactured gases** in the iron and steel industry starting in 2002 includes the consumption in blast furnaces, oxygen steel furnaces and other iron and steel processing plants.

Oil

Supply

In the 2026 edition, several breaks between 2024 and 2023 are observed in the oil commodity balance due to new data made available by the Korean administration. Revisions up to 2023 may be amended in the next publication to reflect the new reporting methodology.

There are breaks in transfers of several oil products in 2020 owing to a change in the reporting methodology of a refinery that expanded its chemical plant.

The production of heavy distillates has been declining due to the expansion of heavy oil upgrading facilities.

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In 2017, due to constraints to imports of condensate, Korean refineries used **naphtha** into the refinery process.

From 1997, stock levels include vessel stocks.

Transformation

Fuel input to heat and power plants in electricity and oil statistics may show discrepancies due to different sources in compiling commodity statistics. Oil statistics are based on standards by the Korea National Oil Corporation whereas electricity statistics rely on surveys from heat and power plants.

In particular, inputs of **fuel oil** to autoproducer electricity and autoproducer CHP are included with final consumption.

Consumption

Due to the change in the reporting methodology of a refinery, some breaks may appear between 2019 and 2020, in particular for consumption in Chemical (including petrochemical) industry.

From 1990 to 1995, **kerosene type jet fuel** split between international civil aviation and domestic air transport has been estimated.

Natural gas

General

In the 2024 edition, general revisions were made for the entire time series, 1990 to 2022. The revisions were made due to new more reliable data sources being used and a change in methodology to provide more detailed data.

Supply

Since 2013, *receipts from other sources – oil* is estimated using the historical relationship with the Oil Questionnaire and extrapolating.

Korea reports production of **natural gas** since 2005.

The *receipts from other sources* from 2006 to 2012 represent the amount of **LPG** that are either blended with **natural gas** or are directly used in city gas distribution networks.

Korea's gas field was end of production on December 31, 2021.

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Transformation

Consumption in *not elsehwere specified (Transformation)* represents gas that is used in hydrogen fuel cell generators.

Consumption

Prior to 2015, energy industry own use in liquefaction plants included losses and measuring errors.

From 1993 to 2006, consumption of natural gas in *transport equipment* is included in the *machinery* flow.

From 1987 to 1991, the breakdown of final consumption has been estimated by the IEA Secretariat, as well as the *residential* subsector for 1992.

No transmission loss has been reported.

Biofuels and waste

General notes

In the 2026 edition, several products and flows were estimated by the IEA Secretariat. As such, the statistical difference may be high due to the adjustments made to data for **municipal waste (renewable), municipal waste (non-renewable)**, and **primary solid biofuels** across the time series. Additionally, the time series for **geothermal** was removed since the data represents ground source heat pumps.

In the 2024 edition, the Korean administration revised the capacity of **hydro** and **wind** for their entire time series, due to new available information.

Due to the change of reporting methodology, breaks in time series may occur between 2013-2014 and 2014-2015.

Heat data are available starting in 1993.

Transformation

Inputs to autoproducer heat plants have been estimated by the IEA Secretariat because of efficiency issues for municipal waste prior to 2011 and in 2012 and for biogas in 2008, 2011 and 2012.

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New plants were included in the Korean survey creating breaks in time series in 2011.

In 2007, some main activity heat plants and autoproducers in the commercial/public services sector were reclassified as main activity CHP plants, resulting in a break in the time series between 2006 and 2007 for **biogases**.

Electricity and heat

General notes

In the 2026 edition, the Korean administration implemented major revisions to both the electricity and heat balances. These changes affected supply, consumption, and the reallocation of generation by plant type. Due to the inconsistencies observed in the revised values, the IEA Secretariat estimatedinputs and outputs by fuel, primarily for oil and renewable products. The Korean administration plans to revise the data in the next reporting cycle.

In the 2024 edition, **heat** production data were revised for all years starting from 1990. The revised data shows considerably higher levels of **heat** production compared to previous records. **Heat** production for numerous products was back calculated using fuel input as a basis. These revisions may have established fixed efficiencies that resemble default values in the calculations. The Korean administration continues its efforts to enhance data quality, and revisions may be made in upcoming cycles.

The significant increase in **heat** production, supply and consequently consumption from 2016 to 2017 can primarily be attributed to the uncertain data situation of **heat** production and **heat** sold from autoproducer plants. These figures are estimated by the Korean administration, as pointed out above, mainly by taking fuel input as a basis.

Electricity statistics from 1971 to 1993 have been estimated by the IEA Secretariat based on the Korean National Statistics. Data from 1994 have been submitted by the Korean administration. This leads to breaks in time series between 1993 and 1994.

Supply

In the 2024 edition, portions of electricity production from **combustible fuels** in autoproducer CHP plants were reallocated to autoproducer electricity plants for all years beginning in 1990.

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The own use of **heat** in heat plants is very irregular due to a lack of data.

Electricity generation reported under *other sources* is from fuel cells.

Production of **tidal** electricity began in 2013.

Data for **heat from chemical processes** that is sold are available from 2008.

Data for electricity production using **heat from chemical processes** in copper and zinc plants are available from 2005. The corresponding heat inputs were estimated until 2013 data. In 2014, the company concerned switched to **diesel oil** for electricity generation.

Transformation

In the 2025 edition, the IEA Secretariat estimated **LPG** and **kerosene** input in terajoules and the electricity and heat generation for main activity producers in 2022 and 2023, in order to ensure consistency for these products between the oil and electricity questionnaires.

For 2020, the increase in electricity output from **nuclear** was due to the 1.4 GW reactor (Singori #4) coming online, as well as higher utilisation rates. For 2018, the decrease in electricity output from **nuclear** was due to a combination of shutdowns for maintenance, and the closure of the Kori and Wolseong nuclear power plants in June 2017 and June 2018 respectively.

For 2018, the increase in heat production from **natural gas** was in part due to the commencement and expansion of operations at two CHP plants (Hwaseong Dongtan and Anyang).

For 2017, the decrease in electricity production from **residual fuel oil** is due to the closure of two main activity producer plants.

Some discrepancies exist between data reported for **residual fuel oil** in the oil databases and the electricity and heat databases. The Korean administration hopes to remedy this situation in a coming cycle.

Data for electricity and heat production by autoproducers using **natural gas** and **liquid fuels** are available from 2000.

In 2000, the Korean administration started to report **heat** statistics for some heat plants which were not reported before.

Between 1993 and 1999, the breakdown of **heat** output by type of fuel was estimated by the IEA Secretariat.

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Consumption

Data for direct use of **geothermal heat** are available from 2002. **Geothermal** direct use data are overstated as it refers to heat production by geothermal heat pumps, which include inputs of electricity and/or gas in the transformation process.

Heat consumption by subsector was reclassified in 2010 due to new information available on heat sales from autoproducers to end-users by sector.

Prior to 2008, sales of **electricity** by Korea's main electricity distributor, KEPCO, to the *non-ferrous metals* sector are included in *iron and steel* consumption.

Data on production and consumption of **electricity** and **heat** in *oil refineries* and *LNG liquefaction/regasification plants* are included in the *industry* sector. From 2007, *oil refinery* **electricity** and **heat** production and consumption started to be reported under the correct energy sector.

Data for **heat** consumption by sector are available from 2000.

Data for **electricity** consumption in the *transport equipment* sector are included in *machinery* from 1994 to 1999.

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Latvia

Source

Central Statistical Bureau, Riga.

General notes

Data for Latvia are available starting in 1990. Prior to that, they are included in Former Soviet Union in the publication World Energy Statistics.

Breaks in the time series appear for inputs to and outputs from electricity and heat generation between 2016 and 2017 due to a change in methodology. This is most notable for main activity producer CHP and Heat plants. Data for 2017 onwards are reported on a unit basis, whereas data for previous years are reported on a plant basis.

Coal

Supply

The increase of distribution losses for **peat** in 2003 is due to a fire in one of the warehouses.

Transformation

In 2024, calorific values of **peat** used for producing **peat briquettes** were revised for years 2020 and 2021, thus bringing the transformation process efficiency back to feasible levels from these years onwards.

Consumption

The drop in the iron and steel industry in 2014 is due to the bankruptcy of the major company in the market.

Oil

Supply

Other hydrocarbons data represent shale oil.

In 2020, changes in the national legislation mandated an increase in the minimum blending of **biofuels**.

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In 2018, amendments to the legislation mandated a biofuel blending target of at least 4.5% of volume for **gas/diesel oil** used in temperate and severe winter conditions leading respectively to an increase of its consumption for *road* transport.

In 2018 one of the main players in marine bunkering at Latvia's largest port ceased operations. As a result deliveries of oil products to marine bunkers decreased in that year. As of 2019 the issues have been resolved and bunkering activity has resumed.

Consumption

In 2022 and 2023, an increase and a decrease are respectively observed in **LPG** consumption for the non-metallic minerals sector. The increase in 2022 can be explained by the spike in **natural gas** prices during the energy crisis with companies switching to **LPG**. In 2023, with prices coming back to lower levels, companies switched back to **natural gas**.

In 2023, the decrease in **fuel oil** consumption for international marine bunkers is due to supply from Russia being stopped.

In 2020, consumption of **LPG** in fishing is reported for the first time as a company changed its type of activity from NACE 1020 to NACE 0311.

Consumption of **LPG** and **bitumen** in mining/quarrying are reported for the first time as an asphalt concrete plant started operating in 2020.

Natural gas

Consumption

The consumption in the *iron and steel industry* decreased in 2014 due to the bankruptcy of the major company in the market.

Transformation

In 2017 there was a steep decrease/break reported in *main activity producer CHP* consumption and a respective increase/break in *main activity producer heat* consumption due to the classification of **natural gas** inputs according to the individual units of the plants instead of the plants as a whole that was previously used.

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Biofuels and waste

Supply

For 2018 data, the increase in the indigenous production of **solid biofuels** is due to wood pellet production.

In 2017, a **biodiesel** producer exported amounts produced in 2017 and also some amounts from stocks.

Transformation

Heat production from **solid biofuels** has increased in 2021 due to a colder heating season. Moreover, many heat producers have increased their input of biofuels compared to other fossil fuels.

Due to a reclassification in 2004, there was break in time series of electricity production from autoproducer electricity plant fuelled by biogas between 2003 and 2004.

Consumption

The increase in consumption of **solid biofuels** in not elsewhere specified (industry) in 2018 is related to increases in the manufacture of furniture sector.

The increase in inland consumption of **biodiesel** in 2018 data is related to the implementation of favourable legislation (the “Biofuel Law”).

From 2014 to 2017, **biodiesel** consumption has been decreasing due to policies which support the sale of arctic diesel fuel without renewable additives.

In 2026 edition, **biogases** used for blending in the gas network were reported for the first time.

Electricity and heat

Supply

In 2019, the first large-scale main activity **solar thermal** district heating plant opened in Latvia.

For 2017, higher rainfall resulted in a significant increase in electricity output from **hydro,** and a decrease in both imports of electricity and output from **combustible fuels**.

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Heat production from *other sources* represents waste heat recovered from industry, and heat produced by condensing economisers.

Transformation

From 2012 onwards, the increase in electricity production from **solid biofuels** is due to the deployment of six new main activity producer CHP plants running on wood chips.

Consumption

Prior to 2020 data, all electricity consumption in the Energy sector was included in own use of electricity in power plants

Prior to 2015 data, electricity consumed by trams at one of Latvia's three tram operators was included under *road.*

For 2012, the increase in electricity consumption in the *iron and steel* sector is due to a facility switching from an open-hearth furnace to an electric arc furnace.

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Lithuania

Source

Statistics Lithuania, Vilnius.

General notes

Data for Lithuania are available starting in 1990. Prior to that, they are included in Former Soviet Union in the publication World Energy Statistics.

Oil

Supply

In 2020, changes in the national legislation mandated an increase in the minimum blending of **biofuels**.

Natural gas

Supply

The export quantities since 2014 represent imported LNG which is regasified and subsequently exported to other countries.

Transformation

Not elsewhere specified (transformation) data represent **natural gas** used for methanol manufacture, which is used as input in oil refineries.

Consumption

Natural gas consumption for power generation has been falling significantly from 2010 onwards as gas-fired power and heating plants are being retired, largely replaced by biomass.

There is a break between 2010 and 2011 in the *not elsewhere specified (energy)* timeseries due to **natural gas** being consumed for heat that was used to destroy radioactive waste after the decommissioning of the only Lithuanian nuclear plant at the end of 2009.

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Biofuels and waste

Supply

In 2019, the increase in the indigenous production of **industrial waste (non-renewable)** is the result of increased data availability.

The production of **charcoal** has been over-estimated prior to 2017 due to the fact that it was not possible to report data less than 1 kt.

Starting from 2016, some **industrial waste (renewable)** was collected via sorting. These wastes consist of non-recyclable paper, textiles and wood wastes and their production is included in **solid biofuels**.

Transformation

In the 2026 edition, there is an increase in the reported efficiency of **primary solid biofuels** for autoproducers of heat.

In 2020, the Kaunas Cogeneration Power Plant, which produces energy from **industrial** and **municipal waste**, became operational. This led to an increase of heat and electricity generated from these products.

The *Fortum Klaipėda* CHP plant produces electricity and heat from **industrial waste (non-renewable)**, **municipal waste** and **solid biofuels** since the end of 2013. Since its inception, structural optimisation has been sought. Additionally, before 2016, calorific values of the fuels were calculated by taking samples of fuels and after this period, calculations were made from steam. For these reasons, there are fluctuations in fuel inputs, energy production and fuel ratios between **industrial waste (non-renewable)**, **municipal waste** and **solid biofuels** since 2013.

In 2013, an incinerator combusting **industrial waste (non-renewable)** and **municipal waste** began operations.

Electricity and heat

Supply

In 2021, there is an increase of electricity and heat production from industrial and municipal wastes. This is due to the Vilnius CHP plant becoming operative.

In 2021, heat production from natural gas and fuel oil increased due to some heat plants using significantly more these fuels.

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In 2020, there is a spike of heat production from autoproducers heat plants in commercial and public services sector. This is due to Forest Investment plant that changed NACE classification

Transformation

For 2022, the decrease of heat output from chemical heat and electricity production from chemical heat is due to the disruption of raw materials supply for the chemical industry. In 2009, the Ignalina nuclear power plant, the only nuclear plant in Lithuania, closed.

In March 2017, the *Geoterma* **geothermal** heat plant, the only geothermal heat plant in Lithuania, closed.

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Luxembourg

Source

STATEC, Institut national de la statistique et des études économiques du Grand-Duché du Luxembourg, Luxembourg.

Coal

General notes

For the 2011 edition, the Luxembourgian administration revised the time series from 2000 for most **coal** and coal products. Time series for **BKB** consumption were revised from 1990.

Prior to 1978, some **sub-bituminous coal** may be included in **hard coal**.

Steel production from blast furnaces ceased at the end of 1997.

Oil

Consumption

In the late 1970s, the reduction in consumption of **fuel oil** in the iron and steel industry was due to substitution by coal.

Supply

Exports of **bitumen** and **LPG** include transit trade. The Luxembourgish administration is currently investigating, and revisions are expected next cycle.

Natural gas

General notes

In 1982 there is a break in the time series in transformation and industry due to a change in methodology.

Transformation

In the 2017 edition a *main activity producer CHP* plant was reclassified as one *main activity electricity producer* plant and one *main activity producer heat* plant. Data were revised back to 2014.

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Since 2002, the increase in the transformation sector is due to a new 350-MW combined cycle power plant.

The last *main activity producer electricity* gas-consuming plant closed in 2016.

Consumption

Between 2020 and 2021 there is a break in the time series of the *industry sector* due to a change in methodology in which energy consumption is estimated at the company level and a NACE reallocation of notable companies.

In 2015, Luxembourg integrated supplementary data from ETS companies and industrial consumption was revised back to the year 2000.

Since 2012, the methodology to determine final consumption was changed in order to integrate basic data from National Accounts.

Since 2000, a more detailed breakdown of final consumption data is available due to a change in methodology.

Since 2000, consumption in the *non-ferrous metals* sub-sector is included in iron and steel for reasons of confidentiality.

Since 2000 consumption in *not elsewhere specified (Industry)* includes activity of companies reclassified to preserve the confidentiality.

Prior to 2000, *residential* consumption includes consumption in *commercial/public services* and *agriculture/forestry*.

Biofuels and waste

General notes

The Luxembourgian administration started including trade figure of wood chips in trade figure of **solid biofuels** from 2015 data. This creates breaks in time series between 2014 and 2015.

Data on **solid biofuels** are available from 1992.

Supply

There was a fire at the co-digestion plant Itzig in September 2018. The plant was not reopened until October 2019, causing a decrease in **biogas** production (specifically: **other biogases from anaerobic fermentation**).

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Transformation

In the end of 2018, there was a fire in one of the main **biogas** plants and it has been off for most of 2019. The most notable effect has been on biogas blending.

In 2011, the blending of **biogases** with **natural gas** started.

Consumption

In the 2023 edition, values for **ambient heat** in the Residential sector were revised back to 2013 due to a new data source.

Electricity and heat

General notes

In the 2024 edition, several values for 2021 were revised thanks to new information available.

Data for **solar thermal** are available starting in 2001 and for **solar PV** starting in 2000.

A revision in the classification of power plants by type and the production and consumption data for both **electricity** and **heat** back to 2000 causes breaks in the time series.

Supply

In the 2025 edition, inputs to heat pumps were reported for the first time. Outputs were estimated using standard efficiencies.

Most of the **hydro** production shown for Luxembourg is from the Vianden pumped storage plant and is exported directly to Germany.

There were some repairs on the upper basin of the **pumped storage** site at Vianden in 2019 leading to a reduction in electricity production. The full storage capacity was not available during this period.

In the 2017 edition, following plant reclassification, **heat** production by main activity plants was revised from 2011 onwards.

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Starting in 2005, data for **electricity** transmission and distribution losses were obtained from the network operator. Prior to that, they were estimated by the Luxembourgian administration.

For Main CHP, own use data are not available for **solid biofuels-** or **natural gas-**fired plants.

Transformation

A **natural gas** fired, main activity electricity plant (TGV Twinerg) closed in 2016.

The production of electricity from **solid biofuels** from 2013 corresponds to the opening of a new plant burning wood wastes.

Data on electricity production from **biogases** are available from 1998 and heat production from 2010.

In 2002, the increase in electricity production is due to a new **natural gas** combined cycle power plant.

At the end of 1997, the *iron and steel* industry stopped production of **electricity**.

Electricity data for **natural gas** autoproducer CHP plants are available starting in 1995, and for main activity CHP plants starting in 1996.

Prior to 1990, **net electricity** production by autoproducers includes production from combustible fuel sources only.

Consumption

Heat consumption in industry and commercial and public services is estimated based on National Accounts. When not available, heat consumption figures for the most recent year reported are estimated based on data for the preceding year.

In 2015, the observed declines in the **heat** used in the *textiles and leather* and *chemical and petrochemical* sectors lead to the closure of two industrial main CHP plants. The heating needs of these sectors were met through direct purchase of natural gas, due in part to attractive pricing during this period.

In 2015, following the procurement of new information, data for **heat** distribution losses and heat consumption in industry and energy sectors were revised from 2000 onwards.

A change in the data source caused some breaks in the industry **electricity** consumption time series between 2010 and 2011.

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The breakdown of **electricity** consumption in industry is not available from 1990 to 1999.

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Mexico

Source

Secretaría de Energía, Mexico City.

General notes

Data are available starting in 1971.

In the 2026 edition, 2024 data have been extracted from the "Balance Nacional de Energía 2024" published by Secretaría de Energía or estimated by the IEA Secretariat based on the data from this energy balance.

The Mexican administration submitted data directly by questionnaire for the first time with 1992 data. As a result, some breaks in time series may occur between 1991 and 1992. For prior years, data are partly estimated based on the publication *Balance Nacional - Energía*.

In the 2016 edition, the Mexican administration completed a major work on revisions of the time series back to 1990. Revisions for some products include reporting of new consumption flows, increased quantities of coal and higher calorific values, resulting in increases of total primary energy supply.

Coal

General notes

The IEA Secretariat has estimated preliminary data for 2024p for all the products because no official mini-questionnaire submission was received by the time the database was finalised. The estimates were based on data published in SENER, INEGI and the IEA Quarterly Coal Statistics.

Since 2024 edition, several products were estimated for the reporting years 2022-2024, using the growth rate from the “Balance Nacional de Energía” published by the “Secretaría de Energía”.

In the 2023 edition, the Mexican administration revised production, blast furnace use in transformation, coke oven energy industry own use and final consumption of **coke oven coke** for 2020 due to new available information.

The time series for **blast furnace gas** and inputs of **coke oven coke** to blast furnaces start in 1991.

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Hard coal data prior to 1978 may include **sub-bituminous coal**.

Supply

In the 2025 edition, the IEA Secretariat estimated **coke oven coke, coke oven gas** and **coal tar** production, transformation and energy use for the data year 2023 based on the figures for “coque de carbón” of the “Balance Nacional de Energía” published by the “Secretaría de Energía”.

In the 2025 edition, **other bituminous coal** imports for 2023, including imports by country of origin, have been estimated by the IEA Secretariat.

In the 2025 edition, **blast furnace gas** production for 2023 was estimated by the IEA Secretariat proportionally to the coke oven coke input to blast furnaces to keep the efficiency of the blast furnaces within the acceptable range.

In the 2024 edition, the IEA Secretariat estimated **coke oven coke** production, transformation and energy use for the data year 2022 based on the figures for “coque de carbón” of the “Balance Nacional de Energía” published by the “Secretaría de Energía”.

In the 2024 edition, the IEA Secretariat estimated **coke oven gas** production for 2022 proportionally to the coking coal input to coke ovens to keep the efficiency of the coke ovens within the acceptable range.

In the 2023 edition, **other bituminous coal** imports for 2021, including imports by country of origin, have been estimated by the IEA Secretariat.

In the 2023 edition, the IEA Secretariat estimated **coke oven coke** production for 2021 based on the figures for “coque de carbón” of the “Balance Nacional de Energía” published by the “Secretaría de Energía”.

In the 2023 edition, **blast furnace gas** production for 2021 was estimated by the IEA Secretariat proportionally to the coke oven coke input to blast furnaces in order to keep the efficiency of the blast furnaces within the acceptable range.

Many coal mining units reduced production during 2019, specifically mines in Coahuilla (the largest coal producer state). This is reflected in the production figures of **coking coal** and **sub-bituminous coal** for that year.

Imports by country of origin for other bituminous coal and coking coal for 2016 have been estimated by the IEA Secretariat, based on partner data.

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Blast furnace gas production and consumption have been estimated by the IEA for 1990 to 2017 based on inputs of coke oven coke to blast furnaces.

Coke oven coke production was estimated by the IEA for some years between 1999 and 2012 based off historical and commodities data, as were inputs of coking coal to coke ovens between 1990 and 2012.

The methodology currently used by Mexico to estimate production of coal tar and coke oven gas for recent years uses coke oven coke production as a guide. This was extended to the time series from 1990 to 2001, and to the years where coke oven coke production was estimated by the IEA.

Consumption

In the 2025 edition, the IEA Secretariat estimated and reallocated the consumption of **coking coal** in coke ovens to the coke ovens own energy use for the data year 2023, because there were no reports of coke oven coke production as described in the “Balance Nacional de Energía” published by the “Secretaría de Energía”.

In the 2025 edition, the IEA Secretariat estimated the consumption of **blast furnace gas** in the Energy sector and Iron and Steel subsector for 2023, following the growth rate from the “Balance Nacional de Energía” published by the “Secretaría de Energía”, to avoid breaks in the time series.

In the 2024 edition, the IEA Secretariat estimated the distribution of demand of **coke oven gas** and **blast furnace gas** in the transformation and Iron and Steel final consumption for 2022, following the growth rate from the “Balance Nacional de Energía” published by the “Secretaría de Energía”, to avoid breaks in the time series.

In the 2024 edition, the IEA Secretariat estimated the **coking coal** consumption on the coke ovens for the data year 2022 following the growth rate from the “Balance Nacional de Energía” published by the “Secretaría de Energía”.

In the 2023 edition, the IEA Secretariat estimated the distribution of demand of **coke oven gas** and **blast furnace gas** in transformation, energy industry own use and iron and steel final consumption for 2021 to avoid breaks in the time series.

The category Non-specified (Industry) in the **coking coal** balance includes the industries of transport equipment, chemical, food and glass. Disaggregated values are not available.

Use of pulverised coal injection in blast furnaces occurs in Mexico, but is not currently reported.

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Oxygen steel furnace gas production and production of **other recovered gases** occur as by-products of heavy industry, but are not reported**.**

For **coking coal,** amounts reported for consumption in main activity electricity generation and associated imports for the years 2003 to 2016 have been reallocated to **other bituminous coal** by the IEA Secretariat.

Oil

General notes

Since the 2021 edition, data from 2018 onwards have been partly-estimated by the IEA Secretariat based on the IEA Monthly Oil Statistics, the Mexican Secretaría de Energía (SENER) national energy balance and submissions by the Mexican administration. In the 2025 edition, 2024 preliminary data was estimated by the IEA Secretariat based on IEA Monthly Oil Statistics.

In the 2016 edition, major revisions were carried by the Ministry of Energy on the time series back to 1990 based on updated information available from PEMEX, the Mexican Institute of Petroleum and the Federal Electricity Commission (CFE). Revisions include notably crude production, refinery output, gas separation plant production, autoproducer generation and road consumption.

New data reported as additives from 1990 correspond to methyl tertiary butyl ether.

From 1993, data for production *from other sources (natural gas)* of other hydrocarbons correspond to hydrogen used at the Minatitlan refinery, also represented as the output of *non-specified transformation* in the balances format.

The split between domestic and international aviation consumption of kerosene-type jet fuel is not available. By default, all kerosene-type jet fuel consumption is reported under international aviation.

Supply

In 2017 Minatitlán refinery was offline for several months and later operating well below capacity as a result of an accident on site. The refinery at Tula was also temporarily offline. Both these events impact refinery throughput in 2018.

Refinery intake of **crude oil** was estimated by the IEA Secretariat for the years 2016, 2017 and 2018 based on growth rates from SENER and PEMEX published data.

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In 2017, production of **crude oil** and **NGL** was impacted by heavy maintenance at the Ku-Maloob-Zaap field and decline at the Cantarell field in the Gulf Mexico which was affected by several force majeur events.

For 2017 import data of **LPG**, **naphtha**, **road diesel** and **fuel oil**, the received data was supplemented with estimates by the IEA Secretariat based on published data from SENER.

2017 to 2022 imports of **petroleum coke** were estimated by the IEA Secretariat based on information from the U.S. Energy Information Agency and the national energy balance.

From 2016 onwards trade information is based on daily customs data now available to the Ministry of Energy. Historical revisions are pending.

The large refinery losses from 2005 onwards are the result of the downward revisions to refinery output of **gas/diesel oil** carried out in 2017.

NGL production reported in the IEA publications may be different from what is reported in the Mexican energy publications as the IEA includes in its oil data liquids produced in conjunction with natural gas.

In the 2016 edition, main revisions were carried to **NGL**, **LPG**, **naphtha**, **ethane** supply. New data became available on input of NGL to refineries prior to 2011. Data on ethane production from gas separation plants (positive transfers from NGL) was revised upwards for 1990 to 1998. LPG gas separation plant production was revised down. Naphtha refinery output was revised upwards from 1990.

Transformation

In the 2026 edition, the inputs of gas diesel and residual fuel oil to electricity and heat plants for years 2017 to 2024 were estimated by the IEA Secretariat, in accordance with input and output data published in the electricity databases.

For several months in 2017, the Salina Cruz refinery was under extensive maintenance following operational problems and structural damage as a result of the September 2017 earthquake, affecting refinery inputs and outputs.

The Madero refinery closed for maintenance in August 2017 and remained closed through the start of 2018, affecting refinery inputs and outputs.

2017 refinery gross output of **gas/diesel oil, bitumen, lubricants and paraffin waxes** was estimated by the IEA Secretariat based on SENER and PEMEX published data.

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In the 2016 edition, data for crude oil refinery input and refinery output of **gas/diesel**, **naphtha**, **refinery gas**, **bitumen**, **paraffin wax** and **other products** were revised back to 1990 (see general notes).

Data for **fuel oil** and **gas/diesel** inputs to autoproducer CHP generation are available from 1999.

In 2003, a new facility was added to a refinery to produce **petroleum coke.**

Consumption

In the 2026 edition, the split of domestic versus international aviation jet kerosene consumption was estimated by the IEA secretariat from 1990 onwards.

In the 2026 edition, the road consumption of diesel oil was estimated by the IEA secretariat for years 2020 to 2024.

2017 consumption of **naphtha** for feedstock purposes in the chemical and petrochemical sector was estimated by the IEA Secretariat based on ethylene production figures.

Consumption of **motor gasoline** and **road diesel** was impacted by changes to fuel subsidies introduced on January 1, 2017.

Consumption of **lubricants** and **bitumen** for 2017 was estimated by the IEA Secretariat based on sales data from SENER.

In the 2016 edition, **naphtha** non-energy use consumption in the chemical/industry was revised significantly revised down from 1990 to 2008 based on PEMEX information.

In the 2016 edition, **gas/diesel** and **motor gasoline** road consumption data were revised back to 1990 based on updated information from the Mexican Institute of Petroleum and PEMEX.

Consumption of **lubricants**, **bitumen** and **paraffin waxes** are available from 1990 and **petroleum coke** from 1993.

Prior to 1987, the split of **LPG** consumption between residential and commercial/public services has been estimated by the IEA Secretariat.

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Natural gas

General notes

Natural gas reported in the IEA publications may be different from what is reported in the Mexican energy publications, as IEA includes only dry gas and excludes natural gas liquids, which are considered as part of oil.

In the 2026 edition, most flows were revised for 2010-2023 according to the revisions in Balance Nacional – Energía. Some of the 2024 data are estimated by the Secretariat to align with previous trends in the time series.

Supply

In the 2025 edition imports from the US for 2022 and 2023 were considerably lower than expected compared to the official values in national balance and historical values, and they were adjusted using the US values that was submitted officially by the US as exports to Mexico.

For the preliminary 2024 data, the IEA Secretariat had to perform estimations based on various governmental sources.

Consumption

In the 2026 edition and 2025 edition, inputs into main activity electricity producers, electricity autoproducers and CHP autoproducers for 2023 and 2024 were estimated by the IEA Secretariat.

Losses and pipeline transport are included in oil and gas extraction.

From 1993 to 1999, part of energy industry own use and *non-specified industry* data were estimated.

Since 1993, the breakdown of the *energy sector* and of other sectors is available.

Biofuels and waste

General notes

2021 data were estimated by the IEA Secretariat.

For the 2020 July edition, new data supplied by the Mexican administration for 2018 and 2019 were incorporated in place of previous estimates.

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The Mexican administration believes the fuels categorised as **industrial wastes (non-renewable)** are likely residual gas, however more investigation is needed. Revisions, if applicable, are expected next cycle.

In the 2025 edition, **solar PV** capacity breakdowns for 2023 data were prorated using the previous year's ratio.

Supply

Prior to 2017 data, some **bagasse** production has been attributed to **other vegetal materials and residues**. This causes a break in series between 2016 and 2017. Revisions prior to 2017 are expected in the future.

Data for **bagasse** production are available from 2008.

Transformation

In the 2025 edition, the outputs of **biogases** and **primary solid biofuels** are estimated by the IEA Secretariat.

In the 2024 edition, main activity producer electricity input and output and autoproducer electricity use of **primary solid biofuels** for 2022 have been estimated by the IEA Secretariat based on information from the national energy balance 2022 published by the Secretaria de Energia (SENER).

In the 2022 edition, **solar PV** capacity data for 2019 and 2020 and **wind** capacity for 2020 were estimated by the IEA Secretariat.

Consumption

Increased consumption in the industry and transformation sectors for **solid biofuels** in 2017 is attributed to **bagasse**.

Data for **solid biofuels** used in autoproducer electricity plants from 1991 to 2005 have been estimated by the Mexican administration.

Data on **biogases** consumption are available from 1997.

Electricity and heat

General notes

In the 2026 edition, the IEA Secretariat estimated all the values for 2024 based on *Balance Nacional de Energía* of the Secretaría de Energía, and other sources.

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Since the 2023 edition, some 2021, 2022 and 2023 data were estimated by the IEA Secretariat based on various editions up to 2023 of the Balance Nacional de Energía of the Secretaría de Energía, and other sources.

In the 2023 edition, data for 2018-2020 were revised based on new data provided by the Mexican administration.

For the 2022 edition, due to data availability issues, some data provided by the Mexican administration for 2020 were equal to the values for previous years.

For the 2020 July edition, new data supplied by the Mexican administration for 2018 and 2019 were incorporated in place of previous estimates.

The Mexican administration is currently undertaking revisions of the **electricity** time series back to 1996. Revisions include changes on inputs and outputs on power plants fuelled mainly by **combustible fuels** and the reclassification of main electricity plants previously reporting **sub-bituminous coal** as fuel to **other bituminous coal** for the period 2003-2015.

Supply

Electricity generation from **other sources** mainly represents generation from recovered waste heat from industry, and also a small amount of electricity production from regenerative braking in suburban trains.

The decrease in electricity produced from **wind** in 2017 is due to an earthquake which damaged infrastructure in the south of the country.

Production of main activity producer electricity plants from **wind** is available from 1994.

Electricity production from **wind** and **solar photovoltaic** is available from 1990.

Discrepancies occur between respective reported figures for electricity trade between the US and Mexico from 2013 onwards.

Transformation

New autoproducer electricity plants fuelled with **coke oven gases** were put on-line in 1999.

Electricity production from **solid biofuels** and **biogases** data are available respectively from 1991 and 1997.

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Consumption

Some electricity consumption in energy industry is included in the industry sub-sector where it was generated (e.g. the chemical industry, as well as in *non-specified industry*).

Direct use of **solar thermal** heat is available from 1990.

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Netherlands

Source

The Netherlands Central Bureau of Statistics, The Hague.

General notes

The Netherlands Central Bureau of Statistics has conducted reviews and revisions of their energy balance three times; in 2005, 2011 and 2015. The 2005 revisions were to improve basic energy statistics, particularly with respect to carbon and CO_2 reporting, while the 2011 revisions were part of a harmonization program with international energy statistics. The 2015 revisions were the result of increased data collection, availability of new source information, and further alignment with international energy definitions. More details are available here: www.cbs.nl.

Coal

General notes

International trade into and through the hub ports of Amsterdam and Rotterdam is complicated by the capacity to purchase coal directly at these points. The majority of coal passing through these ports is intended for consumption in European countries other than the Netherlands, which is neither the country of origin or destination, therefore these data have been removed where possible. In the 2019 edition, the Central Bureau of Statistics proceeded to major revisions of trade and stock changes for anthracite, coking coal, other bituminous coal and lignite since 1990. Imports now should only relate to coal for inland consumption according to Eurostat's statistical regulation, thus eliminating transits to other countries and stock changes of trading companies.

In the 2023 edition, there were small revisions of production, trade, transformation and final consumption flows for several products between 2015 and 2020, due to improved statistical methodology and new available information.

Following revisions made in the previous edition to data for 1995 onwards, this edition includes further revisions made by the Dutch administration for the period 1990 to 1994. These revisions are the result of increased data collection, availability of new source information, and further alignment with international energy standards.

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Supply

In the 2023 edition, some imports and the blast furnace (transformation) consumption of **anthracite** for 2012 and 2013 were re-allocated to **coking coal**, due to new information available.

In the 2013 edition, non-specified exports for 2011 were estimated by the Central Bureau of Statistics due to a lack of information from key market players.

For data prior to 2011, stock changes for primary coal types were estimated by the Dutch administration based on trade and consumption data.

For 1984 to 1986, production *from other sources* of **other bituminous coal** represents a stock of "smalls" washed for re-use.

Transformation

In the 2023 edition, the Dutch administration extended the revisions of blast furnaces, coke ovens and iron and steel flows back to 1990. These affected **coke oven gas** and **blast furnace gas** energy industry own use and final consumption in iron and steel industry.

In the 2022 edition, revisions back to 2015 were made in the reporting of blast furnaces, coke ovens and iron and steel industry, due to improved observations of an industrial complex.

At the end of 2015 three low-efficiency plants running on bituminous coal input closed down. In the course of 2017 another two old installations ceased operating. These closures were part of the so-called Agreement on Energy for Sustainable Growth in the Netherlands agreed upon by the Social and Economic Council of the Netherlands (SER) and more than forty representative organisations and stakeholders.

Consumption

In 2019, the consumption of **lignite** decreased significantly as result of a company partly ceasing activities. That company totally ceased its activities in 2020.

Prior to 1989, non-energy use is included with industry consumption.

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Oil

General notes

In 2017, large amounts of **fuel oil** were reclassified as other products due to their chemical properties.

Data for gas/diesel road consumption become more difficult to collect in 2013, as the distinction in taxation between road diesel and gasoil was abolished.

Following revisions made in the previous edition to data for 1995 onwards, this edition includes further revisions made by the Dutch administration for the period 1990 to 1994. These revisions are the result of increased data collection, availability of new source information, and further alignment with international energy definitions

Motor gasoline includes other light oils until 1990.

Some breaks in time series occur in 1990 when the Dutch administration started to report the petrochemical industry according to IEA methodology.

From 1990 onwards, naphtha includes aromatics, naphtha and other light oils.

Some non-specified trade flows by countries are negative, probably due to balancing totals by products. The issue is currently being investigated with country reporting authorities.

Supply

Trends in the supply of **other oil products** in 2020 are confirmed by the Dutch administration to be the result of companies sometimes reporting highly-aromatic **fuel oil** into this category.

In the 2021 edition, stock changes of **bitumen** for 2018 and 2019 are estimated by the IEA Secretariat.

Data for deliveries of fuel oil to international marine bunkers were revised downwards in the 2019 edition back to 2015. This was due to an improvement in the underlying data and figures available to CBS Statistics Netherlands.

In 2017 the main plant producing **lubricants** closed as a result there is no more refinery gross output of this product.

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Consumption

In the 2026 edition, and from 2022 onwards, **petroleum coke** demand in the iron and steel sector is confidential.

In the 2023 edition, the Dutch administration introduced several revisions back to 1990, in particular for **gas/diesel oil** sectoral inland consumption. The bottom-up analyses were done on the basis of new research of this oil product's use by mobile equipment.

Consumption of **fuel oil** for fishing in 2020 is zero as fishing boats switched to **gas/diesel oil**.

In the 2019 edition several revisions were introduced to flows relating to the chemical and petrochemical industry. Energy consumption in the chemical industry has been revised upwards back to 2012, following an internal audit of the data that revealed gaps in coverage. Non-energy consumption in the chemical industry has been revised downwards back to 1990 following a review of the data submitted by one of the main companies.

Refinery gas includes chemical gas and is included in chemical industry consumption.

Natural gas

General notes

In the 2018 edition, the Dutch administration revised the supply side data for 1990-2016 in order to (i) better account for flows from underground storages which used to be incorporated in the *indigenous production* data, and also (ii) handle inflows/outflows of **natural gas** stored in Germany as imports/exports.

In the 2019 edition, the Dutch administration revised the *opening and closing stock levels* based on a dedicated questionnaire used. Additionally, industrial consumption was revised since 2012 based on inputs coming from the Emissions Trading Scheme (ETS) data

Between 1981 and 1982, and between 1983 and 1984 there are breaks in time series due to the introduction of more comprehensive surveys on end-use consumption.

Supply

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LNG Imports data are obtained directly from customs by Statistics Netherlands, as a result there may be the reporting of *imports* from countries which do not produce **natural gas**.

In the 2023 edition, trade methodology was updated to eliminate the reporting of transit trade with Belgium, this has resulted in a break in the time series between 2016 and 2017.

A production cap of **natural gas** was set by the government in 2015, which has been extended and gradually tightened for 2016, 2017 and 2018.

In the past, the amounts reported under *indigenous production* also included quantities coming from *stock changes*. The reason was that the Dutch administration could not distinguish between quantities of **natural gas** falling under marketable production and amounts being moved from offshore fields to onshore fields without undergoing any purification and/or other necessary production processes. From 2015, the data reported distinguish between amounts to be reported as production and amounts that should be classified as stock changes.

International marine bunkers were reported for the first time in the 2019 edition.

Transformation

Data for *non-specified (energy own-use)* represent **natural gas** combusted by the distribution operator for the purpose of operating the gas distribution grid.

The 2009 increase in input to *main activity electricity producer* consumption is due to the opening of a new plant in the second half of 2008.

Consumption

Data for the *non-specified (other) non-energy use* represent the volume of gas injected as *cushion gas* in a new underground storage.

Biofuels and waste

General notes

In the 2024 edition, the Dutch administration revised several flows and products from 2015 due to both new available information and changes in their data extraction processes.

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Supply

In the 2026 edition, efficiency of autoproducers heat plants using **industrial waste** are low due to a small number of companies on the market using variable inputs into the heat production.

In the 2024 edition, production of **other vegetal materials and residues** (part of solid biofuels) was revised by the Dutch administration for 2021 to ensure consistency with the data from the new biomass questionnaire. This causes a break in the time series between 2020 and 2021, but the same approach is likely to be extended back to 2015 data in the next cycle.

Increases in **biodiesel** production for 2017 are related to increased capacity of existing plants and increased demand.

From 2009 to 2012, and again from 2014 the production and trade of pure **biogasoline** were confidential; net imports were estimated by the Dutch administration based on consumption.

Transformation

In 2023 use of **primary solid biofuels** as input to electricity and heat plants has decreased due to the surge in modern renewables generation.

The imports of **wood pellets** are up in 2018 due to the renewed subsidy for co-firing of biomass at energy plants.

In 2017, the increase in heat production from **solid biofuels** in main activity CHP plants is because there were two additional companies reporting data.

Trade data for **municipal waste** are available from 2011.

Consumption

In the 2025 edition and for 2023 data, the Dutch administration used a new sectoral division for the industry consumption of **primary solid biofuels**, causing breaks in the time series between 2022 and 2023. In the next cycle this methodology will be applied also to the previous years.

In the 2020 edition, there was a revision from 1990 to 2017 of the consumption of **solid biofuels** in the residential sector.

From 2014, a better allocation of heat own-use was available for **biogas** digester prewarming, and in **municipal waste** burning plants for flue gas cleaning.

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The final consumption of **solid biofuels** in the residential and agriculture sector increased in 2014 and again in 2016 due to the results of new surveys and parameters.

Electricity and heat

General notes

In the 2025 edition, data for 2015 – 2021 were revised thanks to new data availability.

In the 2016 and 2017 editions, data for the years 1990-2013 were revised by the Dutch administration following an extended review of old national publications and new data obtained from grid operators.

Supply

In 2019, the Dutch administration revised *transmission and distribution losses* of **heat** back to 2015 to incorporate improved data. As a result, there a break between 2014 and 2015. Historical revisions are pending.

For 2018, the increase in electricity output from **Solar** PV autoproducer electricity plants is in part due to the inclusion of solar on industry surveys. As a result autoproduction in various industries was captured for the first time.

For 2018, the declines in heat generation from **municipal waste**, and heat used for electricity generation, and also the increase in electricity output from municipal waste, are due to a change in ownership of a company which sold heat.

Data on **heat** production from chemical sources are available from 2017.

The decrease in electricity production from **nuclear** power in 1997, 2013, and 2017 is due to maintenance shutdowns at the Netherlands' only nuclear power plant.

Electricity **from other sources** represents generation from expansion gases and chemical waste gases.

The large increase in **electricity** trade in 1999 is due to the liberalisation of the Dutch electricity market. Until 2003, trade data are based on contracted quantities instead of physical flows.

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The increase of **heat** produced in main heat plants in 1995 is due to a change in ownership of one large installation, resulting in its reclassification from being an autoproducer to a main activity plant.

Electricity production from **solar photovoltaic** is available from 1990.

Transformation

For 2019, the increases in **electricity** output from **other sources**, and heat output from **chemical heat** are in part due to improved data availability.

Data on electricity and heat output from **industrial waste** are available from 2015.

In mid-2017, two **other bituminous coal**-fired power stations closed, as a result output from other bituminous coal declined in 2018. Another plant closed in-late 2019.

The efficiency of **blast furnace gas**-fired autoproducer CHP plants increases between 2015 and 2016 due to improved methods for allocating inputs between sold and unsold heat.

Heat output from **chemical heat**, and **other sources** is available from 2015.

Electricity output from **other sources** refers to production from expansion gases and recovered heat.

Heat used for electricity production represents waste heat bought from other industries that was generated from **combustible fuels**. The corresponding electricity output is included with that of **natural gas**.

Autoproducer heat plants using **refinery gases** are included with autoproducer CHP plants because data are considered confidential for 1990.

Heat production in commercial and public services includes production in agriculture.

All **municipal waste** autoproducer electricity and heat only plants have been reclassified by Statistics Netherlands as autoproducer CHP from 2012, causing breaks in the time series.

Prior to 2008, a few small autoproducer electricity plants using **solid biofuels** were included with main activity plants for reasons of confidentiality.

In 2006, some **municipal waste** plants changed ownership and were reclassified from electricity only to CHP plants as they started heat projects.

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A new main activity producer CHP plant fuelled by **refinery gas** started up in 1999 and there was a fuel reclassification in 2000.

For **natural gas**, all electricity production prior to 1998 is included in CHP plants.

For **biofuels and waste**, all electricity and heat produced prior to 1995 is included in CHP plants.

Data for heat produced from **biofuels and waste** are available from 1990.

Prior to 1990, all electricity and heat produced from **coal** is included in CHP plants.

Inputs of **hard coal** for electricity production from 1981 to 1989 in terajoules (TJ) are estimated by the Secretariat based on data submitted in kilotonnes (kt) by the Dutch administration.

Net electricity production by autoproducers prior to 1988 includes production from **combustible fuel** sources only.

Data for **heat** production by fuel in heat plants prior to 1987 are estimated by the Secretariat based on fuel inputs submitted by the Dutch administration.

Data for **heat** production from main activity producer CHP plants and heat plants are available from 1982.

Prior to 1982, **electricity** production from and inputs to main activity producer CHP plants are included with main activity producer electricity plants.

For 1970 to 1973, **electricity** output from autoproducer CHP plants has been included with main activity producer CHP plants.

Consumption

In the 2023 edition, the Dutch Administration revised data for electricity consumption in the *Blast furnace* and *Iron and steel* sectors for the period 1990-2014. This followed revisions to data for 2015-2019 in the 2022 edition.

In 2018, the decrease in **heat** used for electricity generation was due to the closure of a large installation.

In 2018, there were four new **geothermal** installations producing heat which warmed greenhouses. As in the past, these would be categorised in the *agriculture and forestry* sector.

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For data from 2015 onwards, there is improved data availability for **heat.** This causes breaks in series for *transmission and distribution losses*, and heat consumption in the *non-ferrous metals* sectors.

Increasing **electricity** consumption in agriculture and forestry is due to expansion of greenhouse farming.

Direct use of **geothermal heat** in agriculture/forestry starting in 2008 is due to a new project extracting deep **geothermal** heat. The heat produced has been used for heating greenhouses.

Prior to 1979, **electricity** consumption in agriculture is included in commercial and public services.

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New Zealand

Source

Ministry of Business, Innovation and Employment, Wellington.

General notes

Prior to 1994, data refer to fiscal year (April 1993 to March 1994 for 1993). From 1994, data refer to calendar year.

Coal

General notes

In the 2023 edition, the calorific values of **sub-bituminous coal** for all flows were revised by the New Zealand administration for 2019 and 2020, due to a correction in the reporting methodology of one major producer.

In the 2021 edition, the New Zealand administration provided revisions for some flows back to 2009.

In the 2020 edition, the New Zealand administration has done historical **revisions** on the data as a new data system and methodology was implemented.

In the 2020 edition, some high **statistical differences** can be found for many types of coal in various time periods.

Peat, although produced in New Zealand, is not used as a fuel, and is used for agricultural purposes only.

In the 2014 edition, the definition of **hard coal** was aligned with the International Recommendations for Energy Statistics. Prior to this, **hard coal** for New Zealand from 1960 to 1977 had contained **sub-bituminous coal**. The portion of **sub-bituminous coal** production and residential consumption has been estimated by the IEA Secretariat for this period and moved to **brown coal**.

In the 2011 edition, the New Zealand administration has revised some of the **coal**, natural gas, oil, renewable and electricity time series back to 1990.

Supply

In the 2021 edition, a mine was reclassified from **other bituminous coal** to **sub-bituminous coal**. The time series was revised accordingly.

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In 2018 a mine of **other bituminous coal** that was not in production in 2017 restarted activity.

In 2017 the underground mine producing coking coal switched to opencast operation.

The decrease of **other bituminous coal** production in 2015 is due to a temporary shutdown in one of the coal mines at the beginning of 2015 and another one at the end of 2015.

A detailed breakdown of exports of **coking coal** by country of destination between 2001 and 2011 is estimated by the IEA, based on secondary sources and partner data.

Transformation

Sub-bituminous coal inputs into coke ovens refers to coal that is merged with iron sands and limestone to form the inputs for the multi-hearth-furnaces, kilns and melters that produce direct reduced iron (Glenbrook Steel Site), with off-gases and supplemental and natural gas driving CHP plants. This method, while not the typical iron and steel process, produces similar by-products. The **sub-bituminous coal** inputs are reported under coke oven coke transformation and the resulting off-gases are reported as production of **coke oven gas** and **blast furnace gas**.

Blast furnace gas production and distribution losses prior to 1998 are IEA Secretariat estimates. Portions of this gas will have been used for energy purposes in the multi-hearth furnaces or elsewhere in the plant. Some transformation efficiencies will appear higher than normal due to non-reporting of certain inputs, including some confidential data.

Consumption

In the 2020 edition, some quantities of **sub-bituminous coal** that were previously reported under **other bituminous coal** were moved under **sub-bituminous coal**. This reclassification led to a break in the consumption time series between 2018 and 2019 as the new classification starts in 2019.

In 2018, some **other bituminous coal** quantities previously reported under non-specified were reallocated into industry sectors.

In final consumption, some industry data are reported in *non-specified industry* for confidentiality reasons.

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In 2014, the increase in consumption of **sub-bituminous coal** in mines included the combustion of some unsold coal fines for safety reasons.

Prior to 2010, the construction sector is included with commercial/public services.

Prior to 2009, mining and quarrying is included in agriculture.

Oil

General notes

Breaks appear between 2017 and 2018 for **other oil products** as a result of improved reporting infrastructure by the New Zealander administration.

For 2016, the following data were estimated by the IEA Secretariat: consumption of **lubricants**; imports of **bitumen;** and refinery output, and interproduct transfers of **other oil products**.

For 2015, the following data were estimated by the IEA Secretariat: stock changes and consumption of **lubricants**; consumption of **bitumen**, and all figures for petroleum coke and **other oil products**.

From 1998, **gas/diesel oil** includes light fuel oil. Until 1997, light fuel oil is under fuel oil.

Until 1997, other hydrocarbons from natural gas sources correspond to synthetic gasoline production (ceased in February 1997).

For reasons of confidentiality, beginning in 1994, the New Zealand administration no longer reports data on the production of methanol.

Supply

In 2024, **bitumen** import data are incomplete due to an interruption in imports from a major supplier and the addition of new ones. The New Zealand administration plans to address this issue in future editions.

In the 2022 edition, receipts from renewables of **biodiesel** for blending with transport fuels are not available for 2019 and 2020 according to the New Zealander administration. This can result in unexpected supply values. Revisions are expected next cycle.

In the 2021 edition, the New Zealander administration revised stock changes for several primary and secondary oil products for as early as 2014 onwards.

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In 2019, New Zealand no longer produces **lubricants**.

Between 2013 and 2014, the jump in imports of **kerosene-type jet fuel** can be explained by an anticipated strike at the refineries.

Transformation

New Zealand's last major refinery (Marsden Point refinery) ceased operations in 2022, leading to the disappearance of most of the transformation activity from 2023 on.

In 2020, **gas/diesel oil** inputs for electricity production are confirmed by the New Zealander administration to be higher than usual due to generator testing. Furthermore, input of **gas/diesel oil** for CHP production in 2020 is zero.

Consumption

In the 2026, the New Zealand's administration changed their methodology for reporting oil included oil products purchased at service stations and used for recreational marine purposes. From 2023 onwards, the quantities of **motor gasoline** and **gas/diesel oil** are included under domestic navigation.This leads to a break in the timeseries of these two products between 2022 and 2023.

Between 2009 and 2010, a break in time series appears for demand of **gas/diesel** as the administration changed its methodology for commercial/public services

For 1960 to 1973, consumption data have been estimated by the Secretariat.

Natural gas

General notes

In the 2025 edition, most of the data submitted for 1990 to 2022 was revised due to the adoption of an improved methodology for filling out the natural gas questionnaire.

2018 data were estimated based on monthly data submitted to the IEA Secretariat.

Between 2012 and 2013 there are breaks in series for the final consumption breakdown due to the introduction of a new survey.

From 1977 to 1979 and from 1986 to 1989 *transmission and distribution losses* are included in the *statistical difference*.

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Supply

There are neither imports nor exports of **natural gas** for New Zealand.

Transformation

The large 1998 increase in input to *autoproducer CHP* plants is due to two new autoproducer CHP plants.

In February 1997, production of synthetic **gasoline** from **natural gas** ended.

Consumption

Between 2012 and 2013 there are breaks in time series for the final consumption breakdown due to the introduction of a new survey.

In 2005, the decline in *chemical and petrochemical* industry consumption was due to the closure of the Motunui methanol production plant, which was then reopened in late 2008.

Prior to 2003, gas consumed in industry includes some gas for *energy industry* own-use. Since 1990, detailed consumption breakdown for industry is available. From 1977 to 1979 and from 1986 to 1989, losses are included in *statistical differences*.

Biofuels and waste

General notes

In the 2025 edition, the New Zealand administration changed the reporting of solar PV data from DC to AC.

In the 2024 edition, the New Zealand administration revised supply and final consumption of **primary solid biofuels** and added **charcoal** data for the entire time series, due to new available information.

In the 2020 edition, extensive revisions were made for the time series back to 1990. The majority of the revisions were related to transiting the New Zealand data system from excel based to R based.

In 2023, electricity from **primary solid biofuels** was reported for the first time for main activity producer electricity, due to a trial biomass burn conducted as part of an investigation into alternative fuels. This trial was not continued thereafter.

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For the 2019 edition, the New Zealand administration submitted extensive revisions back to 1990 following an internal review of their systems and methodologies.

Due to improved wood data collection starting with 2016 data, increases in **solid biofuels** in transformation, supply and consumption may not be a true increase but more representative of increased data survey respondents. This results in a break in time series between 2015 and 2016.

Supply

In the 2026 edition, revisions were made to **biogas** production time series following a review of plant-level electricity generation.

Transformation

In the 2022 edition, data on fuel input and electricity generation from **solid biofuels** CHP auto-producers were revised thanks to a multi-year programme of work that the administration undertook to improve solid biofuels statistics.

In the 2019 edition, data on electricity production from **biogases** were significantly revised by the New Zealand administration following an internal review of systems and methodologies.

Consumption

In the 2020 edition, the repetition of data is an estimate by the New Zealand administration for the consumption of **biogases** in the *food, beverages and tobacco* sector for the years 1990 to 2018 due to unavailability of data. The same is true for the consumption of **biogases** in the *commercial and public services* sector from 2007 to 2018.

In the 2026 edition, revisions were made to residential **charcoal** consumption, correcting earlier submissions that were reported in tonnes rather than TJ on NCV basis.

Electricity and heat

General notes

For the 2020 and 2019 editions, the New Zealand administration submitted extensive revisions back to 1990 following an internal review of their systems and

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methodologies. For **solar PV**, the source data, Electricity Market Information, changed their entire time series. Data may be further revised in future editions.

There are several breaks in the time series between 1987 and 1988 due to a reorganisation of government departments during 1987.

Supply

In the 2026 edition, revisions were made to **hydro**, **solar PV**, and **geothermal** *production* following a review of plant-level electricity generation. Revisions also apply to **solar PV** installed capacity.**Heat** outputs from main activity and autoproducer CHP plants are not available.

Electricity and heat production from other sources represents waste heat recovered and used for electricity production. This includes **heat** recovered from chemical processes at acid plants in the fertiliser industry, where sulphur is the main input.

Only net **electricity** production is collected for some plants such as **combustible fuels** autoproducer CHP and electricity plants. As a result, **electricity** own use in these plants is estimated by the New Zealand administration.

Transformation

For 2018, a shortage of **natural gas** resulted in decreased use of natural gas for electricity generation, and increased use of **sub-bituminous coal**.

In late 2015, two **natural gas** fired power stations used for baseload demand closed. As the remaining natural gas-fired plants are used more for peak demand, there is a reduction in generation efficiency between 2015 and 2016.

Stable efficiencies are reported for a range of fuels and plant types based on historical estimates by the New Zealand administration including **biogas** autoproducer chp and electricity plants, **gas/diesel oil** main activity producer CHP and autoproducer chp plants as well as **natural gas** autoproducer electricity plants.

In 1999, a reclassification of autoproducer plants causes some breaks in the time series.

Data for **geothermal** electricity production by autoproducers are available from 1990.

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The New Zealand administration has updated efficiencies for **electricity** production from **geothermal heat** from 10% to 15% from 1990 onwards; this causes a break in the time series between 1989 and 1990.

In the 2018 edition, revisions in electricity production in **hydro** plants back to 2002 are related to a change in methodology. This results in a break in time series between 2001 and 2002.

Electricity production by autoproducers from **natural gas** and from **oil** has been estimated by the Secretariat from 1970 to 1973.

Consumption

The only remaining oil refinery closed during 2022.

A new survey starting with the 2013 data can cause breaks in data for final consumption of **electricity**.

The consumption of **electricity** by the transport sector is collected under the Australian and New Zealand Standard Industrial Classification (ANZSIC) 2006 system's "Transport, Postal and Warehousing" category. As this covers commercial services as well as transport, MBIE estimates the amount of this that can be allocated to transport. At present this data does not allow for the disaggregation by transport sub-sector.

Beginning in 2013, the falling **electricity** consumption in the *pulp, paper and printing* sector follows with the permanent closure of a paper machine in one of New Zealand's larger energy users, following decreased demand for newsprint.

Data on direct use of **geothermal heat** are available from 1990 and direct use of **solar thermal heat** from 2002.

From 1974 to 1993 *transmission and distribution losses* include statistical differences.

The classifications used by the administration of New Zealand were changed in 1991.

Electricity consumption in *pulp, paper and printing* is included in *wood and wood products* prior to 1990.

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Norway

Source

Statistics Norway, Oslo.

General Notes

In the 2018 edition, data for Norway were revised back to 2010, following the introduction of a new system for energy balances and energy accounts. Breaks in series may appear between 2009 and 2010 as a result. For more detailed information regarding the methodological changes, please refer to the documentation of statistics production since statistics year 2010 on the Statistics Norway website. At the time of writing, the document was available in Norwegian as “Dokumentasjon av statistikkproduksjonen fra statistikkår 2010 og fremover”.

Coal

General notes

Other bituminous coal includes **lignite**.

Production of **coking coal**, **coke oven coke** and **coke oven gas** ceased in the late 1980s.

Supply

In 2022 a large **blast furnace gas** producer that did not operate in 2020 and 2021 restarted production and sales of **blast furnace gas**.

A downward trend of **other bituminous coal** production started in 2017.

The decrease of **other bituminous coal** production in 2015 is due to a temporary shutdown in one of the coal mines.

The decrease of **other bituminous coal** production in 2005 is due to a fire in one of the coal mines; this entailed a break in the production for a large part of the year.

Consumption

In 2022, a company restarted operating of a blast furnace after the closure in 2020 and sold part of the produced **blast furnace gas** to the chemical industry.

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Oil

General notes

In the 2022 and 2023 editions, as part of the continuing efforts for data improvement, the Norwegian administration introduced revisions back to 2010 due to methodological changes and new sources. There may be breaks for some products and flows between 2009 and 2010. Additional revisions are expected in the next edition.

Prior to 1990, **ethane** is included with **LPG**.

Supply

In the 2023 edition, the Norwegian administration introduced revisions back to 2010 for indigenous production and exports of **crude oil**. There may be breaks between 2009 and 2010.

Due to refinery maintenance, refinery output of several oil products decreased in 2019.

In the 2021 edition, indigenous production of **additives/oxygenates** decreased due to a change in reporting methodology by the Norwegian administration.

In 2017 the Goliat field was offline from September through October for planned and unplanned maintenance.

Crude oil production includes condensates.

Starting with 2014 data, Statistics Norway has changed the source for annual **crude oil** exports to include shipping information collected by the National Petroleum Directorate.

Starting from 2014 data, there is a break in **naphtha** supply time series due to a change in reporting methodology adopted by Statistics Norway.

Prior to 2002 data, a part of **LPG** exports was reported as **NGL** exports.

Since 1986, imports of **refinery feedstocks** are reported under the relevant oil product imports.

Transformation

In 2016 the Slagen refinery underwent maintenance which led to a decrease in refinery throughput for that year.

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In 2014, the strong decrease in **crude oil** refinery intake is linked to heavy maintenance work carried in the refineries in fall 2014.

Starting with 1990 data, **gas/diesel oil** used for autoproduced electricity on oil and gas platforms are reported under energy industry own use.

From 1970 to 1975, **gas/diesel oil** for electricity generation has been estimated by the Secretariat.

Consumption

Starting in 2021, it is mandatory in Norway to blend biodiesel to non-biodiesel for use within non-road transport sectors.

In the 2022 edition, the Norwegian administration revised consumption data for several sub-sectors, most notably for **gas/diesel oil**, **motor gasoline** and **kerosene type jet fuel,** from 2020 onwards.

Use of oil products for heating in households is no longer allowed; hence, the consumption of oil products in the residential sector declined in 2019.

Data on **naphtha** consumption in Norway are currently unavailable.

Consumption of **lubricants** is reported within industry, as no further breakdown is available.

In 2003 and 1993 data, breaks in time series appear for consumption in the chemical/petrochemical industry due to newly available information.

Prior to 2000, **gas/diesel oil** used in fishing is included in agriculture/forestry.

Natural gas

General notes

For Norway, the supply of **natural gas** is the residual of two very large and opposite amounts: indigenous production and exports. As a result, large statistical differences in some years may lead to discrepancies in the growth rates of supply and demand of natural gas.

Supply

Since 2008 data on *opening and closing stock levels* are available.

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Transformation

In the 2023 edition, revisions were made from 2010 to 2020 which re-allocated oil refineries to electricity, chp, and heat which aligns with the correct reporting methodology.

Since 2007, **natural gas** inputs to all electricity and CHP plants are included in *autoproducer electricity plants* for confidentiality reasons.

The last main activity electricity producer closed down in 2016.

Consumption

Prior to 2008, **natural gas** amounts used in gas extraction by offshore platforms were not included in production data.

Since 2002 domestic navigation is included under *non-specified transport*.

The 2007 increase in *non-specified transport* is due to the wider use of gas-powered sea vessels.

Before 2000, energy use in *oil and gas extraction* also included some final consumption amounts.

In 1992 the increase in *oil and gas extraction* is due to the start-up of new fields.

Consumption for *pipeline transport* is included in energy industry own use.

Starting in 2023, **natural gas** consumption in *electricity, CHP and heat plants (Own use)* has declined significantly following the shutdown of a large CHP plant at the end of 2022.

Biofuels and waste

General notes

Some of the data reported under **solid biofuels excluding charcoal** includes **charcoal**. Efforts are being made by the Norwegian administration to separate this data in the future.

In the 2025 edition the Norwegian administration revised the 2022 data of several products and flows, either due to methodological changes (**primary solid biofuels**) or errors in last cycle data (**biogases**, **biodiesel** and **bioethanol**) or because for some products the latest year data are always preliminary, e.g. for **non-renewable municipal waste**.

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Due to new available information, in the 2024 edition the Norwegian administration revised several supply and demand flow from 2018 to 2021 and electricity production from main activity and auto producers for 2020 and 2021 for **industrial waste**, **municipal wastes**, **primary solid biofuels**, **biogases**, **biodiesel**, **other liquid biofuels**, **hydro** and **solar PV**.

Prior to 2007, equal shares of renewable and non-renewable **municipal waste** were estimated because the actual split was not known.

Data for **industrial waste** and **biogases** are available from 1991.

Supply

The increasing share of **biogasoline** that is not **bioethanol** reported by the Norwegian administration since 2022 is bio-naphtha, which has similar properties and energy content than fossil gasoline and lower density.

The data for the indigenous production of **biogases** is based on consumption data.

In 2014, the **biodiesel** production facility closed.

Data for **liquid biofuels** imports are available starting in 2006.

Transformation

Increased heat production from **biogases** and **other liquid biofuels** in 2018 is related to replacing fossil fuels.

Consumption

In the 2024 edition, for the first time the Norwegian administration reported **biogases** blended in the natural gas grid for 2022 and consumption of liquified **biomethane** added to LNG for maritime transport in 2019 and 2022.

In the 2024 edition, the amount of **biogases** reported for commercial and public services in 2022 is likely to be too low and will be revised by the Norwegian administration in the next publications.

Charcoal consumption data in residential were first reported in the 2022 edition, only for the preliminary 2021 data, and then for the whole time series in the 2023 edition.

From 2019, data for **solid biofuels** in the *industry sector* replaces coal/coke as a reductant. This is seen in the *chemical/petrochemical* and *iron and steel* sectors.

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Decreases in the consumption of **solid biofuels** in the *chemical/petrochemical*, *non-metallic minerals* and *food, beverages and tobacco* in 2018 are related to the fact that **charcoal** was included before but now it has been deducted.

Distribution losses for **biogases** are included in commercial/public services prior to 2003.

Electricity and heat

Supply

In the 2023 edition, the Norwegian Administration revised heat production from **heat pumps** and **other sources**, for the years 2010-2017, to remove amounts used for district cooling.

Solar electricity production in the *residential* sector is available from 2018. However, it only refers to electricity sold – it does not include electricity generated and consumed by households themselves.

The electricity generated from **other sources** represents electricity from waste heat.

Prior to 2009, transmission and distribution losses include statistical differences.

Heat produced by autoproducer heat plants from chemical processes and from *other sources* and used for electricity production has been estimated by the IEA Secretariat for the period 1990 to 2006.

Electricity production from **wind** is available from 1993.

Data for **heat** production from heat pumps and electric boilers (including the electricity used for this production) are available from 1989.

Data for **heat** production are not available prior to 1983.

Transformation

Biogases efficiency for main activity producer electricity plants is unstable and may be revised by the country in future submissions.

In September 2020, a fire occurred at a **natural gas** fired power plant. As a result, lower electricity output from natural gas was observed in 2021 and early 2022.

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Prior to 2018, **heat** output from *heat pumps* included district cooling. Electricity inputs to heat pumps run in cooling mode is included for all years. Revisions are pending.

Increased heat production from **biogases** and **other liquid biofuels** in 2018 is related to replacing fossil fuels.

For 2017, the apparent increase in heat output from **solid biofuel** fired Main CHP plants is due to a plant reclassification.

In the 2016 edition, Norway corrected the **industrial waste** consumption in heat plants and reclassified some the corresponding heat output under other sources.

Starting in 2007, data for **natural gas** electricity and CHP plants are aggregated in autoproducer electricity plants for confidentiality reasons. The revisions received for the 2018 edition partially altered these data for the period 2010 to 2016, but no explanations were given.

Breaks in the time series between 1996 and 1997 and between 2001 and 2002 and now 2009 and 2010 are due to a reclassification of main activity producers and autoproducers. This includes the apparent cessation of autoproducer **pumped hydro** and **hydro** electricity generation since 2010, where this generation has been reclassified as main activity.

Data for heat production from **biogases** are available from 1995.

Prior to 1991, net **electricity** production by autoproducers by industry sub-sector was estimated by the Secretariat based on data submitted by the Norwegian administration.

Data on inputs and outputs in **heat** plants are not available prior to 1983 for main activity heat plants and prior to 1988 for autoproducer heat plants.

Consumption

Electricity consumption in *road* refers to calculated consumption for fully electric vehicles and hybrids. This consumption is removed from *residential* and *commercial and public services* consumption where relevant.

For the 2019 edition, **heat** consumption in the c*hemical (incl. petrochemical)* and *commercial and public services* sectors was revised back to 2007. Historical revisions for other sectors are pending. As a result, breaks in series occur for heat consumption in some sectors between 2016 and 2017.

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Consumption of **electricity** for *pipeline transport* is included in *oil and gas extraction*.

The breakdown of **heat** consumption by industry sub-sector was expanded in 1992, reclassified in 1994 and collected by a new reporting system in 1997.

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Poland

Source

Central Statistical Office, Warsaw.

Coal

General notes

Other recovered gases which appear in the balances as output from **blast furnaces** also include off-gases from zinc and copper smelting, ceramics kilns and steel production, thus artificially increasing the overall efficiency of blast furnaces when calculated.

The decrease in exports and consumption of **coking coal**, as well as the stock built in 2019 are consequence of a reduction of the external and internal demand of iron and steel, which was impacted, among other factors, by the carbon and electricity prices.

Patent fuel trade data may include transit trade.

Prior to 2016 data, **other bituminous coal** includes **anthracite**.

Transformation

In 2019 the use of **other bituminous coal** for electricity generation decreased as consequence of high CO2 prices and high mining costs, which made more competitive other generation technologies such as natural gas or renewables, as well as electricity imports.

The decrease in the consumption of **lignite** in Main Activity Producer CHP Plants in 2019 is a result of the shutdown of a large power unit for renovation.

For the year 2015, there is production of **gas works gas** but no reporting of any input to that process. The LPG input was too small to be appeared (less than 0,5); until 2016, the reported numbers were rounded to the nearest whole number in the Joint Annual Questionnaires.

For the 2018 and 2019 editions, the Central Statistical Office has revised their methodology which accounts for sold heat produced from autoproducer heat plants using **coking coal** and **other bituminous coal**, resulting in lower, but more accurate data for 2007 onwards.

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Consumption

In the 2022 edition, revisions were made in for 2017-2019 **coke oven coke**. This product is used as a reducing agent for the production of zinc concentrates. In previous years, it was treated as energy use. The values are currently shown as non-energy use.

Introduction of anti-smog resolution led to reduction of **hard coal** consumption in households in 2019.

Inputs of **coke oven coke** into blast furnaces and consumption in the iron and steel sector were estimated in 2019 so as to keep the efficiency of blast furnaces at 40%. Part of the large decrease in the iron and steel sector consumption can be explained by that estimation.

Consumption in agriculture/forestry for **BKB**, and own use in power stations for **lignite** are residual flows, so may contain statistical differences and other consumption not reported elsewhere. As a consequence, changes in these time series may not be wholly representative of the activities shown.

Prior to 2010, own use in coal mines included workers' take home allowance, which should be included in residential consumption.

Oil

General notes

From 1997, receipts *from other sources (natural gas)* of **other hydrocarbons** correspond to the natural gas used in the hydrocracking unit in refineries, also represented as the output of *non-specified transformation* in the balances format.

Supply

Output of **petroleum coke** is produced from a new refinery plant installed at the end of 2019.

Between 2016 and 2017, a break in series for stocks of **refinery feedstocks** results from a change in reporting methodology.

In 2018 new legislation introduced a biofuel blending obligation for liquid fuels. The effects of this policy can be seen throughout 2017, as companies prepared for the implementation of the new directive, and in 2018 once the directive came into force.

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Transformation

In 2017 lower refinery activity is linked to maintenance activities at several refinery installations across the country.

Prior to 1998, inputs of **gas/diesel oil** and heavy **fuel oil** to autoproducer CHP in petroleum refineries have been included in the transformation.

Consumption

In 2016 regulatory changes affecting the customs and tax authorities meant that consumption of fuel in the informal economy decreased.

In 2015, a new flue-gas desulphurisation unit was installed. As this unit facilitates high sulphur fuel oil burning in place of natural gas, this explains the increase in **fuel oil** consumption in oil refineries.

Natural gas

Supply

Exports include **natural gas** that is injected into underground storage facilities abroad. This process was very economically favourable for the years 2016 – 2020.

Exports include all the **natural gas** sold by companies operating in Poland (these are mainly re-exports).

Natural gas reported in *associated production* contains some heavier hydrocarbons. This results in a high gross calorific value for production.

Transformation

Non-specified transformation data represent **natural gas** used for hydrogen manufacture. This hydrogen is used for hydrodesulphurization in oil refineries.

In 2013 and 2014 some CHP plants were used as backup reserve plants, resulting in a decrease in consumption under main activity producers CHP plants.

In 2004 and 2005 small amounts of **natural gas** were used to start up main activity elec

tricity plants.

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In the 2017 data, local small-CHP & heat plants were reclassified from the *commercial/public services* to the *transformation sector* and the *residential* sub-sector.

Consumption

Distribution losses may include some statistical differences.

Non-specified energy includes gas used for heating and pumping operations in the distribution network.

Biofuels and waste

General notes

Several breaks in the **industrial waste** time series are caused by difficulties in the classification of wastes.

In the 2018 edition, **solid biofuels** were corrected for 2015 data.

There is a break in time series between 2015 and 2016 for **biogases** due to reclassification from autoproducer to main activity plants.

The increases in **municipal wastes** starting in 2016 are related to two new plants.

Data on **biodiesels** are available from 2005; **biogasoline** data from 2003; and **other liquid biofuels** data from 2009.

In 2008, a new questionnaire was launched which increased the coverage of renewable and waste data.

Supply

Under current Polish law, only producers and importers of **biodiesel** are obliged to fulfil the National Indicative Target of share of biofuels in the total usage of transportation fuels. Since the regulation is currently not applied to retail distributors they, for economic reason, rather export the **biodiesel** than sell it domestically. This results in low domestic consumption and increase of exports in 2016.

Production of **other liquid biofuels** increased in 2015 because new companies started to report their biofuels production to the Polish administration.

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Transformation

In 2017, heat production from autoproducer CHP and heat plants burning **municipal wastes** increased due to two new plants.

Before 2000, industrial waste was used interchangeably with light fuel oil in some plants, which might result in breaks in the time series.

Consumption

The decrease in the consumption of **biodiesel** in the road sector in 2017 is related to an unfavourable pricing scheme on the domestic market, causing consumers to choose **diesel** and producers to export or blend the **biodiesel** they produced.

The consumption of **solid biofuels** in non-metallic minerals decreased in 2017 because modern clinker ovens have been replacing **solid biofuels** with **municipal wastes**.

Increases in consumption of **biodiesel** in 2016 are related to a policy change in the middle of the year.

Data for **biogases** refer only to the gas from fermentation of biomass.

Until 1998, data for **industrial waste** include **other recovered gases** which have to be reported in Coal questionnaire, causing a break between 1997 and 1998.

Between 1992 and 1993, due to data availability, there is a large increase in **solid biofuels** for residential, commercial/public services and agriculture/forestry.

Electricity and heat

General notes

In the 2025 edition, several data related to combustible fuels are rounded to one decimal, due to statistical confidentiality.

Prior to 2010, **heat** supply and consumption can include autoproducers unsold heat. Previous attempts to address such issue may have caused breaks for heat production and fuel in autoproducer heat plants (1993) and in autoproducer CHP plants, and for heat consumption in industry sub-sectors.

Supply

Electricity and heat from **chemical heat** and other sources are available from 2011. Prior to that, these amounts could be included under different categories.

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Heat distribution losses are available from 2004. Prior to that they are included in consumption.

Heat production from heat pumps is available from 2009.

Transformation

In the 2026 edition, several products present unstable efficiencies due the statistical confidentiality implemented during the 2025 edition.

For 2019, the increase in electricity output from **industrial waste** was in part due to the opening of a new waste-to-energy plant in late 2018.

In 2019, electricity output from **solid biofuels** increased following the introduction of a new state support scheme. In 2016, output declined following a reduction in state support for biomass co-firing.

For the 2017 edition, the Polish administration revised electricity production data from power plants run by combustible fuels, reclassifying those that were previously reported as main activity CHP as main activity electricity plants. These revisions mainly affected **coal**-fired power plants and created breaks in time series from 2004 onwards.

In the 2017 edition, the Polish administration reclassified some amounts of electricity consumption from *chemical and petrochemical* sector to *oil refineries*, following access to improved survey methods.

Due to a reclassification of plant types, there is a break in time series in 2015 for the generation of heat in autoproducer CHP plants in the iron and steel sector.

In 2014 and 2008, a number of CHP plants were reclassified from autoproducer to main activity producer due to an industry re-organisation.

Prior to 2013, electricity used for pumped storage (mixed plants) is included under used for pumped storage (pure hydro pumping plants).

Data for direct use of **geothermal heat** are available from 2000 and direct use of **solar thermal heat** in commercial/public services from 2002 and in residential from 2009.

Heat consumption in energy industry own use includes process heat not sold before 1995.

Data for **electricity** production in autoproducer electricity plants are available from 1986.

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Consumption

Electricity consumption in *Road* refers to consumption in designated public charging spots. Charging of vehicles in a residential setting is included in *Residential* consumption.

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Portugal

Source

Direção-Geral de Energia e Geologia, Lisbon.

Coal

General notes

Hard coal data prior to 1978 may include **sub-bituminous coal**.

Transformation

In 2022, the production of electricity from **coal** stopped as the last coal-fired power station closed in November 2021.

Consumption

In the 2024 edition, the General Directorate of Energy and Geology reallocated industry consumption of **anthracite**, for 2014 and 2015, and **coke oven coke**, from 2014 onwards, from *chemical and petrochemical* and *non-metallic minerals* to *iron and steel* to better align with the National Energy Balances and the National Accounts Statistics.

Between 1997 and 2001 **gas works gas** was gradually replaced by **natural gas** in the *commercial/public service* and *residential* sectors.

The production of pig iron ceased in the first quarter of 2001, leading to decreases in supply and consumption of **coking coal**, **coke oven coke**, **coke oven gas** and **blast furnace gas** in 2001.

Oil

General notes

The increase in refinery throughput in 2015 is a result of increased refinery capacity linked to the expansion of the Sines refinery.

A new hydrocracking unit started operations in Sines Refinery in April 2013. This explains the 2013 increase in **refinery feedstock** imports, as well as middle distillate production.

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Supply

Production *from other sources (natural gas)* of **other hydrocarbons** corresponds to hydrogen used in refineries, also represented as the output of *non-specified transformation* in the balances format.

Scheduled refinery maintenance lasting two months in 2018 affected the production and exports of secondary oil products.

Consumption

Due to an investment to increase capacity, petrochemical plant operations were stopped for almost five months, thereby decreasing the consumption of **naphtha** and **LPG** for non-energy use in 2018.

Consumption of **gas/diesel oil** in industry and commercial/public services represents diesel use in mobile fleets.

Natural gas

Supply

In February 1997, Portugal started to import **natural gas**.

The surge in 2017 *imports* is attributed to the consumption of gas-fired power plants that filled in the gap of decreased hydro-generation due to a drought.

Transformation

Since 2012, data reported for *non-specified transformation* represent **natural gas** used for hydrogen manufacture. Prior to this year, these quantities are reported under *oil refineries*.

The 2002 decrease in natural gas used for *gas works (transformation)* is due to the closing of the Lisbon gas works plant in May 2001.

Biofuels and waste

General notes

Data for **solid biofuels** were revised in a previous publication by the National administration from 1990 to 2001, which may result in breaks in time series between 1989 and 1990.

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Data are available from 1994 for **biogases**, from 1999 for **municipal waste** and from 2003 for **industrial waste**.

Consumption

The use of **biogasoline** for blending decreased in 2017 because it is no longer compulsory to use biofuels in gasoline.

Data for **solid biofuels** were further revised based on a new survey on industry, resulting in breaks in sub-sectoral consumption for 2012.

Between 2009 and 2010 a new survey on energy consumption in households creates a break in time series in the **solid biofuels** consumption in residential time series.

Electricity and heat

Supply

Data for production of electricity from **solar photovoltaic** and **wind** are available from 1989.

The large decrease in electricity output from hydro for 2017 is due to decreased rainfall.

Transformation

Biodiesel inputs to electricity generation are included under gas/diesel oil and are expected to be reported separately in future cycles.

In 2019 and 2020, one of the two **other bituminous coal-**fired plants in Portugal operated with reduced output. The plant permanently closed in late 2020.

In the 2017 edition, the data for production of **electricity** by autoproducer **hydro** plants were revised between 1990 and 1999, according to a new national methodology.

For 2016 data onwards, **heat** and **electricity** production from chemical sources have been reclassified as autoproducer CHP production from **industrial waste**, causing cessation of the heat and electricity generated from heat from chemical processes time series, and causing breaks in the industrial waste time series between 2015 and 2016.

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In 2007, some power plants that were previously reported as main activity CHP have been reclassified as autoproducer CHP.

In 2007, the power station that burns **industrial waste** started to work as a CHP plant, whereas previously it was only producing electricity.

New plants fuelled by **solid biofuels** and by **municipal waste** started in 1999.

Prior to 1992, data for electricity production by autoproducers include production from combustible fuel sources only.

Electricity production from **other oil products** refers to methanol.

Data for production of **electricity** in main activity producer CHP plants and the associated fuel inputs are not available prior to 1980.

Consumption

As of the 2025 edition, the vast majority of heat reported as sold by autoproducers CHP plants is actually autoconsumed by the primary activity of the autoproducers, although the economic activities might have different owners and legal status on paper. The topic is being discussed with the Portugues administration and data might be revised in future reporting cycles.

In April 2021, an oil refinery shut down which led to a decrease in **heat** consumption in 2021 and 2022.

In the 2017 edition, the Portuguese administration reclassified some amounts of heat consumption from the residential to the commercial and public services sector for the period 1998 to 2014 following a new national methodology.Data for direct use of **solar thermal heat** is available from 1989 and direct use of **geothermal heat** from 1994.

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Slovak Republic

Source

Statistical Office of the Slovak Republic, Bratislava.

General notes

Data are available starting in 1971.

The Slovak Republic became a separate state in 1993 and harmonised its statistics to EU standards in 2000. These two facts lead to several breaks in time series between 1992 and 1993, and between 2000 and 2001.

Coal

General notes

BKB includes **peat products**.

In 2019 there is a general decrease in coal supply affecting all products, which is driven by less coal-fired power generation and reduced operation in the *iron & steel* sector.

Data for **anthracite**, **patent fuel** and **coal tar** all begin in 2005. Prior to this, **anthracite** was included with other hard coals, and **patent fuel** and **coal tar** data were not reported.

Since 2005, data for **coal tar** and **patent fuel** are based solely on trade receipts. Production of **coal tar** which is consumed within the national boundary is not reported. Consumption of **patent fuel** adopts the residual methodology for statistical differences described above.

Breaks in time series may exist between 2000 and 2001 as the result of the implementation of a new survey system.

Commercial/public services also includes statistical differences for **other bituminous coal**, **lignite**, **patent fuel** and **coke oven coke** from 1980 onwards and **BKB** from 1989 onwards.

Supply

Coal mining is scheduled to end in the Slovak Republic by 2023.

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Oil

General notes

Starting with 2016 data **ethane** is included with **refinery gas**.

From 2001 onwards, **kerosene type jet fuel** includes small amounts of **other kerosene**.

Transformation

In 2018, one of the companies changed its status from main activity producer CHP plant to autoproducer CHP plant, resulting in a decrease in **refinery gas** and **fuel oil** consumption for main activity producer CHP.

Between 2008 and 2009, one of the companies changed its status from autoproducer CHP plant to main activity producer CHP plant, resulting in a decrease in fuel oil consumption for autoproducer CHP.

Consumption

In 2018, one of the companies changed its status from main activity producer CHP plant to autoproducer CHP plant, resulting in an increase in **fuel oil** consumption in the chemical and petrochemical industry.

For **gas/diesel** oil, road data include rail use.

Small quantities of **kerosene-type jet fuel** used for domestic aviation are included in international aviation bunkers data.

Data for energy use of **white spirit** are not available.

Natural gas

General notes

In the 2024 edition, 2022 data were submitted with an updated methodology leading to a minor break in the time series for some flows between 2021 and 2022. In the next edition a revision is expected to eliminate these breaks. Data for *transmission and distribution losses* were not available between 2009 and 2013.

Between 1970 and 1971 and between 1978 and 1979, there are breaks in time series due to a revision of data for 1968-1969 and 1979-92 made in 2003. Data for 1970 were estimated by the Secretariat.

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Supply

In 2002 the gross calorific value (GCV) of production increased significantly as extraction from a field with a low GCV ended.

Imports include gas used for pipeline compressor stations.

Transformation

In 2014, the decrease in *autoproducer CHP* plants consumption was due to a plant closure.

Autoproducer electricity plants stopped operation in 2016.

Amounts in *non-specified transformation* represent **natural gas** used for hydrogen manufacture. This hydrogen is used for hydrodesulphurization and for hydrocracking in oil refineries.

Consumption

In 2018, following a change in the nature of its economic activity (as per the NACE classification), a big consuming company is now accounted for in the natural gas consumption for the mining sector, leading to a substantial increase.

In 2016, non-energy use of natural gas in the *chemical and petrochemical* industry decreased due to a two-month stoppage in ammonia production.

In 2001, there is a break in time series for energy use in *oil and gas extraction* due to the application of the IEA's definition starting that year.

There are inconsistencies in the time series of *commerce/public services* as this sub-sector was computed as a residual.

Data collection for the Transport Sector began in 2001, with no data being available for years 1990 to 2000. For years prior to 1990, the reported figures are estimates compiled by the Slovak Administration using various sources.

Starting in 2023, oil and gas extraction data in the energy sector is no longer available due to reporting units changing their NACE classification.

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Biofuels and waste

General notes

Prior to 2001, the data reported as **industrial waste** include **biogases** and **municipal waste**.

Consumption

In 2024 edition, **solid biofuels** residential consumption data have been revised since 2010 thanks to the cooperation between the National Statistical Office and the Slovak Hydrometeorological Institute (SHI) which launched a survey on biomass consumption.

Electricity and heat

General notes

Data for **solar photovoltaic** are available from 2010.

Supply

For 2018, heat supply of main activity producer CHP plants declined due to the closure of a large producer in January 2018.

Electricity and heat from *other sources* refer to waste heat (flue gases).

Transformation

In the 2023 edition, heat supply from main activity **nuclear** CHP plants was reclassified to main activity **nuclear** heat plants for all years starting from 2001.

In the 2023 edition, electricity supply from main activity **nuclear** CHP plants was reclassified to main activity **nuclear** electricity plants for all years starting from 2001.

For 2020, no **municipal waste** use is reported at autoproducer electricity plants or autoproducer heat plants, as the plants reported the production under autoproducer CHP.

For 2020, the efficiency of production using **other bituminous coal** at main activity CHP plants is above the expected range. Conversely, for 2021, 2020 and 2019, the efficiency of heat production using **biogas** at main activity plants is far

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below the expected range. The Slovak Administration is investigating these issues. Revisions are pending.

For 2018, opposing trends in **residual fuel oil** use at Autoproducer and Main CHP plants are due to changes in plant classifications following a merger.

For 1990 to 2003, electricity and heat production from **combustible fuels** have been estimated based on the data on fuel inputs to electricity and heat plants reported in the annual fuel questionnaires.

Prior to 2001, electricity generation from primary **solid biofuels**, **municipal waste** and **biogases** are included with **industrial waste**.

Consumption

For 2018, the apparent decline in **heat** consumption in the *oil refineries* and *chemical (incl. petrochemical)* sectors is due to a merger between companies in those sectors and a CHP plant.

For 2018, the increase in **electricity** consumption in the *mining and quarrying* sector is because a larger consumer was reclassified.

The low electricity consumption in *oil refineries* in 2003 and 2004 is due to a change in ownership and work carried out on a refinery.

Data for direct use of **geothermal heat** are available from 2001 and direct use of **solar thermal heat** from 2005.

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Slovenia

Source

Statistical Office of the Republic of Slovenia, Ljubljana.

General notes

Breaks in the time series appear for inputs to and outputs from electricity generation between 2017 and 2018 due to a change in methodology. This is most notable for lignite-fired *main activity producer CHP* and electricity only plants. Data for 2018 onwards are reported on a unit basis, whereas data for previous years are reported on a plant basis.

A new energy data collection system was implemented in January 2001, causing some breaks in time series between 1999 and 2000.

Data for Slovenia are available starting in 1990. Prior to that, they are included in Former Yugoslavia.

Coal

Transformation

In the 2024 edition, **lignite** use in main activity producer electricity and CHP plants decreased considerably in 2022 due to the Slovenian Government intention to transition away from coal-fired power plants.

From 2018, there is a change in methodology for reporting CHP generation which reflects in new figures in only-electricity production. Revisions prior to 2018 are not expected.

In 2015, one of the main activity electricity plants burning **lignite** ceased its operations.

Oil

Supply

Time series for crude oil production and fuel oil for international marine bunkers end in 2021 because the corresponding activities stopped in 2022.

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Between 2013 and 2014, a break in imports and exports time series for **kerosene-type jet fuel** and **fuel oil** appears due to improvements in reporting methodology. New trade corresponds to imports that are first stocked on Slovenian territory and later re-exported.

Consumption

In the 2021 edition, there is a break between 2017 and 2018 for **white spirit** whereby consumption is reported for various industry sub-sectors due to a change in reporting methodology by the Slovenian administration.

Time series for **motor gasoline** and **gas/diesel** consumption in road fluctuate as they are computed by the Slovenian administration as residual between the supply and the total consumption of all other categories.

Natural gas

Supply

In 2025 edition, the increasing trends from various countries are due to supply insecurities of the Russian originated natural gas, traders were trying to insure required quantities from other regions.

Transformation

In the 2025 edition, main activity producer produced less electricity due to favourable hydrology and the adaptation of the electricity market to the conditions of the Russian-Ukrainian war, as well as falling natural gas prices in 2023.

Heat production of main activity producers for 2023 was in line with the 2021 value. The decrease in 2022 was mainly due to one of the biggest producer of heat - because of the high prices and disruptions in the supply of natural gas.

In 2014, improvements in a *main activity producer CHP* plant resulted in a substantial reduction of **natural gas** consumption in this sector.

Consumption

In the 2025 edition, majority of the industry sectors reported less consumption for 2023 than 2022.

In 2011, the decrease in the *chemical and petrochemical* sector non-energy use consumption is due to minimal use of gas for production of methanol.

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There are inconsistencies in the time series for *commercial/public* services as this sub-sector is computed by the Slovenian administration as a residual.

It is stated that 2022 was a special year for the Slovenian energy industry. The combination of coal savings and recurring geomechanical problems in Slovenian coal mining industry together with the consequences of the first steps to abandon the use of coal led to an almost two-month stoppage of electricity production from the thermal power plant (coal-fired). It was evaluated, based on the prices of electricity on the market, that it is important to save coal for the winter months. During this period a thermal energy for surrounding cities was provided by the gas power plant located within an aforementioned thermal power plant, so the natural gas consumption in main activity electricity producer was increased.

On the other hand, related to main activity CHP producer, since a considerable increase in price for the natural gas several producers reduced consumption of natural gas. Some switched to other fuels, while the uncertain situation in the field of energy led to measures related to the considerable heat consumption saving (decrease in main activity producer heat).

Biofuels and waste

Supply

In the 2025 edition the Slovenian administration revised data for **solar thermal** and residential consumption of **primary solid biofuels** from 2009 onwards due to methodological changes.

Since the 2024 edition and 2022 data, more disaggregated information on **Solar photovoltaic** autoproducer electricity plants were obtained by the Slovenian Statistical Office. This results in a break in the time series of electricity generation and capacity of the different types of **Solar PV** plants by capacity between 2021 and 2022.

Solar PV autoproducer electricity production in Slovenia contains from 2019 onwards the share of self-consumption from Residential and Commercial and public services. This has not been the case between 2015 and 2018.

Consumption

In the 2025 edition and for 2023 data, breaks in the time series of transformation and final consumption for **primary solid biofuels** and **biogases** are due to the

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reallocation of some producers from main activity to autoproducers and a change in retrieval of NACE codes by the Slovenian administration.

As a result of a new survey on energy consumption in the services sector, in the 2024 edition the Slovenian administration reported for the first time consumption of **solid biofuels** in “Commercial and public services” for 2022.

Increases in consumption of **biodiesel** starting from 2017 are the result of an amended energy policy, which went into effect in mid-2017.

The break in time series between 2008 and 2009 for **solid biofuels** is due to revisions based on a new household survey which is to be carried out on an annual basis.

Breaks in total final consumption for **industrial waste** prior to 2008 are a result of a sectoral reclassification.

Electricity and heat

Supply

In the 2025 edition following a grand data project in Slovenia reallocations of Main activity and Autoproducers were made for 2022 and 2023 data.

Solar PV autoproducer electricity production in Slovenia contains from 2019 onwards the share of self-consumption from Residential and Commercial and public services. This has not been the case between 2015 and 2018.

Transformation

In 2018, Slovenia began gradually changing the sources of data for main heat plants from questionnaires to administrative sources. This change has resulted in some variation in reported efficiencies, in particular, for **natural gas**.

Consumption

In the 2025 edition data for Commercial and public services were corrected for 2022 and 2023.

Electricity consumption before 2022 that could not be allocated to a specific sector was reported under commercial and public services. New surveys were able to allocate parts of the electricity consumption to additional sectors. Starting from 2022, all electricity consumption that could not be allocated is reported under not elsewhere specified other).

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Breaks occur between 2017 and 2018 for electricity consumption data (in particular, for *Machinery* and *Construction*) due to a change in the sample frames and sample sizes used in surveys.

Data on electricity consumption in *Road* are available from 2017.

In 2017, the apparent increase in electricity consumption in *Rail* is due to improved data provided by a new survey launched by the Ministry of Infrastructure in 2018.

Direct use of **solar thermal** and **geothermal heat** is available from 2009.

Surveys for data on heat consumption are available from 2003 onwards for the residential, industry and energy sectors. Prior to 2003, the data have been estimated by the Slovenian administration.

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Spain

Source

Ministerio para la Transición Ecológica y el Reto Demográfico, Madrid.

General notes

Spain is currently working on improving its data collection system. Therefore, breaks in time series are present in the data and historical revisions are expected in future editions.

Coal

General notes

The calorific values for **sub-bituminous coal** are correct on an as received basis, and comply with definitions of **sub-bituminous coal** on a moist, but ash free basis.

Supply

Since 2019, capacity of coke oven coke production has decreased in Spain. As a consequence, the imports of **coke oven coke** have increased and the imports of **coking coal** have decreased.

Hard coal mining ceased in Spain at the end of 2018. Consequently, the production figures for **other bituminous coal**, **sub-bituminous coal** and **anthracite** are zero from 2019.

Import and exports figures include transit trade. This affects specially anthracite. There is ongoing work to improve this situation.

The main **coke oven coke** producer closed in 2019, which meant a significant reduction of the quantities of **coke oven coke** produced. This also affected the **coking coal** imports.

Lignite mining ceased in 2008.

Underground production of sub-bituminous coal ceased in 2016.

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Transformation

Half of the coal power plants closed in Spain in June 2020. Due to this great reduction of the coal plants in Spain, figures in transformation have decreased greatly, especially in Main Activity Producer and **other bituminous coal**.

The Main Activity Producer plant consuming **coke oven gas** has had several stops within 2020, which have affected the consumption and the efficiency figures.

In 2018 edition, a reclassification of plants from autoproducer to main activity has led to breaks between 2015 and 2016.

Consumption

In the 2026 edition, the consumption of **other bituminous coal** in the *non-metallic minerals* sector for 2021 has been revised by the Spanish administration.

In the 2025 edition, several revisions have been done consequently to newly available data or improvement of the methodology. This includes iron and steel for **anthracite** since 2007 and several flows for **other bituminous coal**, **coke oven coke**, **coke oven gas** and **blast furnace gas** since 2021.

Iron & steel production slowed down in 2019. As a result, energy consumption has decreased this year in electricity, natural gas and all coal products related to this sector (coking coal, coke oven coke, coke oven gas, blast furnace gas).

In the 2021 edition, blast furnace (energy) consumption has been revised back to 2003.

Oil

General notes

A change in the reporting system occurred mid-1996 resulting in some breaks in time series.

Transformation

In 2022, there is a break in the historical series for **LPG** due to a switch from natural gas to LPG made by one of the reporting CHP units.

Consumption

In 2023, the increase in gasoline demand in the decrease in diesel demand is the result of incentives to reduce the sale of new diesel cars in the country.

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The Spanish administration provides from 2022 a more detailed breakdown in some sectors such as **non-bio gasoline** consumption for domestic navigation.

A more detailed breakdown in some consumptions such as LPG, non-bio gasoline, non-bio jet kerosene and non-bio gas/diesel oil used for refinery fuel appears in 2021 due to the inclusion of decimal points in the reporting.

Gas/diesel oil is no longer used in coal mines due to the cessation of coal mining production in 2020.

A more detailed breakdown in some consumptions time series appears between 2012 and 2013 due to an update and improvement in the reporting methodology.

Natural gas

General notes

Spain has implemented a new tool in data collection, so there are currently breaks in the time series for 2014 and 2015 in transformation and industry respectively.

Supply

Starting in 2020, Spain was able to obtain information about *international marine bunkers*, which led to a re-allocation of export flows initially included in *Non-elsewhere Specified* for the period of 2015 to 2019.

Transformation

The increase in the *transformation sector* consumption for 2017 comes from more gas-fired plants being used to compensate decreased hydro generation due to a drought.

Due to the implementation of an updated tool for gathering information on electricity generation plants in 2013 many *autoproducer electricity* plants were reclassified as *autoproducer CHP* plants.

In 1997, the increase in input to *main activity producer electricity* is due to two main activity producer electricity producers running on **natural gas**.

Between 1993 and 1994 there is a break in time series in *autoproducer CHP* plants consumption, since a new survey revealed a large number of CHP autoproducers that were previously included in *industry* consumption.

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Since 1990 the decrease of **natural gas** inputs into **gas works gas** production is due to the substitution of **natural gas** by manufactured gas.

Consumption

Between 2021 and 2022 there is a break in the time series for t*ransmission/distribution losses* and p*ipeline transport* in which some data was reassigned from the former to the latter.

Between 2021 and 2022, there is a break in the time series for *chemical and petrochemical* in which an increase in information lead to a decrease in energy use and an increase in non-energy use.

Since 2021, data reported in liquefaction / regasification plants represent **LNG** that is used for cooldown of international ships.

Since 2001, the final consumption breakdown is estimated by the Spanish administration.

Between 2005 and 2006 there are some breaks in time series for the energy industry own use and for final consumption due to a change in the estimation methodology.

Since 1988 the increase of **natural gas** used as feedstock is due to a substitution of **naphtha** for the production of fertilisers.

Prior to 1982 **natural gas** consumption in textiles and leather, transportation equipment and machinery has been included in non-specified industry.

Biofuels and waste

General notes

In the 2025 edition, the classification of **biogases** used in auto-producer and CHP plants was revised by the Spanish administration, leading to a break in the time series. Prior to 2018 data, **other liquid biofuels** data were included with **solid biofuels**. A revision of the historical time series is expected in the future.

Transformation

In 2021 consumption of solid biofuels in MAP electricity increased due to a new plant becoming operative.

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In the 2022 edition, thanks to a split of paper **industrial waste** between renewable and non-renewable, some units report industrial waste in electricity autoproducers. For this reason, in 2020 the electricity generation increased greatly. In addition, in 2020 a CHP plant reported generation from hydrogen produced through membrane systems using saltwater reservoirs. This product has been allocated to industrial waste since non-renewable electricity is used. For 2023 edition, it has been reported as “other sources”.

Heat production from renewable sources is mostly not sold to third parties but rather, used for industrial purposes or consumed by heat production facilities.

2017 is the first year that data are available for the blending of **biogas** with natural gas. An update to the time series is expected in the future.

Based on studies from the Institute of Cork, Wood and Charcoal (IPROCOR), the efficiency of **charcoal** production plants is assumed to be 20%.

From 2013 data, a revision of the industry sector of some companies causes breaks in time series for **solid biofuels**, **municipal waste** and **biogases**.

Consumption

Increased consumption of **biofuels** from 2016 to 2017 is a result of increased demand for motor gasoline/diesel.

Prior to 2006, inputs of **biogases** used to generate process heat were erroneously included as inputs to transformation when they should have been reported in the appropriate industry in final consumption.

The breakdown of **solid biofuels** direct use in the industry sector prior to 1999 is not available.

Electricity and heat

General notes

In the 2026 edition, **heat** production and consumption data for 2024 were included for the first time. This addition has affected the total final consumption figures for **natural gas**, **gas/diesel**, and **solid biofuels**, as part of this consumption is now allocated to the transformation sector to autoproducer CHP and heat plants.

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Supply

As a result of the National Energy and Climate Plan wind and PV power and generation have increased significantly every year since 2018. Moreover, in the last years, electricity production from autoproducer **solar** increased due to implementation of a new regulation incentivising prosumption.

Electricity reported under *other sources* is from waste heat and hydrogen.

Transmission and distribution losses are estimated by the Spanish administration.

Data for electricity from **solar thermal** plants are available from 2007.

Starting in 2006, a new method was used to estimate the losses from final consumption, resulting in a break in time series between 2005 and 2006.

From 2005, residential rooftop **solar photovoltaic** electricity production data, previously reported under autoproducer, are included in main activity electricity plants according to the Spanish administration classification.

Electricity production from **wind** and **solar** are reported from 1989 when data became available.

New reporting systems were implemented in 2000 and again in 2006, and a further revision was introduced in 2024, which resulted in a reclassification of many plants from main activity to autoproducer and vice versa. This leads to breaks in the time series for the transformation sector, final consumption sectors and electricity production between 1999 and 2000, between 2005 and 2006, and between 2023 and 2024.

In the 2026 edition, **electricity** generation for main activity producer **solar PV** was revised from 2021 – 2023 due to improved data and estimation methods.

Starting in 2024, data for **hydro** and **solar PV** reflect a reclassification between autoproducer and main activity producer plants, as well as improved data availability.

Transformation

In the 2020 edition, electricity generation for **wind** was revised from 1998 – 2017.

From 2017 onwards, more accurate data on inputs and outputs for **pumped hydro** are available. This improvement in data quality leads to an apparent increase in efficiency.

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Prior to 2018, some **industrial waste** and **other liquid biofuels** used for electricity and heat generation was reported under **solid biofuels**.

In the 2017 edition, a change in reporting methodology resulting in reclassification of plants from autoproducer **electricity** to autoproducer CHP has led to breaks in electricity production in autoproducer electricity plants between 2012 and 2013 and 2014 and 2015. The administration anticipates further revisions to the time series in subsequent cycles.

The National Energy Commission reclassified plants that consume **biogases**, leading to breaks in time series between 2007 and 2008.

In 2000 and 2006, many plants were reclassified from main activity producer to autoproducer or vice versa.

For 2004 and 2005, electricity production from **gas/diesel oil** is included with **fuel oil**.

The large increase in electricity output from main activity producer electricity plants fuelled by **natural gas** in 1997 is due to the opening of a new plant.

Prior to 1989 inputs and outputs from the use of **biofuels and waste** to generate electricity and/or heat (i.e. comprising **solid** and **liquid biofuels**, **industrial waste**, **municipal waste** and **biogases**) are reported under non-specified **biofuels and waste**.

Prior to 1987 **electricity** production in main activity producer CHP plants is included with production from main activity producer electricity plants.

From 1983, net **electricity** production by autoproducers has been estimated by the Spanish administration and includes production from combustible fuel sources only and net electricity production by autoproducer CHP plants is included in electricity plants.

Consumption

For 2022, the **electricity** consumption in *non-ferrous metals* sector fell to almost half, due to the contraction of the aluminium sector (the main company closed).

For 2021 data, all the sectors had their consumptions increased after COVID-19 pandemics which reduced the economic activities in 2020. Residential sector is the main exception since it did not change much compared to 2020. *Iron & Steel*, *non-metallic minerals*, *food, beverages and tobacco, paper, pulp and printing* and *construction* showed the highest increases with respect to 2019 data.

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Consumption on *non-ferrous metals* was affected by the contraction of the aluminium sector. In the transport sector, *road* continued to increase due to the growth in the number of electric vehicles.

For 2019 data, some electricity consumption was reallocated from *industry non-specified* to other sectors. As a result, apparent increases are observed for sectors such as *textiles and leather* and *wood and wood products*.

Electricity consumption by electric road transport vehicles includes battery and electric plugins and is modelled based on vehicle registrations.

For 2012, the **electricity** consumption data are estimated by the Spanish administration.

Data for direct use of **geothermal** and **solar thermal heat** are available from 1990.

Electricity consumption under the *non-specified industry* category includes the consumption for the manufacture of rubber and plastic products, furniture, repair and installation of machinery and equipment (except repair and maintenance of ships and boats) and other manufacturing. This aligns with the Classification of the Economic Activities in the European Community (NACE) group code 22 and 31 to 33 (excluding class 33.15).

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Sweden

Sources

Statistics Sweden, Örebro.

Swedish Energy Agency (Energimyndigheten), Eskilstuna.

Coal

General notes

Peat products data may be reported under the category of **peat**, particularly for imports.

In the 2024 edition, **blast furnace gas** production for 2020 and losses and iron and steel industry consumption for 2020 and 2021 were revised due to new available information.

In the 2021 edition, there was a revision of the products included under **gas works gas**. As a result, the figures for the years 2011 to 2018 were put to zero. Previously this product included some mixture of **LNG** with air to form a product with lower calorific value.

Autoproducer inputs to waste heat production that is sold are reported in the respective final consumption sectors and not in transformation.

Supply

Other bituminous coal production until 1992 is coal recovered during the quarrying of clay.

Transformation

The figures in the *Transformation* section for the products **coke oven gas** and **blast furnace gas** were estimated until 2018; from 2019 onwards, the data is obtained from surveys.

Consumption

Since 2024, **coke oven coke** use in *iron and steel*, *non-ferrous metals*, *non-metallic minerals* and *transport equipment* industry sectors as well as its *non-energy use* are not reported due to confidentiality requirements. Similarly, the use of **coke oven gas** in *non-metallic minerals*, the use of **other bituminous coal** in

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iron and steel, *non-ferrous metals*, *non-metallic minerals*, the use of **other recovered gases** in *chemical and petrochemical* industry and the use of **peat** in *chemical and petrochemical* industry sectors are not reported as of 2024 due to confidentiality requirements.

In the 2026 edition, the Swedish administration reallocated **blast furnace gas** consumption from the *iron and steel* industry sector to the *blast furnaces* energy own use sector, after determining that it is solely used for heating purpose in blast furnaces.

In the 2024 edition, the Swedish administration revised the non-energy use and iron and steel industry consumption of **coke oven coke** for 2021 due to new available information.

Since edition 2021, the Swedish administration applied data perturbation to the consumption of **other bituminous coal** and **coke oven coke** in Industry sub-sectors, despite not affecting total Industry consumption, for the years from 2019 onwards due to confidentiality reasons.

Oil

General notes

In 2017 Statistics Sweden added more companies to their new data collection system; these have been progressively included in the reporting through 2018 reference year data.

Swedish stock data include peacetime crisis stocks. Since these stocks may be held in **crude oil** instead of oil products, there may be occurrences of negative stock levels for products.

Data are available from 2003 for **refinery gas** and from 2000 for **additives** and **ethane**.

Beginning in 2002, Sweden has changed some of the conversion factors for some products. That explains the small breaks in time series between 2001 and 2002.

Supply

In 2019, outputs of several oil products decreased as a result of refinery shutdowns lasting two months.

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As reported by the Swedish administration, there is a break between 2019 and 2020 in the refinery output of **other oil products** which relates to the production of refinery feedstocks not included in the latter product category.

In 2018, due to a new data collection survey rolled out by Statistics Sweden which has a higher level of detail available, transfer of **refinery gas**, **naphtha and fuel oil** appear for the first time. Consequently, transfer of **other products** in 2018 dropped to nearly zero.

Quantities of receipts from other sources of **other hydrocarbons** correspond to **natural gas** used by refineries.

Transformation

In 2014**, gas/diesel oil** inputs to main activity CHP electricity plants are confidential and aggregated with **fuel oil**.

In 2013 data, the drop in **crude oil** refinery intake is related with maintenance in August and September 2013 at the Swedish refineries.

From 2011, the country's gas works plants stopped using **naphtha.**

Consumption

Between 2023 and 2024, there is a break in the consumption of blended **biodiesels** because of a change in Sweden's greenhouse gas reduction mandate at the end of 2023.

In 2020, the Swedish administration confirmed that all **refinery gas** is consumed as refinery fuel. This change in reporting methodology possibly extends to 2018 and revisions are expected.

Starting from 1995 data, Sweden has changed its standard classification of industry sub-sectors

Between 1985 and 1986, there are breaks in consumption time series of **fuel oil** due to more detailed reporting.

In 1984 data, consumption of **other kerosene** in the road sector is discontinued due to product re-classification.

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Natural gas

Supply

From Other Sources – Renewables were estimated in 2022 edition using data from the renewables questionnaire.

Natural gas consumption in *international marine bunkers* are available for the first time for the year 2017.

Transformation

In the 2021 edition, there was a revision of the products included under **gas works gas**. As a result, the figures for the years 2011 to 2018 were put to zero. Previously this product included some mixture of **LNG** with air to form a lower calorie product.

Autoproducer inputs to waste-heat production that are sold are reported in the respective end-use sectors and not in the transformation sector.

Consumption

For 2013, data for the energy use of gas by *oil refineries* have been estimated by the IEA Secretariat.

For 2008, data for total final consumption and its breakdown have been estimated by the IEA Secretariat based on other Statistics Sweden publications.

For years prior to 1993, *road transport* is included in *commercial/public services*.

Biofuels and waste

General notes

In the 2024 edition, the AC capacity of **solar photovoltaics** subgroups (PV<30 kW, PV 30-1000 kW and PV1+MW) is smaller than the total solar photovoltaics AC capacity reported, for the years from 2017 to 2021.

In the 2022 edition, the administration adopted a new data source for energy consumption in industry. This has caused breaks in the time series and the presence of new flows in 2020 in particular for **solid biofuels**, **other liquid biofuels** and **biogases**.

New data in the 2020 edition for **biodiesel** in *industry, transport* and *other sectors* for 2005 – 2017 are related to a new survey.

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There are some breaks in time series between 2015 and 2016 in pumped hydro, **industrial waste** and **other liquid biofuels** figures due to the lack of data. The figures are expected to be modified in the 2018 edition.

From 1990 to 2006, **municipal waste** was reported as 60% non-renewable and 40% renewable. In 2007, reanalysis of the waste revealed the content was 40% non-renewable and 60% renewable. This was re-analysed again starting from 2016 data, when the result of the analysis revealed the split should be 52% renewable and 48% non-renewable. This results in breaks in the time series between 2006 and 2007 and also 2015 and 2016 for both renewable and non-renewable **municipal waste**.

In the 2018 edition, data for **biodiesels** were revised from 2006 to 2015 while **biogasoline** and **bioethanol** were revised from 2005 to 2015. The revisions affected indigenous production due to increased information about net trade, as well as the transformation sector, for blending with motor gasoline/diesel/kerosene and consumption in the road sector.

Supply

In the 2025 edition, domestic supply of **biodiesel decreased** by half between 2023 and 2024, due to change of the greenhouse gas reduction mandate, which has decreased from 30.5% to 6%, leading to a decline in imports and usage for this fuel.

In the 2022 edition, for **industrial waste** data the administration adopted the figures from the survey “Quarterly Fuel Statistic“ while in the past the “Energy use in manufacturing industry“ was used. This led to a break in the time series between 2019 and 2020.

Due to a change of tax regulations in 2017, it was no longer profitable to produce fatty acid methyl ester (FAME) in the same capacity as before, so there was a drop in **biodiesel** production. This drop in production was substituted by imports to meet increased demand.

In the 2018 edition, trade data were added for **primary solid biofuels** starting from 2012. As the net trade used to be reported together with indigenous production, this has resulted in a downward revision of indigenous production for 2012-2015.

Transformation

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In the 2022 edition, electricity generation from **industrial waste** is reported but no capacity installed is shown. This is because industrial waste is a secondary product used in other non-specified plants.

Consumption

Starting in the 2023 edition, variable industry flows, depending on the product, for **industrial waste**, **municipal waste** (renewable and non-), **primary solid biofuels**, **biogases**, **biodiesel** and **other liquid biofuels** are confidential. However, their total value is reported in not elsewhere specified industry, thus the reported total final consumption is correct.
In the 2022 edition, **industrial waste** consumption in the industry sector non-specified flow appears for the first time. Disaggregated data will be available in future editions.

In the 2021 edition, there are revisions in the consumption of **solid biofuels** in the agriculture/forestry sector starting in 2005 resulting in a break in series between 2004 and 2005. These revisions remove double counting with the residential sector.

Increased consumption of **biogases** in the industry sector in 2018 was because several industries switched from **natural gas** to **biogases.**

Changes in tax regulations as of 1 July, 2018 has contributed to decreased consumption of **biodiesel** in 2018 data.

Due to confidentiality issues, **solid biofuels** consumption in food, beverages and tobacco is reported with paper, pulp and printing for 2014 data.

Consumption data by sector for **biogases** are available from 2011.

In 2011 data, there was a change in the reporting methodology for consumption of solid biofuels and waste in the residential sector, which is responsible for breaks in time series between 2010 and 2011.

For **biogases**, the *residential* sector is used as a residual.

Electricity and heat

Supply

In the 2025 edition, 2023 data for **batteries** are confidential.

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For 2020, the cessation of electricity output from autoproducer **hydro** was due to the plant no longer being classified in that category.

In the 2021 edition, upward revisions were applied to heat production and consumption back to 1997, to incorporate new data on recovered flue gas heat. Production is reported under heat from **other sources**.

For 2017 onwards, electricity inputs to and outputs from pumped **hydro** storage plants are based on a revised methodology. As a result, breaks occur between 2016 and 2017. Prior to 2017, electricity inputs to mixed hydro storage plants are reported under pure pumped plants.

Inputs to **heat pumps** include heat recovered from industry and from ambient sources (including sewage and seawater).

Ambient heat is shown as the indigenous production of **heat**.

Information on heat for sale produced in **heat pumps** and **electric boilers** is available starting in 1992.

Data on gross electricity production are sourced from an annual survey, while net production is sourced from monthly surveys. As a result, implied own use may vary.

Transformation

In the 2025 edition and from 2023 data, the Swedish administration started reporting inputs and outputs of power plants at a unit level, while in previous years data were reported at a plant level. As a result, breaks in series are observed between 2022 and 2023 for the heat output from main activity producer CHP and heat plants, especially for **biofuels** and **wastes**.

For 2020, the decrease in electricity output from **other bituminous coal** was due to a plant closure.

For 2020 onwards, the decrease in electricity output from **nuclear** is due to the closure of two reactors, one in late 2019, and another in late 2020.

In Sweden, heat produced in **heat pumps** is sold to third parties (as district heat) and is therefore included in transformation.

Heat production from **solid biofuels** in autoproducer CHP includes waste heat and chemical heat.

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For 2012 and 2013, small quantities of bio-methanol used to produce electricity are included in **other liquid biofuels**, under production, as well as input and output of autoproducer CHP.

For 1997 and 1998, heat production from **liquid fuels** in main activity producer CHP plants includes heat recovered from flue-gas condensing.

Prior to 1992, data on electricity production from **biogases** are included with **solid biofuels**.

Heat produced for sale by autoproducer CHP plants is reported starting in 1992.

From 1987, the breakdown of net **electricity** production by industry for autoproducer electricity plants is available.

Prior to 1987 net **electricity** production by autoproducer plants includes data for CHP plants only.

Prior to 1980, **heat** produced in main activity producer heat plants is not available.

Prior to 1974, **heat** produced in main activity producer CHP plants is not available.

Consumption

Both for **heat** and **electricity**, the consumption of some industrial subsectors is confidential and it is incorporated under the non-specified industry sector. For **heat** the confidential uses are in *non-ferrous metals* since 2020 and *non-metallic minerals* for 2023. In the 2026 edition, only energy own use for oil refineries has been set confidential in 2024. For **electricity**, in the 2025 edition the Swedish administration set as confidential consumption in *paper, pulp and printing* and in *wood and wood products* for 2022; in the 2026 edition, *iron and steel* and *non-ferrous metals* have been set confidential for 2024.

Consumption of **electricity** in not elsewhere specified (Energy) refers to electricity used for operating heat plants other than boilers and heat pumps.

Prior to 2022, **electricity** consumption in *road* includes all energy consumption by hybrid vehicles. The Swedish Administration revised historic data in the 2025 edition.

Disaggregated data for industrial **heat** demand became available from 2020, due to a change of underlying data source. This led to an increase in reported demand compared with previous years. The Swedish Administration hopes to revise the historical timeseries in a future cycle.

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Consumption of **electricity** for distribution of district heat is included with *other energy industry own use*.

In 2014, consumption of **electricity** in the *mining and quarrying* and the *paper, pulp and printing* sectors are confidential and were incorporated under the *non-specified industry* sector.

Data on direct use of **solar thermal** are available from 1989.

Consumption of **heat** in industry and other sectors is available from 1984.

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Switzerland

Sources

Swiss Federal Office of Energy (SFOE), Ittigen.

Carbura, Swiss Organisation for Stockholding of Oil Products, Zurich.

General notes

From 1999, data on consumption result from a new survey and are not comparable with data for previous years.

Coal

General notes

Calorific values for **anthracite**, **other bituminous coal** and **coke oven coke** are taken from a common default figure. Calorific values for **lignite** are also default, but are based on dried **lignite** fines which have a higher calorific value.

Consumption

From 1985, industrial consumption of **gas works gas** is reported in *non-specified industry* to prevent the disclosure of commercially confidential data.

The allocation of consumption between certain coal types is estimated by the Swiss administration.

Oil

General notes

The statistical differences for **gas/diesel oil** are partly due to changes in consumer stocks.

In 2004, petroleum coke production started due to the installation of a cracking unit in a refinery

As of 1993, the Swiss administration has reported figures for naphtha that are net of quantities used for blending into motor gasoline. For 1994, 1995, 1997, 1999, 2001 and 2002 this reporting has led to negative production numbers for naphtha.

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For these years, the IEA Secretariat has moved the data into transfers and reduced the production of motor gasoline by corresponding amounts.

Supply

There is a break in stocks between 2017 and 2018 for **refinery feedstocks** as more detailed information of refinery activity is collected by the national administration.

In 2015, low refinery throughput is due to maintenance in May and June and to an unplanned outage in October due to a leak in a heat exchanger at the Cressier refinery. The closure of the Collombey refinery from March 2015 also contributed. As a result, imports of many oil products increased in 2015.

The Collombey refinery remained closed in 2016, resulting in decreased refinery throughput and increased imports in this year. Refinery output of **petroleum coke** stopped as this product was only produced at the Collombey refinery.

Data for refinery losses at the remaining Cressier refinery are low and are under investigation.

Since 2013 oil importers are obliged to compensate parts of the CO_2 emission that are produced by the transport fuels they sell. The biofuel components are exempt from this obligation, which together with tax exemptions on biofuels, partly explains the increase in biofuel blending since.

Transformation

Gas/diesel oil *non-specified transformation* represents inputs to mobile and stationary power generators, of which the electricity output is unknown at this stage.

In 2012, low refinery intake is due to the temporary shutdown of the refinery in Cressier in the first semester of 2012 and maintenance at Collombey refinery.

In 1988, the reduction in refinery intake of refinery **feedstocks** in 1988 is partly due to a switch to crude oil and partly to a shutdown for maintenance of a refinery.

Consumption

2024p data is estimated by the IEA Secretariat for the transport sector.

In 2022, increase of **other oil products** consumption includes benzene, technical gasoline and mineral tar.

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In the 2022 edition, the Swiss administration revised data from 2012 onwards for **road diesel** consumption in rail and domestic navigation and **motor gasoline** consumption in domestic navigation.

In the 2019 edition the Swiss administration revised data back to 1990 for **road diesel** consumption in rail and domestic navigation, and **motor gasoline** consumption in domestic navigation.

In 1994, the increase in consumption of **gas/diesel oil** is due to consumer stock-building prior to the introduction of a value-added excise tax on heating fuels as of 1 January 1995.

Natural gas

General notes

Since the 2019 edition consumption reported in *not elsewhere specified (other)* is calculated as residual flow for **natural gas**. Prior to this, the statistical differences used to be absorbed by *agriculture/forestry*.

Supply

For the 2024 provisional data, the imports do not include imports of LNG.

Prior to 2023, import data reflected the supplier's country of registration. For 2023, they reflect the border entry point, driving the sharp increase in re-ported imports. For the 2024 provisional data, imports again reflect the supplier's country of registration.

Transformation

Since 2013 there are fluctuations in gas consumption of main activity producers CHP plants due to the fuel flexibility of a plant.

In 1996, the increase of gas input to main activity CHP plants is due to more complete accounting for all producing entities.

Consumption

Between 1977 and 1978, there are breaks in time series due to the introduction of a new survey by industry type.

Between 1998 and 1999 there are breaks in series for the final consumption breakdown due to the introduction of a new survey.

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Biofuels and waste

Supply

Due to favourable taxation in Switzerland, the imports of **biodiesel** and **bioethanol** intended to be blended with oil products increased significantly from 2016 to 2017.

Due to a new program launched in September 2014 in which CO_2 emissions due to traffic can be compensated by substituting fossil gasoline and diesel by biofuels, the imports and road consumption of **biodiesels** and **biogasoline** increased sharply starting in 2015.

Transformation

In the 2020 edition, some significant revisions were in **industrial waste (non-renewable)** from 2013 to 2015 for fuel input to autoproducer CHP plants because one plant operator corrected its fuel input.

Consumption

Starting in 2018, several agricultural **biogas** plants installed a system to measure heat production. Previously, it was estimated. Due to measurements, they realised they produce much more heat than estimated. This creates a break in series between 2017 and 2018 data.

Consumption data for **biogases** in the transport sector are available from 1996 to 2012 as a biogas fuel station had stopped selling biogas in 2013.

In the 2026 edition, inputs to transformation for solid biofuels were revised from 2015 onwards, resulting in a break in series between 2018 and 2019.

Electricity and heat

Supply

Heat production includes heat produced by **nuclear** power stations and distributed to other consumers.

Data for electricity production from wind are available from 1996.

Data for solar electricity production by autoproducers are available from 1990.

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Transformation

In the 2023 edition, the Swiss Administration revised data back to 2013 to incorporated updated plant-level data.

For 2021, the decrease in electricity output from **nuclear** was mainly due to maintenance works at the Leibstadt power plant.

In the 2020 edition, some significant revisions were made to input of **industrial waste (non-renewable)** to autoproducer CHP plants, for 2013 to 2015, because one plant operator corrected its fuel input.

For 2019, gross **heat** production from heat pumps ceased following a decline in 2018. Two such facilities existed in Switzerland, the larger of which closed in 2018, followed by the smaller in 2019.For 2016 and 2017, electricity output from **nuclear** sources declined due to shutdowns at two of Switzerland's five nuclear power plants (Beznau 1 and Leibstadt). For 2018, output increased due to higher availability at these two plants.

Electricity used for pumped storage (pure hydro pumping plants) is included under used for pumped storage (mixed plants).

In 2016, two new **pumped hydroelectric** plants went into operation.

For 2015, the large decline in **electricity** and **heat** production from **industrial waste** is due to one large main activity CHP plant significantly reduces their activity. This plant eventually closed in 2016, further lowering **electricity** and **heat** generation for this fuel.

From 2012, the **municipal waste** autoproducer plant previously reported as electricity plant met the CHP requirements and was reclassified as such.

Biogas is no longer being used for heat production as of 2011.

The decrease in the use of **natural gas** in main activity CHP plants in 2007 is caused by the reduced operation of one plant after the start-up of a new waste-incineration plant and the shutting down of another plant. Use increases again in 2008 due to the re-starting of a district heating plant.

The autoproducer heat plant that produced heat for sale using **municipal waste** was closed in 2006.

The breakdown of **electricity** and **heat** generation from autoproducers by sector is only partially available from 1990 to 1999 and is not available from 2000 to 2018.

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Prior to 1978, data for **heat** output from CHP plants are not available.

The allocation of **electricity** production in main activity producer electricity only and CHP plants between 1967 and 1973, and in main activity producer CHP and autoproducer CHP plants in 1974 are Secretariat estimates.

All **hydro electricity** production is reported under large scale hydro (> 10 MW) due to the fact that production data are not being collected by different size capacity categories.

In the 2026 edition, a major methodological revision was introduced from 2020 onwards, together with other data-driven revisions in the transformation sector from 2015 onwards, resulting in revisions to the time series.

Consumption

In the 2024 edition, modelling of electromobility was revised leading to changes in the sectoral breakdown. Additionally, the sectoral breakdown within the industry sector has been revised according to the latest information from the corresponding survey.

In the 2023 edition, the Swiss Administration revised the breakdown of industrial consumption data back to 1999 to incorporate data from the latest surveys. In addition, electricity consumption by electric vehicles previous reported under the Industry, Residential, and Commercial and public services sectors was reallocated to Road.

Consumption in the *transport equipment* industry is included with *machinery*.

Geothermal direct use is overstated as it refers to heat production by **geothermal heat** pumps, which include inputs from electricity and/or gas in the transformation process.

The breakdown of final consumption of **electricity** in the industry sector from 2000 to 2001 was estimated by the Secretariat.

Data for direct use of **geothermal** heat and **solar thermal** heat are available from 1990.

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Republic of Türkiye

Sources

Ministry of Energy and Natural Resources (Enerji ve Tabii Kaynaklar Bakanlığı), Ankara.

Petrol İşleri Genel Müdürlüğü, Ankara.

Coal

General notes

In the 2025 edition, preliminary data for 2024p supply of subbituminous coal, coal tar, coke oven gas and blast furnace gas were estimated as no official data were received for these products by the time the database was finalised.

In the 2024 edition, coal data for the Republic of Türkiye includes **anthracite** trade and final consumption in the industry sector for year 2022. This is due to newly reported data from the Turkish administration. The high statistical difference observed for this product is due to inaccurate data reporting from the industry sector, which reports part of the final consumption of anthracite as **other bituminous coal** instead. For years previous to 2022, anthracite is included in other bituminous coal data for all flows as disaggregation is not provided.

In the 2024 edition, the IEA Secretariat estimated parts of the preliminary 2023 data.

In the 2018 edition, revisions were conducted by the Turkish administration back to 1990 impacting the transformation and industrial sector. The revisions in the transformation sector were the result of new data submitted by the Turkish Electricity Transmission Company (TECT).

In the 2017 edition, historical revisions on **coal tar** data were conducted by the Turkish administration due to new available information.

Data from 2012 onwards utilised the latest census data, causing breaks in time series between 2011 and 2012.

Data from 2008 are provided from the results of an improved questionnaire. Significant changes occur in consumption patterns within the iron and steel industry, coal mining as well as across industry, residential and commercial/public services for **other bituminous coal**.

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Calorific values for fuels used for electricity, CHP and heat plants are obtained from data submitted to the Ministry of Energy and Natural Resources (MENR) by the Turkish Electricity Transmission Company, and these values may differ significantly from production and import values provided by MENR, causing imbalances for some years.

Production of **gas works gas** declined in 1989 due to plant closures; the last plant closed in 1994. Use of **gas coke** and **gas works gas** ceased in 1994.

Due to government regulations in industry and residential, in particular, there has been a shift from the use of domestically produced **coal** to imported **coal** and **natural gas**.

Supply

Production of **sub-bituminous coal, coke oven gas** and **blast furnace gas** have been estimated by the IEA Secretariat for 2020.

Transformation

In the middle of 2014, most autoproducer plants in the Republic of Türkiye were reclassified as main activity producer due to a change in the legislation. Amongst other things, this brought the reporting of unsold heat and prorated inputs in line with IEA methodology.

Consumption

In the 2025 edition, the industry consumption breakdown of the sub-bituminous coal is made available thanks to developments in data collection performed by the country. Therefore, there is a break in industry consumption of this product in 2023 and there should be no data under “not-elsewhere specified” anymore.

In the 2023 and 2024 editions, **other bituminous coal** and **lignite** consumption in residential and commercial and public services for 2021 and 2022 were estimated by the IEA Secretariat.

In the 2018 edition, revisions on industrial coal consumption were conducted by the Turkish administration back to 2010 due to new available information.

Privatisation of state-owned coke ovens in recent years results in incomplete information on **coke oven gas** distribution.

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In the 2017 edition, consumption of **sub-bituminous coal** in construction has been reclassified by the Turkish administration as consumption in the non-metallic minerals industry.

In 2015, a new survey was introduced by the Turkish administration to collect more detailed industrial consumption data, resulting in breaks in time series between 2014 and 2015.

Oil

General notes

In 2023, the 14% increase in **crude oil** production is due to the start of new oil fields in the Eastern Anatolia region.

A project to upgrade the İzmit refinery was completed in 2015. This resulted in considerably higher refinery throughout in 2015, compared to previous years. The project included a new unit to convert high sulphur fuel oil into higher grade products, such as gas/diesel oil and motor gasoline, and producing petroleum coke as a by-product.

In the 2016 edition, the Ministry of Energy revised time series for **kerosene-type jet fuel** from 2013. Sales to foreign airlines, previously accounted for under exports, are now reported under international aviation according to the IEA methodology. Data could not be revised for prior years. Exports of **jet kerosene** up to 2012 years may include international aviation consumption.

In the 2016 edition, the Ministry of Energy revised crude oil net calorific values from 2010 due to a new methodology for calculating them.

Production *from other sources (natural gas)* of **other hydrocarbons** corresponds to hydrogen used in refineries, also represented as the output of *non-specified transformation* in the balances format.

From 2013, marine fuels are reported under **fuel oil** instead of **gas/diesel oil**.

From 2012, **petroleum coke** data are reported.

Supply

In 2019, the increase in refinery throughput is due to the start-up of the new STAR refinery.

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In 2018 Izmir refinery underwent maintenance for several months impacting the overall throughput quantities.

In 2014, the drop in **lubricants** imports and consumption is related to a legislation change effective 1st of January 2014 regarding base oil imports.

From 2012, new information on **additives** imports (MTBE) data became available.

From 2012, no exports breakdown is available for **white spirit**, **lubricants**, **bitumen** and **other products**.

From 2010 data, more accurate NCVs for crude oil are available due to the implementation of a new survey.

For the years 1978, 1980, 1981, 1983, 1984, international marine bunkers are included in exports.

Transformation

In 2021, there is an increase in inputs of **naphtha** for transformation in the petrochemical industry as processed in the STAR refinery.

Gas/diesel oil and **fuel oil** consumed to produce electricity are used in both oil and coal-fired plants.

Consumption

Consumption of **white spirit and SBP** decreased in 2022 due to new environmental regulations.

Consumption of **biodiesel** for *road* transport increased in 2018 due to legislation coming into effect on 1 January 2018, which enforced a 0.5% blending obligation for **gas/diesel oil.**

In the 2019 edition consumption of **petroleum coke** was reclassified from non-energy to energy use.

For the 2015 data, new surveys were used to create a more detailed breakdown of the industry and other sectors. This led to breaks in time series between 2014 and 2015.

From 2014, information on gas/diesel consumption in fishing is available.

From 2013, additional information on **petroleum coke** cement consumption is available.

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Prior to 2012, consumption of **other oil products** in the chemical sector was included under *non-specified industry*.

Between 2010 and 2011, breaks in consumption time series for **LPG**, **motor gasoline** and **gas/diesel oil** appear due to improved survey methods.

Between 1977 and 1978, the end-use classification of **gas/diesel oil** and **fuel oil** were changed in the Turkish national statistics resulting in breaks in time series.

Natural gas

Supply

LNG Exports to Switzerland is natural gas that is sold to a Swiss-based company by loading it on a cargo ship, the destination of consumption is unknown.

LNG Exports to Serbia are exported by road tanker.

Exports reported by the Turkish administration represent transit gas.

In 2008, there is a break in time series for *stock changes* due to a revision of storage capacity data.

In December 2016, the first Floating Storage and Regasification Unit (FSRU) terminal started to work, allowing thus greater import quantities and stock levels.

Transformation

Non-specified transformation of **natural gas** represents amounts used to produce hydrogen for hydrocracking in refineries.

In the 2018 edition, Turkish administration revised 2014 and 2015 data, as some main activity producing plants in the Republic of Türkiye were reclassified as autoproducers.

Consumption

In 2015, a new survey was introduced by the Turkish administration to collect industrial consumption data, resulting in a substantial decrease of consumption reported under *non-specified industry*.

In 2013, energy use of **natural gas** in *blast furnaces* was zero, as gas was replaced by coal and coke.

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From 2009, there are some breaks in time series across all sectors, as consumption data started being collected by a different institution, the Turkish Energy Market Regulatory Authority.

In 2006, there is a break in time series for non-energy use in *chemical and petrochemical* industry due to improvements in the classification.

Prior to 2000, data for *commercial/public services* were included in the *residential* sector.

Between 1999 and 2001, the decrease in **natural gas** *chemical and petrochemical* feedstocks is linked to the activity of the fertiliser industry.

Since 1988, data for **natural gas** consumption in the *chemical and petrochemical* industry (for fertilisers) and in *non-specified industry* (dye industry) are available.

Non-specified industry includes the natural gas distributed by OIZ (Organised Industrial Zones).

Biofuels and waste

General notes

The Turkish administration only intermittently surveys **renewables and waste** used for power and heat. Due to this fact, some breaks may appear in the **biofuels and waste** time series.

Transformation

Biodiesel blending with **diesel** increased in 2018 because there was a new policy requiring that **diesel** be blended with 5% **biodiesel**.

In 2017, the increase in electricity production in main activity producers burning **solid biofuels** is related to new plants.

Consumption

In the 2024 edition, data for **geothermal** consumption are confirmed by the national authorities. Historical time series revisions will be implemented in the next publication.

In the 2024 edition, data for **solar thermal** consumption in the industrial sector were surveyed for the year 2022, deviating from the previous method of estimation

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up to 2021. This adjustment may lead to data discontinuities between 2021 and 2022. Time series revisions are expected in future publications.

Starting with 2018 data, new sub-sector data in the industry sector for **industrial waste (non-renewable)** and **solid biofuels** is available as a result of a new survey. Backward revisions will not be available in the future.

Prior to 1998, consumption in the **wood and wood products** sector includes that of the paper, pulp and printing industry.

Electricity and heat

Supply

Other sources **heat** production represents recovered waste heat (steam) from industry, mainly from cement and glass manufacturing, while *other sources* **electricity** is the proportion of generation by plant obtained from this heat.

Electricity production from **wind** is available starting in 1998.

Transformation

In 2021, the decrease in electricity generation from autoproducer **hydro** plants was the result of a power plant being reclassified as a main activity producer.

In 2020, the decline in electricity production from **lignite** was due to temporary plant closures for environmental refits.

In 2017, the increase in electricity production from **solar PV** main activity producers is related to new plants coming online, mostly unlicensed.

In the 2006 edition, the Turkish Statistical Office started providing **electricity** and **heat** output on the basis of a new survey that revised time series back to 2000. This causes breaks in the time series between 1999 and 2000. Not all of the input time series have been revised.

A new **gas**-fired main activity producer CHP plant was put into operation in 1999 and a new autoproducer electricity plant fuelled with **coking coal** started in 2000.

Data for **blast furnace gas** for electricity and heat generation are available from 1995.

Data on electricity generated from **biofuels** are available from 1991.

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In 1995, the Turkish administration reclassified autoproducer plants by type and source to be consistent with IEA definitions. This causes breaks between 1994 and 1995 for electricity production, most notably in plants fuelled by **biogases**.

Consumption

Prior to 2014, consumption data in the *machinery* sector includes *transport equipment*.

Comprehensive data on electricity consumption are available from 1973. This causes a break in the time series between 1972 and 1973.

In the 2024 edition, data for **solar thermal** consumption in the industrial sector were surveyed for the year 2022, deviating from the previous method of estimation up to 2021. This adjustment leads to break in series between 2021 and 2022. Additional inconsistencies are observed for 2023 and 2024. Time series revisions are expected in future publications.

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United Kingdom

Source

Department for Energy Security and Net Zero, London.

Coal

General notes

In the 2024 edition, the UK administration revised and reallocated several flows in supply, transformation and final consumption, since 2019 for **other bituminous coal**, **coke oven gas** and **blast furnace gas**, or only for 2021 for **patent fuels** and **coke oven coke**, due to new available information.

In the 2023 edition, the UK administration revised stock change of **other bituminous coal** for 2020 due to new available information.

In the 2021 edition, BEIS revised the coal production by type (**other bituminous coal** and **coking coal**) as a result of an update of their models. The revisions go back to 2016 and reallocate some production quantities from **other bituminous coal** to **coking coal**. Some adjustments were done on TFC/Industry/ Not elsewhere specified to adjust the statistical difference to the new production figures.

Oxygen steel furnace gas data are reported with **blast furnace gas** rather than as **other recovered gases**.

In the 2017 edition, calorific values of **other bituminous coal** were revised for the period 2002-2015 due to a change in the methodology, impacting all flows.

Prior to 1994, the consumption of substitute natural gas is included with **natural gas** while its production is included with **gas works gas**.

Supply

Underground production of **coking coal** increased in 2019 as Aberpergwm mine came back into operation in September 2018.

Underground production of **other bituminous coal** in 2016 decreased due to the closure of Hatfield, Thoresby and Kellingley mines.

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Transformation

In the 2024 edition, **coke oven coke** and **coke oven gas** production for 2022 have been estimated by the IEA Secretariat.

In the 2023 edition, the consumption of **coke oven gas** in autoproducer electricity, CHP and heat plants and of **blast furnace gas** in autoproducers electricity plants for 2019 and 2020 was revised by the UK administration due to new available information. As a result, also final consumption in iron and steel industry was revised.

The consumption of **solid biofuels** increased in 2015, as the largest power station in the UK converted a further unit from **coal** to **biomass** midyear, and the previously converted unit had a full year of operation in 2015 rather than just the last few months of 2014.

The market decline in use of **other bituminous coal** from 2013 onwards for autoproducer electricity generation was due to a plant being sold to a dedicated main-activity electricity producer.

Consumption

In the 2023 edition, industry consumption of **other bituminous coal** in chemical and petrochemical and food, beverages and tobacco for 2019 and 2020 was revised by the UK administration due to improvements in the estimation methodology.

Consumption shown for the commercial/public services includes consumption of some of *non-specified other*.

Oil

General notes

In the 2026 edition, the UK administration revised and reallocated several flows in supply, transformation and final consumption, since 2022, for **gas/diesel oil**, **fuel oil** due to new information available.

The UK classifies **gas diesel oil** into “white diesel” (identified with **road diesel** in the IEA databases) and “red diesel” (identified with **heating and other gasoil**). White diesel is taxed at a higher rate than red diesel. Due to a change in the tax duty status of diesel oil, red diesel cannot be used for industrial or commercial purposes in the UK since April 2022. Therefore, many demand flows have switched from “heating and other gasoil” to “road diesel” in 2022.

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There is a break in series between 2015 and 2016 due to a change in methodology and estimation process applied by the UK administration in the 2020 edition, which involves including data from trade body members and major suppliers.

Breaks in time series occur for **LPG** between 2007 and 2008 due the inclusion of additional information from the petrochemical sector.

For international marine bunkers and domestic navigation, a different bunkers methodology is applied from 2008, in line with UK's National Atmospheric Emissions Inventory. From 2013 onwards, improved data are available for international marine bunkers. Deliveries to international marine bunkers may be underestimated in previous years.

For consumption of oil products, the UK administration revised its methodology from 2008 to better track consumption of imported oil products and domestically refined oil products sold through third parties to final consumers.

Breaks in time series appear in 2013 for **ethane**, **naphtha**, **white spirit**, **lubricants**, **bitumen**, **petroleum coke** and **other oil products**, as new information became available on the energy use of these products.

Supply

In the 2023 edition, the UK administration changed the methodology for capturing **NGL** imports and transfers to the downstream sector (into **LPG**) in 2021. There may be breaks between 2020 and 2021.

In the 2021 edition, the UK administration revised the stock levels (national territory) of **motor gasoline** and **gas/diesel oil** from 2015 onwards, resulting in a stock break between 2014 and 2015.

Refinery output of **ethane** decreased in 2019 due to the closure of the Mossmorran NGL plant.

Biodiesel blending notably increased in 2019 per the requirement of the Renewable Transport Fuel Obligation.

Indigenous production of **crude oil** and **natural gas liquids** increased in 2018 primarily due to multiple new projects coming online at the end of 2017.

Refinery output of total oil products decreased in 2018 due to relatively high levels of maintenance throughout 2018.

From 2008 data on **naphtha** and **motor gasoline** better reflects the blending of these products. Breaks in series may appear between 2007 and 2008.

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Between 2007 and 2008 breaks in time series appear for **NGL** as a result of the UK administration obtaining additional information on the destination of some upstream **NGL**. Previously classified as exports, these amounts now appear as transfers, mainly to **LPG**, then as consumption in the petrochemical sector.

Between 2002 and 2004 products transferred include backflows and interproduct transfers. From 2005 onwards backflows are estimated by the UK administration.

Condensates are reported in **NGL** from 1980 and in crude oil until 1979.

LPG includes ethane until 1980.

Other hydrocarbons, reported until 1994, correspond to bitumen production from coal.

Consumption

In 2021, there is a decline in non-energy use of **naphtha** in the chemical (including petrochemical) sector as one of the largest petrochemical plants in the UK closed a major hydrocarbon cracker in late 2020 for maintenance but was not re-opened in 2021. Instead, it is now being converted to process ethane.

Breaks in time series may occur in the consumption of **gas/diesel oil** between 2011 and 2012, following the UK's administration improved access to customs trade data, in particular duty figures for demand in agriculture.

Natural gas

General notes

In the 2025 edition, revisions were made to years 2020, 2021 and 2022 due to the use of improved data.

In the 2020 edition, revisions were made to years 2017 and 2018 to align with the DUKES publications.

Since 1992, *distribution losses* include metering differences and losses due to pipeline leakage.

Supply

The decrease in the 2025 edition for gas production are in line with the continued decreases in UK indigenous production.

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In the 2018 edition, UK administration revised the supply balance back to 2008 to update Norwegian imports from two terminals previously reported as *indigenous production*.

In 2002, the increase in *imports* is due to increased supplies from the Norwegian sector of the North Sea through the Vesterled pipeline, which was commissioned in the 4th quarter of 2001.

In 2017 data the decreased *closing stock level* is related to the cessation of storage operations in Rough, UK's single largest storage facility.

In 2023, UK exports were down compared to record highs in 2022 when substantial regasification infrastructure meant the UK acted as a land bridge increasing exports to the continent. Despite this, 2023 exports were still substantially higher than the post-2010 average, facilitated by declining UK demand.

Transformation

The **natural gas** reported in *coke-oven (transformation)* is used to form synthetic **coke oven gas** rather than undergoing a coking process.

Consumption

In the 2025 edition, the overall demand that has declining trend since 2021 continues.

In the 2025 edition, non-energy use in chemical and petrochemical flow drop to 0 due to the last remaining ammonia production site permanently closed in 2023.

In the 2023 preliminary data, there is a break in the time series for *transmission and distribution losses* and *commercial and public services*. This break will be resolved in the next version.

Between 2015 and 2016 there are some breaks in the time series in the *energy, industry,* and *other sectors* due to a change in methodology.

In the 2018 edition, **natural gas** consumption in the sectors of *industry*, *residential*, *commercial/public services*, was revised back to 2008 to include information from other data sources such as the Purchases Inquiry, EU ETS and ONS Index of Services and Production.

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In the 2019 edition, the UK administration proceeded to revisions back to 2015 based on improved data from the Purchases Inquiry annual survey of the Office of National Statistics (ONS).

Before 2008, the commercial sector consumption is included in *non-specified other*, while that of public services is shown separately.

Between 2007 and 2008 there are some breaks in time series in sectoral consumption due to a new methodology of data estimation.

Natural gas consumption includes substitute natural gas made at gas works and piped into the natural gas distribution system.

Non-specified industry represent to sales by independent gas suppliers unallocated by category.

Consumption by the mining and quarrying and the wood and wood products sectors is included in non-specified industry.

Non-specified energy includes gas used for heating and pumping operations in the distribution network.

Biofuels and waste

General notes

In the 2026 edition, there was a reallocation of **industrial waste** and **biodiesel** from autoproducer electricity to CHP plants for years 2022 to 2024.

In the 2024 edition, **solar thermal** data have been revised from 2008 onwards due to an improved estimation methodology adopted by the UK administration.

In the 2024 edition, the UK administration added small amounts of renewable aviation turbine fuel imports and blending with fossil fuels in **bio-jet kerosene,** since 2021.

In the 2024 edition, trade and consumption of **biogasoline** was revised by the UK administration from 2018 onwards due to new available information. In addition to **bioethanol**, from this edition **biogasoline** includes also biomethanol, MTBE and bio-petrol.

In the 2024 edition, the Uk administration started reporting **biodiesel** used in power generation, in CHP plants and supplied to non-road mobile machinery (in not elsewhere specified industry) from 2018 onwards.

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In 2023 edition, all series for **industrial waste** have been back corrected to 2008.

In the 2022 edition, **solid biofuels** data were revised back to 2008. This causes breaks in time series between 2007 and 2008.In the 2021 edition, revisions from 2015 onward in **municipal wastes** were reflect a reclassification from **non-renewable** to **renewable** based on the renewable portion of tires.

In the 2017 edition, the UK government revised the data time series for **municipal waste** and **solid biofuels** back to 2001. As a result, breaks in time series may occur between 2000 and 2001.

Transformation

Due to a change in sectoral allocation methodology, in the 2024 edition the UK administration revised consumption in several types of electricity and heat producers and in final consumption for **industrial waste**, **municipal waste**, **biogases** and **primary solid biofuels** for variable time periods, starting from 2008.

In the 2023 edition, gross and net electricity production from combustible fuels in autoproducer electricity plants was revised back to 2018. Breaks in time series – also for the electricity own use – may occur.

From 2015, the UK administration started collecting data from the main-activity **solar PV** companies. Prior to this, all data were included under autoproducers.

The consumption of **solid biofuels** has increased in 2015, as the largest power station in the UK halfway through the year converted a further unit from coal to biomass, plus the previously converted unit had a full year of operation in 2015 rather than just the last few months of 2014.

Prior to 2013, due to data confidentiality reasons, one or two main-activity **municipal waste** plants had to be included within the autoproducer plant category. Since 2013, as there have been at least three main-activity companies, these plants have been reclassified from autoproducer plant to main activity electricity plant, with some CHP plants included under main electricity due to confidentiality reasons.

Consumption

In the 2024 edition, the UK administration added road transport consumption of **biogases** and small amounts of biopropane and biobutane in **other liquid biofuels** since 2018

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In the 2023 edition, gross and net electricity production from combustible fuels in autoproducer electricity plants was revised back to 2018. Breaks in time series – also for the electricity own use – may occur.

In the 2022 edition, **solid biofuels** data were revised back to 2008. This causes breaks in time series between 2007 and 2008.

In the 2021 edition, **solar thermal** reclassifications from residential to commercial and public services in 2016 – 2018 represent new data on heating for public swimming pools.

In the 2020 edition, there are some unusual patterns in the *industry* sector for **municipal wastes** and **solid biofuels**, however revisions are expected in the following cycle.

In the 2018 edition, following a review of the consumption of **biogases** and **municipal wastes** for 2015 and 2016 data, data that were allocated to other sectors have been reallocated to the industry sectors. This has caused a break in time series between 2014 and 2015.

Electricity and heat

General notes

All coal-fired power plants in the United Kingdom closed in 2024.

For the United Kingdom, it is necessary to combine figures for main activity producers and autoproducers in order to prevent the disclosure of information relating to less than three electricity generating companies, since this information is considered confidential. For this reason, data for main activity producer CHP plants have been included with autoproducer CHP plants from 1988. Prior to 1988, electricity output from CHP plants was included with autoproducer electricity plants.

The re-organisation and subsequent privatisation of the electricity supply industry in 1990 has resulted in some breaks in time series.

Supply

In the 2025 edition, revisions were made by the secretariat from years 2020 to 2022 to align with the DUKES publications regarding the electricity output of various main activity producers and autoproducers of renewables and wastes energy products.

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Data for **off-grid solar PV** are currently not available in the United Kingdom but the addition of this data is expected in the future.

Large declines in electricity generation from **coal**-fired power since 2013 are due to concrete plans to phase out coal use for electricity generation entirely by 2025. Alternative generation has been supplied by increases from other sources, including **biomass**, **natural gas**, **nuclear**, **solar** and **wind** generation, and increases in imports through undersea HVDC interconnectors.

Electricity production data for **solar PV** are available from 1999.

The launch of a feed-in-tariff scheme in April 2010 resulted in a rapid increase of capacity and corresponding electricity production growth from **solar PV** in the following years.

In 1996, the break in electricity production from **nuclear** is due to a reclassification of plants from autoproducer to main activity producer plants.

Data on electricity production from **wind** are available from 1989.

Transformation

In the 2023 edition, data on production from CHP plants were revised. As a results, breaks in time series (in particular for coal gases) may occur between 2018 and 2019.

In the 2022 edition, electricity generation from autoproducer wind plants was revised between 2018 and 2019. In 2019, a peak is visible because a large plant was recorded as an autoproducer and in 2020 it was classified as a main activity producer. The reason for this is that the plant was not covered by the survey of major power producers until 2020, therefore administrative data were used in 2019.

For 2021, the decrease in electricity output from **nuclear** was due to a high number of outages, and the commencement of defuelling at Dungeness B.

For 2019 onwards, the decline in output from **other bituminous coal** was due to plant closures (Fiddlers Ferry, Cottam, and Aberthaw).

For 2018-2020, the decrease in electricity output from **nuclear** was due to plant outages for maintenance.

Electricity used for pumped storage (mixed plants) is included under used for pumped storage (pure hydro pumping plants) for confidentiality reasons.

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In 2007, outputs of electricity from **petroleum coke** are included in **fuel oil**.

Prior to 2003, all outputs of electricity and heat from **oil products** are reported in the other oil products category.

Heat production from autoproducers is available starting in 1999.

Inputs and output from **natural gas** for main activity producer electricity production are included in autoproducer electricity for 1990 (for reasons of confidentiality).

Consumption

In the 2026 edition, there are significant revisions to electricity production from **run-of-river hydro** and **solar PV**. In addition,efficiencies ofelectricity production from industrial waste are volatile, due to the small number of plants with varying levels of operation.

For the 2019 edition, a change in methodology was applied for **heat** consumption figures from 2015 onwards. Due to new information regarding the purchasing and reselling of heat, consumption previously included under the *Commercial and Public services* sector was reallocated to the *Residential* sector.

For 2017, the decrease in electricity consumption in *mining and quarrying* is due to omission of one company from dataset.

Prior to 2010, consumption in *mining and quarrying* is included in the *non-metallic minerals* sector.

Electricity consumption in *coal mines* includes consumption in *patent fuel plants*.

Data for **electricity** consumption in transport was classified by sub-sector only starting from 2004 resulting in a break in time series between 2003 and 2004. Prior to 2004, *non-specified transport* includes consumption for traction by urban rails and road vehicles, and consumption for non-traction by railways and bus stations and airports. From 2004 onwards, road vehicles consumption is included under road transport. Prior to 2004, electricity consumption in rail refers to industrial rail only. From 2004 onwards it includes both industrial and urban rail.

Consumption in the *machinery* sub-sector includes that of the *transport equipment* industry before 1996.

Starting in 1990, small amounts of **electricity** used in heat pumps have been included in *residential.*

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From 1984 onwards, the **electricity** consumption in the *non-specified industry* sector includes that of the *wood and wood products* sub-sector (except 2010-2014, when estimates were supplied bu the UK) and unallocated consumption. The unallocated consumption comes from data reported as 'Other industries' by companies and includes Standard Industrial Classification (SIC) codes 7, 22, 31, 32, 33.19, 36, 38.3.

Electricity consumption in energy non-specified sub-sector is primarily made up of 'gas and electricity supply' and includes Standard Industrial Classification (SIC) codes 24.46 and 35. However, prior to 1990, consumption in *gas works* includes electricity use in the transmission/distribution of public supply gas.

For autoproducers, due to data availability constraints, **heat** is assumed to be consumed within the same sector as it is generated.

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United States

Source

US Energy Information Administration, Washington D.C.

General notes

Starting with 2017 data, inputs to and outputs from electricity and heat generation include Puerto Rico.

End-use energy consumption data for the United States present a break in time series with historical data due to a change in methodology in 2014. The break in time series occurs between 2011 and 2012 for oil; and between 2001 and 2002 for electricity and natural gas. The new methodology is based on the last historical year of the most recent Annual Energy Outlook (AEO) publication. Changes occur primarily in reported end-use energy consumption in the industrial sector and its subsectors, including the non-manufacturing industries of mining, construction and agriculture. Historical revisions are pending. Due to other changes in reporting methodologies, there are numerous breaks in time series for the US data, particularly in 1992, 1999, 2001, 2002 and 2013. Care should be taken when evaluating consumption by sector since inputs of fuel to autoproducers are included in final consumption for some years. No data are available for most energy products in the construction and mining and quarrying industries.

Coal

General notes

The statistical difference for **anthracite** is significant for some parts of the time series as some consumption falls below the reporting thresholds, such as *residential* usage. Additionally, some **anthracite** is exported blended with **other bituminous coal**, and reported with the other fuel.

The IEA Secretariat has estimated preliminary data for 2024p for all the products because no official mini-questionnaire submission was received by the time the database was finalised.

In the 2025 edition, **lignite** consumption in gas works as well as **other bituminous coal** and **sub-bituminous coal** consumptions in main activity producer electricity have been estimated by IEA secretariat.

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Since 2023, data for **coke oven gas** and **blast furnaces gas** are estimated by the IEA Secretariat.

In the 2024 edition, preliminary consumption for 2023 was not included because it generated very significant statistical differences.

The decrease in **coking coal** and **coke oven coke** consumption for preliminary 2022 data is due to the ceasing of operations of several coking facilities and a blast furnace plant between 2021 and 2022.

In the 2023 edition, preliminary 2022 data for **coke oven gas** and **blast furnaces gas** are estimated by the IEA Secretariat

In the 2023 edition, the IEA Secretariat revised the estimates for production, energy sector use and final consumption of **coke oven gas** and **blast furnace gas** in 2020 due to new available information.

From the 2022 edition, **coke oven gas** and **blast furnace gas** production and most consumption data are no longer available due to confidentiality.

Since the Energy Information administration (EIA) and the US Department of Commerce do not collect separate data on **patent fuel** exports by country, total exports data of **patent fuel** are included in the exports of **other bituminous coal**.

Coal tar as a by-product of coke ovens is not currently reported.

In 2002, the United States reported “synfuel” production as **patent fuel** for the first time. Prior to 2002, the consumption of this fuel was reported with **other bituminous coal**. Production ceased in 2007 for economic reasons.

Hard coal data prior to 1978 may include **sub-bituminous coal**.

Supply

Other sources **coal** production represents coal production that does not have a Mine Health and Safety Administration (MSHA) identifier.

Other bituminous coal exports could include some **anthracite** quantities. Anthracite is often blended with bituminous coal when exported.

Transformation

Anthracite calorific values for Main Activity & Other Uses is mainly Anthracite waste coal. As such heat content is much lower than expected for this product.

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Coking coal calorific values for coke ovens and blast furnaces are reported by most data providers on an “dry heat content” basis rather than on an “as is” or “as received” basis. As such, they are on the higher end of the range expected for this product.

Oil

General notes

Since the 2025 edition, between 2022 and 2023, a break in the timeseries is observed for refinery feedstock due to the introduction of the transfer to crude oil supply flow. The corresponding quantity is reported as a direct use of **NGL** that is reallocated to LPG and other oil products and transferred to crude oil. Moreover, **NGL** *interproduct transfers* also includes butane blended into gasoline.

In the 2024 edition, the IEA secretariat revised data back to 2019 for **NGL** to reflect transfers of **NGL** to **crude oil** reported by the US administration**.** The quantity of **NGL** consumption has been reallocated to an interproduct transfer to **LPG** that is then transferred to refinery feedstock and included in refinery intake.

In the 2018 edition, the US administration revised data back to 2011 for several products owing to the introduction of a number of methodological changes. This results in a number of breaks in the time series between 2010 and 2011, particularly in the consumption data.

From 2011 onwards, olefins are reported under **other oil products** instead of **LPG**.

Breaks in time series due to methodology improvements and newly available information to the US administration also appear in historical data: in 1990 for fuel oil (new methodology for marine bunkers); in 1992 for LPG/NGL (specific densities); in 1993 for oxygenates (new collection system to accommodate the revised Clean Air Act); in 1994 for motor gasoline (new model from the US Department of Transportation);in 1999-2000 for industry consumption (new available data from the 2002 MECS survey); in 2001 for fuel oil (changes in methodology for classifying imports of unfinished oils) and in 2011 for refinery gas (new density).

Supply

The US administration reports stocks of **crude oil** held in the United States on behalf of Australia under official agreement in 2020.

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Receipts (from non-specified sources) and trade of **additives/oxygenates** in 2020 are not available as the EIA no longer collects information on ETBE and MTBE.

In the 2021 edition, receipts from other sources and total exports of **additives/oxygenates** have been estimated by the IEA Secretariat for 2019 based on information in the IEA Monthly Annual Oil Statistics.

In the 2021 edition, the refinery gross output of **motor gasoline** has been estimated by the IEA Secretariat for 2019 based on information in the IEA Monthly Annual Oil Statistics.

In the 2021 edition, deliveries of **gas/diesel oil** for international marine bunkers have been estimated by the IEA Secretariat for 2019 based on information provided by the EIA.

Deliveries to international marine bunkers of **gas/diesel oil** have been estimated by the IEA Secretariat for 2016 and 2017 based on information provided by the EIA.

In the 2018 edition, the breakdown of exports by destination of low sulphur fuel oil and high sulphur fuel oil is not available. The time series was revised back to 2011.

Completion of the Utopia pipeline from Ohio to Ontario has facilitated more **ethane** exports to Canada in 2018.

High statistical differences for **crude oil** represent “unaccounted for crude oil”, the difference between the supply and disposition of crude oil.

From 2013, the US administration reports exports of **refinery feedstocks**, some of which were previously reported under **white spirit and SBP**.

Stocks changes for **gas/diesel oil**, **fuel oil** and **petroleum coke** were estimated by the IEA Secretariat from 1996 onwards to include stock changes at utilities.

Transformation

From 2002 onwards, the IEA Secretariat has estimated the amounts of refinery gas used for autoproducer electricity production.

Consumption

In the 2024 edtion, **NGL** consumption in the petrochemical industry was revised back to 2019 to reflect the transfer to **crude oil** reported by the US administration.

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In the 2021 edition, consumption of **motor gasoline** for road transport and of **gas/diesel oil** for rail transport have been estimated by the IEA Secretariat for 2019 based on information provided by the EIA.

In the 2021 edition, non-energy use of **gas/diesel oil** in the chemical (including petrochemical) sector has been estimated by the IEA Secretariat for 2019 based on information provided by the EIA.

In the 2021 edition, consumption of **petroleum coke** in industry – not elsewhere specified has been estimated by the IEA Secretariat for 2019 based on information provided by the EIAIn 2018 demand for petrochemical feedstocks derived from oil products increased following new ethylene production capacity coming online and the ramp up in polyethylene capacity. This trend is expected to continue through 2019 as further ethylene capacity comes online.

Between 2010 and 2011, end-use energy consumption data for the United States present a break in time series due to a change in methodology. For the period 2011-2016, quantities of non-energy use of LPG in chemical and petrochemical, and of other oil products in non-specified industry have been estimated by the IEA Secretariat.

From 2013 onwards, road use lubricants are reported under non energy consumption in transport equipment, machinery, and wood and wood products. Previously, such quantities were reported under non-specified industry.

From 1995 onwards, **LPG** inputs to gas works are included in industry.

Natural gas

General notes

Puerto Rico is currently not included in US data for **natural gas** with the exception of gas consumed for electricity generation. LNG imports into Puerto Rico are reported in the Other non-OECD Americas regional aggregate.

Supply

In the 2017 edition of this publication, the *indigenous production* data for 2014 was revised by the US administration creating a break in the time series between 2013 and 2014 due to a change in the methodology. In addition, this increased the *statistical difference* that remained high in 2015 and 2016.

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The exports have been increasing since 2015, due to new liquefaction capacity (i.e. Sabine Pass) coming online at the end of that year.

Transformation

Since 2012, data reported under *non-specified transformation* represent **natural gas** used for hydrogen manufacture. Prior to 2012, these quantities are reported under the *chemical and petrochemical* sector.

Between 1999 and 2000, there are some breaks in time series for the transformation subsectors due to a new data reporting method.

Between 1990 and 2002, the amounts of **gas works gas** that are blended with **natural gas** have been estimated on the basis of the output efficiency of the process.

Since 1989, consumption by *autoproducer CHP* plants is available, while consumption by *autoproducer electricity* and *main activity producer CHP* plants is available since 1991. Prior to these years, these consumptions are included with *industry* and *commerce/public services*.

Consumption

Between 2009 and 2010 then 2020 and 2021 there is a break in the time series for *construction* due to a methodological change.

In the 2019 edition, revisions were made to the *industry sector* from 2015 onwards, by reallocating **natural gas** consumption to the *chemical and petrochemical* sub-sector from other industrial sub-sectors.

Due to revisions made to the iron and steel model, there is a break in the time series between 2014 and 2015 for the consumption in *blast furnaces (energy)*.

Until 2001, *agriculture/forestry* consumption is included under *industry*.

From 1995 to 2001, the detailed breakdown of *industry* consumption is estimated by the Energy Information administration using the Manufacturing Energy Consumption Survey (MECS), which is conducted quadrennially.

Prior to 1995 a detailed breakdown of industry consumption is not available (between 1990 and 1994, chemical consumption is estimated by the American administration).

In 1991 data on **natural gas** use in the *road* sector were collected for the first time, and are not available for previous years.

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Non-specified energy industry own use represents **natural gas** consumed for the production of **ethanol**.

Consumption in fisheries is included under *industry*.

Biofuels and waste

General notes

The EIA assumes all **industrial waste** is non-renewable.

In the 2023 edition, the **biogasoline** net calorific value time series has been revised since 2012 onwards. Previously, the gross calorific values were erroneously reported.

In the 2022 edition, **bio jet kerosene** appears for the first time for the year 2021p. The values will be subject to revisions in future editions.

Due to the change in reporting methodology for **liquid biofuels**, breaks in time series occur between 2009 and 2010. This is especially noticeable in the **biodiesel** time series.

The EIA currently does not collect data on **biogas** from anaerobic fermentation or renewable natural gas (bio-methane), preventing it from providing this information to the IEA on the Renewables Annual Questionnaire. This results in incomplete reporting of biogases energy statistics. However, starting from the 2025 edition, biogas (bio-methane) data have been estimated utilizing information from Cedigaz, and the time series for its blending in the gas grid and use in road transport will appear for the first time.

Supply

Data for indigenous production and domestic supply of **industrial waste** have been estimated by the IEA Secretariat for 2019p.

Data for production of **industrial waste** have been decreasing since May 2014 due to reclassification, resulting in a break in series between 2013 and 2014.

Indigenous production of **biodiesel** is estimated in 2010 based on the EIA's Monthly Energy Report.

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Transformation

The EIA collects generation and consumption data from all plants 1 MW or more in capacity.

Consumption

Due to an improved estimation, there are some breaks in time series of the industry sector and other sectors between 2009 and 2010: for industry, **geothermal**, **biogases** and **industrial waste** (paper, pulp and printing); for other sectors, **geothermal** and **solar thermal**.

Electricity and heat

General notes

Geothermal supply and inputs to transformation data are estimated by the IEA Secretariat starting in 2009 because of efficiency discrepancies.

Between 2001 and 2002, there are breaks in time series concerning the total production of electricity and heat in the United States. Comprehensive data on electricity and heat production and consumption in main activity producer electricity, CHP and heat plants and autoproducer electricity and CHP plants are not available for all years.

Supply

In the 2025 edition, electricity production from batteries has been reported for the first time. As a result, there is a break between 2022 and 2023 electricity production from Other Sources.

There is a break in series for **geothermal** and **solar thermal** direct use data between 2017 and 2018 as a new methodology for reporting these data was adopted with 2018 data. There is an additional break in series between 2018 and 2019e data for **geothermal** direct use, as the methodology has reverted to the previous one.

The IEA Secretariat estimated US **solar PV** electricity generation from autoproducers starting in 1999 by multiplying the dispersed and distributed PV capacity estimated by the US administration by an average capacity factor of 12%. The capacity factor was based on a report published in 2007 by the IEA Photovoltaic Power Systems Programme, Cost and Performance Trends in Grid-

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Connected Photovoltaic Systems and Case Studies. The corresponding consumption of electricity has been included under *non-specified other*.

Data for electricity inputs to and outputs from **pumped storage hydro** plants became available starting in 1987.

Discrepancies occur between respective reported figures for electricity trade between the US and Mexico from 2013 onwards, and between the US and Canada from 2016 onwards. This is in part due to a change in data source for US electricity trade figures, which creates a break in series between 2015 and 2016.

Transformation

Electricity inputs to both mixed **hydro** and pure pumped storage pumping plants are reported under inputs to pure pumped storage.

Offshore wind production began in 2016.

Beginning with 2016 data, the calculation for **heat** production in CHP plants has changed, resulting in breaks in time series. The United States administration is currently unable to apply this methodology to historic years, so will only cover heat data for 2016 onwards. As a result of this methodology change, several combustible fuel power plants have their overall efficiency values increased, recording increased heat production. The previous methodology existed for the years 2006 to 2015, so further breaks exist between 2005 and 2006.

For 2016, **electricity** and **heat** generation from some types of **coal** and some plant types were estimated by the IEA Secretariat, based on an initial submission from the US administration and subsequent reclassification of portions of this coal between coal types.

Accurate accounting of **coke oven gas** and **refinery gas** inputs is not always possible, which can lead to efficiencies of over 100% in main activity producer CHP plants.

Other sources **electricity** production represents purchased steam and waste heat from industries.

The low efficiencies from 2011 for **other bituminous coal** autoproducer electricity plants are due to the fact that one unit; the Albany Brewery Power Plant only produces unsold heat, and is reported in the wrong category of plant.

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From 2007 to 2009, heat from **industrial waste** includes recovered heat from industrial processes. From 2010, the electricity produced from recovered heat is reported under **other sources**.

The decline in **patent fuel** used for electricity production in 2008 and subsequent cessation in 2009 is a result of the termination of the "synthetic fuel from coal" tax credit in 2008, which had been in the order of $20 to $25 USD per tonne, and while intended to deal with coal liquefaction and similar technologies, it had spawned an industry of cosmetic upgrading as a tax minimisation vehicle.

From 2004 to 2013, the EIA reported electricity and heat production from **anthracite** under **other bituminous coal**. The Secretariat estimated the split of generation output by fuel type based on the assumption that the plant efficiencies of the aggregate are equal to that of each part.

Starting in 2002, autoproducer electricity output for **oil** includes generation from **refinery gases** with a low average calorific value. Prior to 2002, this output was not accounted for.

Prior to 2001, some data on plants consuming **sub-bituminous coal** and **lignite** have been estimated by the Secretariat using information provided in the EIA's Annual Electricity Generator Report – Utility.

Data for **peat** are confidential between 1994 and 1998 and from 2000 are not reported.

Prior to 2000, autoproducers include small and independent power producers which under IEA definitions are considered as main activity producers. Production from these small and independent power producers accounts for about 25% of reported production of electricity by autoproducers in the United States. This reclassification causes breaks between 1999 and 2000.

In the 2003 edition, the United States administration reclassified some plants to autoproducers. This reclassification causes more breaks between 1998 and 1999.

Data for **heat** produced in main activity producer heat plants are available from 1992 to 1999, and for autoproducer CHP plants for 1989 to 1999.

From 1999 onwards, the fuel used in **heat** production by autoproducers is included in final consumption because the US administration cannot distinguish between the heat used directly on-site and the heat sold. Therefore, this may underestimate the heat sold to third parties.

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Prior to 1999, **solar thermal** electricity production includes generation from **natural gas** because some natural gas units are attached to solar thermal plants and their production could not be separated.

Prior to 1991 some of the fuel inputs to **electricity** and **heat** production reported for autoproducer plants are reported as final consumption in the particular economic sector in which the autoproducer is operating.

Prior to 1989, there are no generation data available from autoproducers.

Sub-bituminous coal inputs for electricity and heat production are included in **hard coal** before 1983.

Consumption

Consumption breakdown data for **electricity** are modelled based on data obtained from the Annual Energy Outlook and conversion factors. These data are based on fiscal values rather than physical tonnage, so if commodity prices increase or decrease between AEO versions and the conversion factors are not updated, derived changes in consumption may appear that are not supported by physical changes in production, or actual changes in consumption. For example in 2016, production of steel in electric arc furnaces increased by 6%, however consumption of electricity in the *iron and steel* industry was reported as declining by 17%. In addition, as the AEO models are revised annually, but the historical data are not necessarily revised, regular breaks in-series can occur.

For the 2019 edition, the breakdown of final **electricity** consumption for 2017 was based on the results of the Annual Energy Outlook (AEO) of 2018. The model used in the 2018 edition of the Outlook was updated to incorporate the results of the 2014 Manufacturing Energy Consumption Survey (MECS). The MECS values were last updated in 2010, and in the intervening period, several industries had changed significantly. For industry sub-sectors where disaggregated AEO2018 values are unavailable e.g. non-ferrous metals, textiles, and non-metallic minerals, consumption was extrapolated from the MECS 2014 values at the same rate as shipments in that industry. Breaks in time series occur across several sectors between 2016 and 2017.

Similarly, the breakdown of final electricity consumption for 2015 was based on the results of the Annual Energy Outlook (AEO) of 2016. Breaks in time series appear in the mining and agricultural electricity consumption sectors as a result of introduction of individual industry benchmarking for 2015 results. Changes in iron and steel, and pulp and paper data from 2014 to 2015 are the result of

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fundamental revisions of the iron and steel and pulp and paper models between AEO2014 and AEO2016 as well as the use of individual industry benchmarking for AEO2016. These changes are a few notable examples of series changes, and any series can change between AEO releases because of data updates and methodology changes.

Electricity consumption in *road* includes all estimated consumption by electric vehicles (both 100% and plug-in hybrids).

Prior to 1991, total consumption of **heat** sold referred to consumption in *commercial/public services*.

No data are available for **heat** sold that is consumed in the *residential* and *agriculture/forestry* sectors for any year.

Data for direct use of **solar thermal** heat in residential are available from 1999.

Since 1995, **heat** consumption data by sector are no longer collected, and have been estimated by the Secretariat, resulting in breaks in time series between 1994 and 1995, and 1999 and 2000.

Data for consumption of **heat** sold in industry are available from 1991 and in energy industry own use from 1992.

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Non-OECD countries

General notes

In the references below, both the statistical year (2024) for which data are being published in this edition, as well as publication dates of the many documents which have been consulted during the development of this publication are mentioned. As a general rule, where specific documents or personal communications have been used, the date that is referenced is the date of publication of the document or the date of the communication, whereas, where data received through the completion of questionnaires are mentioned, the date that is referenced is the statistical year for which data are being published in this edition, namely 2024.

Data may not include all informal and/or illegal trade, production or consumption of energy products, although the IEA Secretariat makes efforts to estimate these where reliable information is available.

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Note:

EU4Energy is a collaboration between the IEA, the European Union, Focus Countries and other implementing parties, designed to support the aspirations of Focus Countries to implement sustainable energy policies and foster co-operative energy sector development at the regional level. The EU4Energy programme is funded by European Union.

The first phase (2016-2022) was focused on the countries of the Eastern Partnership (EaP) and Central Asia: Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.

The second phase (2021-2025) was focused solely on the six countries of the EU's Eastern Partnership: Armenia, Azerbaijan, Belarus, Georgia, the Republic of Moldova, and Ukraine.

The OLACDE database was used for several Non-OECD Americas countries.

The UN database was the only source of information for time series of the countries not listed individually and included in the regions Other Africa, Other non-OECD Americas and Other non-OECD Asia. It was also used in a number of other countries as a complementary data source.

"An Affordable and Sustainable Energy System for Sub-Saharan Africa" was a 5-year (2019-2024) EU-INTPA funded programme aimed to create sustainable and inclusive economic growth in selected sub-Saharan African countries through energy sector transitions towards low-carbon and climate-resilient energy systems based in renewable energy, while delivering universal and affordable energy access. This was supposed to be achieved by helping the selected sub-Saharan African countries to develop enhanced energy statistics and energy modelling capabilities, to improve tracking against energy-related NDCs, SDGs, and other

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policy goals, as well as long-term energy planning. The ten countries that adhered to the programme were Benin, Democratic Republic of the Congo, Ethiopia, Ghana, Kenya, Nigeria, Rwanda, Senegal, Uganda and Zambia.

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Albania

General notes

Data for Albania are available starting in 1971.

Before 1993, large quantities of oil, widely reported to have moved through Albania into Former Yugoslavia, are not included in oil trade. Although they might have represented up to 100% of domestic consumption levels, no reliable figures for this trade are available.

Starting from 2011, motor gasoline consumption is reported in the residential sector. This consumption corresponds to motor gasoline used in electricity generators.

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Argentina

General notes

Data for Argentina are available starting in 1971.

In the 2021 edition, new use of customs information led to revisions of coal imports between 2002 and 2018.

In the 2020 edition, Argentina's 1971-2017 time series were revised across all products after communication of revised historical balances from Secretaría de Energía. Most of the revisions are based on those revised energy balances; others are based on revisions from the IEA Secretariat after analysis of available historical balance series. In detail:

Coke oven coke, coke oven gas and blast furnace gas data are estimated by the IEA Secretariat from 2006 onwards.

Petroleum coke demand is estimated by the IEA Secretariat from 2006 onwards, and trade is sourced from Instituto Nacional de Estadística y Censos de la República from 2006 onwards.

Data on electricity demand by industrial sub-sector is available since 2015. However, it reflects fixed shares of demand by sub-sector and does not reflect variation of demand trends between sub-sectors over time. Electricity generation by fossil source is estimated by the IEA Secretariat based on information of fuel inputs and generation by technology.

Biogas data includes biogases from thermal processes in the paper industry up to 2013, and electricity generation data reported by CAMMESA from 2012. Refinery feedstocks data is available from 1999.

Additives data contains MTBE from 1994 and other octane improvers from 2010 onwards. A structural break may exist between 2009 and 2010. Natural gas data contains trade of wet gas and own use of wet gas in oil and gas extraction. This can lead to statistical differences in the time series.

The Secretaría de Energía is developing its statistical system to collect further data on final consumption data and its disaggregation by activity. This could lead to data revisions or breaks in time series in future editions.

Since 2010 a different methodology was adopted by Argentina for reporting refinery flows leading to more detailed information (e.g. reprocessing of some oil products). This may result in breaks in time series between 2009 and 2010. Breaks

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in time series may also exist between 1993 and 1994 due to the start of the data series coverage of such refinery flows.

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Bosnia and Herzegovina

General notes

Data for Bosnia and Herzegovina are available starting in 1990. Prior to that, they are included in Former Yugoslavia.

In the 2023 edition, efforts have been made with Agency for Statistics of Bosnia and Herzegovina to improve the statistics of blast furnaces. Current data results in unusually low efficiencies, and revisions of these values could be expected in the next editions.

In the 2022 edition, disaggregated coal data became available between anthracite, other bituminous coal and coking coal. This also includes break down information on consumption flow data such as energy industry own use of blast furnace gas. This led to a break in the time series between 2019 and 2020.

In the 2022 edition, there was a break in the time series between 2019 and 2020 data for the input of combustible sources and its electricity and heat production from autoproducers. This was a result of an error in recognition of autoproducer from industry in the chemical and petrochemical sector that was corrected in C2022 for 2020 with the plan for analysis and correction/revision of historical data.

In the 2021 edition, the net calorific values (NCVs) of crude oil reported by Bosnia and Herzegovina were used to convert physical data to energy units. In previous editions, IEA standard NCVs were used. As a result, the time series of crude oil in energy units was revised from 2014 onwards.

In the 2021 edition, crude oil and oil products data are affected by the overhaul works in the refinery of Brod. This might result in breaks in time series between 2018 and 2019.

In the 2020 edition, solid biofuels modelling by the Ministry of Foreign Trade and Economic Relations led to new data starting in 2018. A break in time series may occur between 2017 and 2018. Revisions for historical data may be communicated in the future.

In the 2019 edition, data on electricity, CHP and heat were submitted by the Agency for Statistics of Bosnia and Herzegovina.

In the 2018 edition, data on blast furnace gas and coke oven gas production became available for 2016. Also, the calorific values of coking coal and coke oven

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coke were revised for 2014-2016. This may result in breaks in time series on the efficiencies of blast furnaces and coke ovens between 2013 and 2014.

In 2018, BHAS received technical expertise from the IEA Secretariat and reallocated inputs of sub-bituminous coal to electricity, CHP and heat plants to lignite for the period 2014-2016. This may lead to breaks in time series between 2013 and 2014.

In 2015, BHAS conducted their first household survey on biomass consumption. Due to this newly available data, breaks in time series may occur between 2013 and 2014. In order to further improve the biomass data quality, they revised data for the period 2014-2016.

In 2014, BHAS conducted their first survey on oil product consumption. Breaks in time series may occur between 2012 and 2013.

Until 2012, the source for crude oil and secondary oil products data is the publication “Industrial Production Bosnia and Herzegovina 2012” and “Oil Trade Data” both produced by the Agency for Statistics of Bosnia and Herzegovina.

Energy statistics are available from the Agency for Statistics of Bosnia and Herzegovina (BHAS) from 2008 for electricity and heat and from 2009 for coal and natural gas. As a consequence, breaks in time series may occur between 2007 and 2008 for electricity and heat and 2008 and 2009 for other products.

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Brazil

General notes

Data for Brazil are available starting in 1971.

Brazil joined the IEA as an Association country in October 2017.

Although IEA's balance is based on Brazil's national statistics, differences with the national energy balance can be observed due to the different methodologies adopted for reporting nuclear, chemical heat, natural gas, NGL production, non-energy use and production process of liquid biofuels, renewables, blast furnaces and coke ovens.

Crude oil data includes small amounts of oil shale.

The split between domestic and international marine bunkers is done based on flag (nationality) of ships.

In the IEA balance for Brazil, "Biogasoline" refers to anhydrous ethanol while "Other liquid biofuels" refers to hydrated ethanol. The national energy balance of Brazil shows bioethanol as two separate products: anhydrous ethanol ("álcool anidro", i.e. nearly pure ethanol, containing less than 1% of water) and hydrated ethanol ("álcool hidratado", i.e. a blend of ethanol and water, in the proportion of about 95% to 5%, generally obtained from conventional distillation). While anhydrous ethanol is blended with gasoline (the blend sold at the pump generally contains 27% of ethanol), hydrated ethanol is sold at separate pumps as a product by itself (álcool) to be used in flex fuel cars, i.e. vehicles that can run on any mix of gasoline and ethanol.

Allocation of consumption to subsectors in national energy statistics is done according to the National Classification of Economic Activities (CNAE). Energy consumption in the tobacco, construction, transport machinery and machinery sectors are included in "other industries" in national data, which is allocated in the IEA Balance to non-specified industry. As such, consumption in the food and tobacco sector excludes the tobacco sector.

In the 2023 edition, the Ministry of Mines and Energy provided Solar Thermal data for the period 1982-2022. Previous IEA Secretariat estimations were revised, and all data for this product are official from this edition on.

In the 2023 edition, the Ministry of Mines and Energy revised historical data for Natural Gas, Diesel Oil and Electricity consumption in the Oil and gas extraction

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sector. These data have been revised in our publications since year 2014, and revisions for previous years are expected in coming editions.

In the 2022 edition, close cooperation with the Ministry of Mines and Energy led to a revision in biogasoline and other liquid biofuels losses. These are now exceptionally taken into account with the objective of reducing statistical difference. The key changes are that they now include losses in evaporation, leaks, accidents during the process of production and storage in addition to distribution losses.

In the 2021 edition, close cooperation with the Ministry of Mines and Energy also led to a series of revisions affecting oil and gas data, enhancing harmonization of IEA data with national energy balances. The quantities of refinery input and output now reflect those reported by the Ministry of Mines and Energy more accurately. Wet gas losses in gas separation plants are now excluded from NGL production, leading to revisions from 2011. Production of LPG and motor gasoline was also revised to exclude the quantities resulting from naphtha processing by the petrochemical industry, which are now included in transfers. The calorific values of natural gas, other non-specified oil products and natural gas liquids have also been revised. As a result of these changes, production and transfers have been revised for LPG, motor gasoline and other non-specified oil products since 1971. Refinery feedstocks have also been revised from 1971, with significantly lower levels of refinery input.

The national energy balance of Brazil reports quantities of “Other non-renewable” energy consumed by the chemical, cement, iron and steel, and other sectors for both final consumption and autoproducer CHP generation. This combines a series of energy sources, such as tyre scrape, clay, blast furnace dust, tail gas, residual gases, sulphur gases and other residues. Starting with the 2021 edition, these products and their corresponding electricity generation are allocated to industrial waste, except for the power inputs of the chemical sector, which are allocated to heat from chemical sources. This leads to a structural break in 2017, as generation from such energy sources in the iron and steel was not separated from blast furnace gases before 2017.

In the 2021 edition, biogases from thermal processes include the amount of blast furnace gases from charcoal, and the corresponding electricity generated from those gases, from 2012 onwards.

In the 2020 edition, new information became available, leading to revisions to 2016, 2017 and 2018 data in coal, gas oil and electricity. Data on biogas in transformation processes has been revised since 2008, oil product densities since

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2014, and biodiesel and diesel data since 2011. Transfers of fuel oil and lubricants have been revised since 2012.

In the 2015 edition, new information became available which explains the types of product transfers within Brazilian refineries. The IEA attempted to reflect these transfers as accurately as possible.

Brazil produces a large share of its pig iron in blast furnaces that are fuelled and fed with charcoal. The blast furnace gases produced when charcoal is used as a reagent in the blast furnaces are renewable products and they have been reported in this publication under the product “Biogases from thermal processes”. Additionally, only the part of these gases consumed for power generation (i.e. energy purposes) has been accounted for in the transformation sector. The remaining charcoal consumed in or used to heat the blast furnaces is reported in final consumption under the iron and steel industry with no distinction between transformation and final consumption.

Prior to the year 2000 blast furnace gases data availability is limited to the input to auto producer electricity plants. Therefore, from 1971 to 1999, the other flows (e.g. production, consumption etc.) are IEA Secretariat estimates.

The Itaipu hydroelectric plant, operating since 1984 and located on the Paraná River (which forms the border of Brazil and Paraguay) was formed as a joint venture between Eletrobrás and the Paraguayan government. Production is shared equally between Brazil and Paraguay.

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Bulgaria

General notes

Data for Bulgaria are available starting in 1971.

In 2025 edition the rise in gas stock levels aligns with Regulation (EU) 2022/1032 of the European Parliament and the Council, issued on June 29, 2022, concerning gas storage. This regulation was enacted to address disruptions in the gas market by ensuring that gas storage facilities across the EU are adequately filled before the winter season and are available for shared use among Member States in a spirit of solidarity. Specifically, it mandates that underground gas storage facilities within Member States must be filled to at least 80% of their capacity ahead of the winter of 2022-2023 and to 90% before subsequent winter seasons.

The LNG terminal in Alexandroupolis, Greece, started commercial operations on October 1, 2024. This facility was developed and is operated by Gastrade, a company in which Bulgaria's national gas transmission operator owns a 20% share.

In the 2024 edition, new autoproducer electricity plants were reported in the industry sector following a pilot annual survey to collect solar PV production and capacity data from autoproducer plants.

In the 2022 edition, useful heat produced by nuclear plants was reclassified from CHP to heat only. Therefore, all nuclear main activity producer CHP plant input and output has been moved to nuclear main activity producer heat plants for the entire time series (1994-2019).

In the 2021 edition, the status of Bulgaria’s crude oil indigenous production data was changed to confidential. A break in the time series may occur between 2018 and 2019.

In the 2021 edition, net calorific values (NCVs) reported by Bulgaria were used to convert physical data to energy units. In previous years, IEA standard NCVs were used. As a result, the time series of primary and secondary oil products were revised for varying periods between 1991 and 2018. Coal NCVs were also revised from 2015 to 2018. Breaks in the time series may occur.

Data on the use of refused derived fuel (RDF) are included in Bulgaria’s waste statistics since the 2020 edition. Thereby, the renewable part of this fuel is allocated to renewable municipal waste, while the non-renewable part is allocated to industrial waste. In the 2021 edition, more information on these renewable

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waste components became available from 2018, resulting in the reclassification of some non-renewable industrial waste. As the combustion of waste for power generation in Bulgaria is experimental, breaks in the time series may occur. The National Statistical Institute is currently reviewing their methodology for this reporting.

Non-specified transformation of natural gas to other hydrocarbons corresponds to hydrogen used in refineries.

Bulgaria has re-classified black liquor from industrial waste to solid biofuels and the renewable portion of tyres from industrial waste (non-renewable) to solid biofuels (industrial waste – renewable part) from 2008. Breaks in time series may occur between 2007 and 2008.

A break in the time series for natural gas stock changes may occur between 2003 and 2004 as cushion gas is excluded from 2004 onwards.

In the 2026 edition, Bulgarian administration revised imports of wood pellets for the entire time series.

From 2018 onwards, reported electricity generation from solid biofuels may exceed the maximum achievable output from net solid-biofuel-only capacity due to the co-firing of coal and solid biofuels in coal-fired power plants.

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People's Republic of China

General notes

Data for the People's Republic of China (China) are available starting in 1971.

China joined the IEA as an Association country in November 2015.

In the 2026 edition, following results from the economic census, NBS supplied the IEA with revisions to their 2019-2023 energy data. The IEA Secretariat revised its data accordingly. Small changes are observed across the entire energy balances both on the supply and demand side for a number of energy products and flows.

In the 2021 edition, following results from the economic census, NBS supplied the IEA with revisions to their 2014 – 2017 energy data, as well as their 2018 data. The IEA Secretariat revised its data accordingly. All revisions showed rather small changes both on the supply and demand side for a number of energy products.

Between September 2015 and early 2016, NBS supplied the IEA with revised energy balances for 2000 to 2013 and the IEA revised its data accordingly.

All revisions showed significant changes both on the supply and demand side for a number of energy products, resulting in breaks in time series between 1999 and 2000.

Coal

NBS and IEA collaborate to provide additional detail on energy production, transformation and consumption of all five different types of coal (e.g. anthracite, coking coal, other bituminous, sub-bituminous and lignite). Prior to the 2026 edition, NBS only provided quantities of raw coal and washed coal (split between cleaned coal and other washed coal) in their energy balances and the IEA Secretariat has attributed these quantities to coking coal and other bituminous coal. From 2026 edition, NBS only provides production of hard and brown coal and the IEA Secretariat uses a reallocation methodology to continue to attribute these quantities to coking coal and other bituminous coal. It is expected that the continuing work to provide disaggregated data on the five different coals will result in greater detail in future editions.

In the 2024 edition, the 2022 year-over-year decrease of net calorific values (NCVs) of coking coal used in coke ovens and other bituminous coal used in coke ovens, blast furnaces, main activity CHP plants, and industry was estimated by the IEA Secretariat. This change in NCVs impacts all corresponding energy data.

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In the 2018 edition, NBS changed the definition of cleaned coal and other washed coal. Only the coal used for coking is called cleaned coal. This might result in breaks in time series in coking coal between 2015 and 2016. As this change of methodology resulted in uncertainty on the use of cleaned coal, the IEA Secretariat estimated the use of coking coal in transformation and final consumption sectors.

In the 2018 edition, based on new information, coal consumption in rail was revised for the whole time series to reflect the fact that coal is used for other usages than transport in the rail sector. The IEA Secretariat has allocated part of the coal reported under rail to other non-specified sectors for the period 1990-2003. For the period 2004-2016 the IEA Secretariat allocated the total amount of coal reported under rail to other non-specified sectors.

In the 2018 edition, based on new information, coal inputs to main activity heat plants and part of coal inputs to main activity electricity plants were allocated to main activity CHP plants for the period 2005-2016.

Net calorific values (NCV) for coal inputs to power generation from 2000 are estimated by applying assumptions used by China on the average thermal efficiency of coal-fired power stations in these years. NCVs are also estimated for bituminous coal production from 2000 as well as for inputs to main activity CHP plants from 2008.

Since 2000, imports and exports of cleaned coal are no longer reported in the national energy balance of China. The IEA Secretariat has used secondary sources of information to report this coking coal trade and corresponding quantities have been removed from bituminous coal trade. Consumption of this coking coal is assumed to be in coke ovens.

The IEA data of coal stocks for the years 1985 and 1990 as well as coal production for the years 1997-1999 are estimates and do not represent official data released by the Chinese government. Those estimates were based on the assumption that coal consumption statistics are more reliable than coal production statistics and that the production-consumption relationship should maintain a balance over time. In recent years, China has reported large increases in stocks for different types of coal. These stock increases are seen as consistent with trends in economic growth and development in China; however, information is currently lacking on the scale of the infrastructure available for this magnitude of stock increases.

Data for coal trade in this publication may not match data from secondary sources of information.

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Oil

In the 2026 edition, gasoline and diesel/gas oil production and consumption in the road transport sector were revised from 2019 to 2023 based on IEA Secretariat estimates. Other non-specified oil products production, energy industry own use, consumption in the chemical and petrochemical sector, and non-specified industry consumption were also revised from 2019 to 2023 based on IEA Secretariat estimates and newly available data from NBS.

In the 2025 edition, gasoline and diesel/gas oil production and consumption in the road transport sector were revised from 2018 to 2022 based on IEA Secretariat estimates. Other non-specified oil products production, energy industry own use, consumption in the chemical and petrochemical sector, and non-specified industry consumption were also revised from 2018 to 2022 based on IEA Secretariat estimates.

In the 2022 edition, a new methodology was developed to adjust refinery yields to crude oil inputs to refinery. The refinery losses have been revised with this implementation.

Starting with 2010 data, NBS increased the level of detail of the national energy balance regarding oil products and coal gases. Breaks in time series may occur between 2009 and 2010.

In 2012, new information became available on how NBS accounts for international aviation and marine bunkers in the China's national energy balance. Previously international flights by Chinese airlines and ships had been excluded. A revised methodology was implemented that includes fuel use for international airplanes and ships, regardless of whether they are foreign- or China-owned.

Coal to liquids output was estimated based on projected production slate of operational coal-to-liquid plants.

In recent years, China has reported large increases in stocks for crude oil and oil products. These stock increases are seen as consistent with trends in economic growth and development in China; however, information is currently lacking on the scale of the infrastructure available for this magnitude of stock increases.

Natural gas

In the 2018 edition, based on new information, natural gas inputs to main activity heat plants and part of natural gas inputs to main activity electricity plants were allocated to main activity CHP plants for the period 2005-2016.

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In the 2012 edition, information became available on natural gas consumption in public transportation in China. This consumption was added to the natural gas time series to ensure proper coverage of the transport sector.

Coal to gas output is estimated based on operational capacity of coal-to-gas plants.

Biofuels and waste

In the 2026 edition, estimates of residential consumption of primary solid biofuels were revised from 2000 onwards to reflect trends in population with primary reliace on biomass for cooking as revised and published by the World Health Organisation.

In the 2024 and 2025 editions, estimates of residential consumption of primary solid biofuels were revised from 2019-2022 to reflect trends in population with primary reliance on biomass for cooking as published by the World Health Organization.

In the 2024 edition, biogases production and demand data were revised from 2017 to 2021 based on IEA Secretariat estimates. Biogases demand by sector was also revised from 2010 to 2016 based on IEA Secretariat estimates and data previously supplied by the China National Renewable Energy Centre.

In the 2024 edition, biodiesel production, trade, and final consumption were revised starting in 2013 to align with data published by the USDA Foreign Agriculture Service.

In 2016, the IEA has been working with the Institute of Built Environment of Tsinghua University, Beijing, to improve its data on biomass consumption in the residential sector in China. Biomass figures have therefore been revised in the 2016 edition back to 1997 to reflect the results of their study and of IEA analysis.

Information became available in 2012 from NBS on the production and consumption of gangue, a mining waste product that has been classified as industrial waste in the IEA energy balances. This quantity of industrial waste is not likely to represent the only combustion of industrial waste in China; however, information is not available to provide more complete data on this activity.

Time series for liquid biofuels and biogases are based on secondary sources of information and IEA Secretariat estimates. None of these time series are reported in the national energy balance of China.

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Electricity and heat

In the 2025 edition, geothermal supply and demand data were revised for the entire time series based on updated IEA Secretariat estimation methodology and the proceedings of the 2023 World Geothermal Conference. In previous editions, all geothermal heat consumption was counted as direct use under geothermal Total Final Consumption. In the 2025 edition, some of this consumption was reclassified as input to main activity heat plants in the transformation sector. Heat output from geothermal sources and total heat production were revised accordingly. The heat from geothermal sources consumed by the Residential and Commercial and public services sectors is now included under the energy product Heat.

In the 2023 edition, electricity consumption in road transport was revised from 2000-2020 based on latest IEA Secretariat estimates.

In the 2018 edition, based on new information, heat production from main activity heat plants using coal and natural gas and part of electricity production from main activity electricity plants using coal and natural gas were attributed to main activity CHP plants from 2005 onwards.

Estimates on the electricity consumption in road transportation are included, starting with 2001 data.

Electricity production from pumped storage hydro is reported from 2010 onwards.

Time series for wind (prior to 2010), geothermal, solar photovoltaic and solar thermal generation are based on secondary sources of information and IEA Secretariat estimates. None of these time series are reported in the national energy balance of China.

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Croatia

General notes

Data for Croatia are available starting in 1990. Prior to that, they are included in Former Yugoslavia.

Non-specified transformation of natural gas reported from 2007 refers to natural gas used by refineries for hydrogen production.

Breaks in time series may appear between 2007 and 2008 as transit data of electricity trade are not available for years prior to 2008.

In 2022, the Croatian government reduced fees paid by fuel distributors for not placing biofuels of the market which caused an important decrease of biofuels deliveries.

In 2022, the share of refinery output by product is different from historical years due to the upgrading of technological processes within the Rijeka refinery.

In the 2026 edition, natural gas trade data was revised by Croatian administration back to 2022 due to a change in methodology to eliminate the reporting of transit trade. This results in no exports reported and a decrease in imports.

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Cyprus

General notes

Note by the Republic of Türkiye (Türkiye):

The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Türkiye recognizes the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Türkiye shall preserve its position concerning the "Cyprus issue".

Note by all the European Union member states of the OECD and the European Union:

The Republic of Cyprus is recognized by all members of the United Nations with the exception of Türkiye. The information in this document relates to the area under the effective control of the government of the Republic of Cyprus.

Data for Cyprus are available starting in 1971.

In the 2026 edition, there is a break in the time series between 2023 and 2024 for main activity producers of electricity from solar PV due to a revision of category breakdowns conducted by the Statistical Service of Cyprus.

In the 2022 edition, the entire time series (2007-2019) of geothermal indigenous production and final consumption in the residential sector were reclassified from geothermal energy to ambient heat by Cyprus. Consequently, these data are no longer represented in the energy balance or statistics.

In the 2021 edition, net calorific values reported by Cyprus were used to convert physical data to energy units. In previous years, IEA standard net calorific values were used. As a result, the time series of liquefied petroleum gases, kerosene type jet fuel excluding biofuels, other kerosene, gas/diesel oil excluding biofuels, fuel oil, lubricants, bitumen, and petroleum coke were revised from 1990-2018. Breaks in the time series may occur between 1989 and 1990 for these products.

In the 2020 edition, the time series of primary solid biofuels were revised from 2009-2010 based on newly available information. Breaks in the time series may occur between 2008 and 2009 for these products.

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Egypt

General notes

Data for Egypt are available starting in 1971.

Data are reported on a fiscal year basis. Data for 2024 correspond to 1 July 2024-30 June 2025.

In the 2026 edition data new information from CAPMAS and the Egyptian Electricity Holding company became available to the IEA Secretariat leading to revisions of the entire balance for 2021 and 2023.

In the 2026 edition, information available on naphtha trade and naphta consumption leads to a large statistical difference. The IEA Secretariat may revise this information in future editions if more information becomes available.

In the 2024 edition, breakdown of electricity consumption by sector is available from 2020 onwards.

Electricity generation data is estimated by the IEA Secretariat for 2024.

In the 2023 edition data was revised for the year 2021 and 2020 to respect the fiscal year basis reporting of Egypt for secondary oil products and hydropower production.

Stock changes may include informal trade.

In the 2022 edition, new information from CAPMAS became available to the IEA Secretariat, leading to revisions in primary and secondary oil data for years 2018 and 2019 as well as coal data for the same period. Trade data for these product aggregates has also been revised for the period 2014-2019.

In the 2022 edition, electricity output from natural gas plants was revised for the period 2008-2019 as new information regarding private sector power plants was collected by the IEA Secretariat.

In the 2022 edition, natural gas final consumption in road transport was revised for years 2018 and 2019 using new information provided by EGAS.

In the 2021 edition, new information became available to the IEA Secretariat, leading to revision of trade and production for primary solid biofuels and charcoal for the whole time series.

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In the 2021 edition, due to a more accurate use of official data, gas condensate data have been revised from 2014 to 2018.

In the 2020 edition, the IEA Secretariat revised primary solid biofuel data back to 1971. Data are now based on the Food and Agriculture Organisation (FAO), growth of solid biofuels production and consumption. Charcoal production, trade and use have been estimated based on FAO data.

In the 2020 edition, importation and consumption of other bituminous coal have been revised for the years 2014 to 2017, as new information became available. This may lead to break in time series between 2013 and 2014.

In the 2020 edition, input of natural gas to power plants as well as natural gas final consumption in 2017 were revised based on new data received from CAPMAS and EGAS.

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Georgia

General notes

Data for Georgia are available starting in 1990. Prior to that, they are included in Former Soviet Union.

Georgia is one of the 11 EU4Energy focus countries.

Energy data for Georgia do not include Abkhazia and South Ossetia, except for the electricity questionnaire. Part of the electricity generated in the Enguri HPP is transferred to Abkhazia and accounted for in the electricity balance as non-specified consumption.

In 2015, a refinery started operating in Georgia.

For the period 2015-2017, trade of crude oil includes a share of crude oil blended with fuel oil. This explains breaks in time series from 2014.

In 2015, trade of natural gas for the year might include re-export.

Between 2014 and 2015, a break in stock level time series appears for some oil products as the National Statistical Office (GEOSTAT) received more detailed information on stocks of oil products.

Between 2012 and 2013, breaks in time series may appear for some products, as data collection and submission to the IEA became the responsibility of the National Statistical Office (GEOSTAT), whereas it used to be done by the Energy Efficiency Centre.

For the period 1990-2012, natural gas data are reported at temperature and pressure conditions of 20°C and 101.325 kPa, respectively.

Since 2011, heat production has stopped due to the shutdown of combined heat and power plants.

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India

General notes

Data for India are available starting in 1971.

India joined the IEA as an Association country in March 2017.

Data are reported by India on a fiscal year basis. Data for 2023 correspond to 1 April 2023 – 31 March 2024. This convention is different from the one used by Government of India, whereby 2023 data would refer to fiscal year 1 April 2022 – 31 March 2023.

The publication “Energy Statistics India 2026” by the Ministry of Statistics and Programme Implementation (MOSPI) was released at the same time as the finalisation of the IEA data for the April 2026 edition. As a result, it was not possible to integrate this new release into the current publication cycle. The MOSPI data will be reviewed and incorporated in subsequent editions.

Coal

In the April 2026 edition, the decline in non-metallic minerals consumption reported by official sources and reflected in the IEA publication is not consistent with activity trends and may be revised in future editions.

In the 2024 edition new data became available from MOSPI regarding calorific values of coking coal, leading to breaks in time series between 2021 and 2022.

In the 2021 edition several transformation and consumption flows are based on growth of total energy supply for a given product, as official data are not yet available.

In the 2015 edition, significant revisions of the net calorific values of the different types of coal were made for the whole time series, based on official data as well as IEA and other experts’ estimates. As a result, there have been significant changes for the coal data when presented in energy units, as well as in the calculated efficiency of coal fired power generation. Data on the production and consumption of secondary coal products may have also been revised as a result.

The net calorific values of coking coal, sub-bituminous coal and other bituminous coal, were revised again in the 2018 edition to take into account more detailed information on imports and IEA Secretariat experts estimates.

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From 2008, due to a notable discrepancy between official coal imports from India and coal exports to India as reported by trade partners, imports of coking coal and non-coking coal are estimated by the IEA Secretariat, based on trade partners' data. The breakdown of non-coking coal imports between bituminous coal and sub-bituminous coal is estimated from 2008. This could lead to breaks in time series between 2007 and 2008.

Coking coal figures for India do not align with IEA definitions as they include production of non-metallurgical coking coal reported by India.

Due to data limitations, IEA Secretariat estimates are used for some products and flows, including supply and demand of coke oven gas and blast furnace gas. Coke oven coke production is estimated from 2006 based on growth of blast furnace iron production, as official production data do not include production from small private producers.

Oil

In the 2025 edition, new data regarding refinery activities became available for the 2019 – 2023 period, leading to revisions in time series for Residual fuel oil, Refinery feedstock and Crude oil.

In the 2023 edition, non-bio jet kerosene consumption by international and domestic aviation bunker were revised from 2018 using the OECD Air Transport CO2 Emissions.

In the 2020 edition, input to autoproducers of electricity were revised from 2008 onwards based on data on their power generation reported by the Central Electricity Authority. In parallel, several final consumption flows were revised to incorporate sales from retailers.

In the 2018 edition, petroleum coke consumption by the non-metallic mineral industries was revised based on information on cement production estimated by the IEA Secretariat based on United States Geological Survey Mineral Industry Report on India. This may lead to breaks in time series as well as differences with previous editions.

In the 2014 edition, information on stock changes of crude oil and oil products, available from the JODI database from April 2011, was added. Breaks in time series may appear in stock changes between 2010 and 2011.

In the 2014 edition, refinery intake was split between crude oil and refinery feedstocks from 1999 based on data available by the Ministry of Petroleum and

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Natural Gas. The refinery feedstocks reported by the IEA Secretariat correspond to the quantities officially reported as “other inputs” to Reliance Refineries. They do not include additives and refinery feedstocks to other Indian refineries. These missing inputs could reach up to 2.5 million tonnes.

Data for diesel consumption from 2008 are partially based on an official survey on the end use of diesel retail sales. The IEA Secretariat classifies the diesel used in mobile phone towers and non-industry power generators as input to autoproducer electricity generation. A corresponding electricity output is estimated.

No NGL production is officially reported by India. The NGL production estimated by the IEA Secretariat corresponds to the production of oil products from gas separation plants, known in India as “fractionators”. In the IEA methodology, the output of oil products from gas separation plants comes from an input of NGL and the separation process is shown in the transfer row. Prior to 2005-2006, the split of fractionator output between petroleum products is estimated by the IEA Secretariat.

No breakdown of refinery fuel by products is currently officially available. Refinery gas production is estimated based on expected refinery output for the years where using official data would lead to refinery gains. Due to notable breaks in official data for fuel oil, consumption of fuel oil in international marine bunkers is estimated between 1990 and 2002 based on industry sources and from 2003 onwards based on Ministry of Shipping cargo data; final consumption of fuel oil is estimated from 2004 based on 2003 data and official trends from Ministry of Petroleum and Natural Gas.

Natural gas

In the 2024 edition, new information became available regarding the consumption of Natural gas in the Iron and Steel industries, leading to revision of quantities in non-energy uses and energy uses from 2000 to 2022 data. Data for demand from 2015 onward for natural gas was also revised based on new data from Petroleum Planning and Analysis Cell (PPAC).

In the 2020 edition, inputs to main activity producers of electricity were revised from 2010 onwards, based on data reported by the Ministry of Petroleum and Natural Gas. Before 2010 inputs to main activity power plants are estimated by the IEA Secretariat.

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In the 2020 edition, use of natural gas in oil refineries was added from 2008 onwards based on data reported by the Ministry of Petroleum and Natural Gas. Before 2008 there is no data reported for this flow.

In the 2020 edition, total final consumption of natural gas was revised from the start of the time series based on data reported by the Ministry of Petroleum and Natural Gas.

Natural gas imports for India from 2008 onwards are based on Indian Customs data, in order to include all LNG importers.

No data are officially available on the sectoral consumption of re-gasified LNG and city gas. The breakdown is estimated by the IEA Secretariat.

Biofuels and waste

In the April 2026 edition, biogas data were revised following the implementation of an improved modelling approach.

In the 2023 edition, consumption of primary sold biofuels by construction sector was reallocated to non-metallic minerals sector for the whole time series based on the fact that it is used to produce bricks.

In the 2023 edition, changes of methodology were implemented to revise the data of off-grid solar PV generation and off-grid biogas production/consumption, thanks to a study by The Energy and Resources Institute (TERI), funded by the Clean Energy Transition Programme; solar PV generation by autoproducer from 2007 year onwards and biogas data from 2005 onwards were revised.

In the 2021 edition, changes of methodology were implemented to revise the data of solid, liquid and gaseous biofuels, thanks to a study by TERI. The scope of data collection for certain products is increased. Full time series were revised for fuelwood, agricultural residues, bagasse, biogases and bioethanol. For solid biofuels, the magnitude of the revision is stronger for the historical data: from 20% in the 1970s to less than 5% in the last five years.

Fuelwood supply is estimated using data from Forest Survey of India, especially looking at fuelwood used for energy usages. Residential consumption is estimated based on households' reliance of fuelwood for cooking.

Transformation of fuelwood into charcoal is estimated based on an updated efficiency factor expressed in mass unit and is then converted to energy unit.

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The demand for charcoal is revised from 2001 onwards, creating a break in time series. The revision takes into account residential consumption of charcoal for cooking, estimated using households' reliance on charcoal for cooking. Charcoal not consumed by households is allocated to industry consumption. Industry consumption of charcoal is not estimated before 2001.

Vegetal materials and residues' supply is estimated using both data on agricultural crops production from the Reserve Bank of India and the surplus availability factor published by the Technology Information Forecasting and Assessment Council of India. Agricultural residues consumption by households is estimated based on their reliance of the latter for cooking.

Bagasse production of combined heat and power is estimated by recouping two sources of information. Bagasse production is estimated based on sugarcane production considering both sugar processing units and jaggery units. As electricity and heat are a by-products of these facilities, they are reported under the category auto-producer CHP plants. Electricity generation is estimated using CEA data and recouped with MNRE data on installed on-grid and off-grid capacity. From 2016 onwards, surplus and non-surplus electricity generated are estimated. Up to 2015, non-surplus electricity is estimated to ensure continuity of the time series. Electricity used to power the plants and electricity used for sugar processing are estimated in the balance by considering an average bagasse-based processing unit. The heat produced from bagasse and directly used by the sugar industry is tracked by its bagasse input, measured as the residual bagasse not used for electricity generation.

Biogas production scope is widened in the 2021 edition, covering not only the biogas used in power production, but also estimating direct final consumption. Anaerobic and thermal technologies to produce biogas are taken into account, using data published in the Annual Report of the Ministry of New and Renewables Energy. Data includes the family scale biogas program, the community scale biogas program, the bio-CNG and the biogas produced in industry. Thermal gasification processes are also covered, based on installed capacity data published by MNRE and IEA Secretariat estimation.

In the 2021 edition, bioethanol production figures are based on official data published by the Ministry of Petroleum and Natural Gas. Demand figures are based on United States Department of Agriculture estimates for the calendar year.

Biodiesel demand and supply are based on the data published by the United States Department of Agriculture estimates for the calendar year.

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Electricity and heat

In the 2023 edition, electricity generation from diesel have been estimated from 2010 year onwards to have a reasonable power efficiency.

Data for total electricity generation include estimates for electricity generation from diesel by non-industrial autoproducers as well as off-grid electricity generation from renewable energy. 2020 data on the electricity consumption by industrial sub-sector are estimated by the IEA Secretariat.

Only information on total on-grid generation from renewables is officially available. The breakdown between sources was estimated by the IEA Secretariat from 2007 using official data on capacities from MNRE. Total off-grid generation and split by sources are estimated based on capacities from 2007 onward.

Solar power generation data reported by CEA include both solar photovoltaic (PV) generation and concentrated solar power generation. It is currently reported in the solar PV commodity balance. The IEA Secretariat solar thermal data only include what derives from heat systems.

Output of biomass power generation and bagasse co-generation is reported altogether as output of autoproducer electricity plants. Up to 2015 data, it only includes the surplus power generation sold to the grid. From 2016 onwards, capacity data reported by MNRE include non surplus capacity; the output of electricity estimated by the IEA Secretariat therefore corresponds to the total output of electricity. Breaks in time series occur between 2015 and 2016.

Estimates of solar thermal output up to 2012 may include systems that were out of operation. For this reason, a break in time series might occur between 2012 and 2013.

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Indonesia

General notes

Data for Indonesia are available starting in 1971.

Indonesia joined the IEA as an Association country in November 2015.

The production and allocation of coal among the various coal types and products are estimated by the IEA Secretariat due to data collection limitations.

The IEA Secretariat estimates coking coal production for the period from 2014 onwards. Breaks in time series may appear between 2013 and 2014. From 2011 onwards, coal exports data from BPS are used. This results in breaks in time series for 2010-2011.

In the 2026 edition, significant upward revisions were introduced for natural gas own use in refineries data as of 2019, in line with the revisions in the Handbook of Economics and Energy Statistics of Indonesia (HEESI). Additionnaly, the IEA Secretariat introduced estimates of natural gas (LNG) used by international marine bunkers from 2013 to 2020 and revised the estimates from 2021 to 2023 based on newly available information.In the 2025 edition, the IEA Secretariat revised the coal balance starting from the year 2010. Recognizing that coal used in captive power plants was included in coal sales reported in HEESI, we have removed this portion by estimating it based on captive capacity data from the Global Energy Monitor (GEM). As a result, consumption flows have been revised, also taking into account available activity data. Additionally, estimates for blast furnaces and coke oven coke plants have been developed and incorporated into the balance.

In the 2024 edition, residential consumption of solid biofuels was revised downwards. This adjustment was made based on official statistics reported in the HEESI.

In 2022, coal consumption experienced a notable increase, particularly within the non-ferrous metals sector. This surge can be partly attributed to heightened activity in nickel smelters during the specified period.

In the 2021 edition, new information on the use of biodiesel was available. This allowed the Secretariat to estimate the part blended with diesel and allocate it to biodiesel for 2019. In the time series up to 2018 included, some biodiesel consumption data could still be included under gas/diesel. This leads to breaks in time series between 2018 and 2019.

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In the 2021 edition, the ministry of Energy and Mineral Resources was able to retrieve information to split the electricity generation from biofuels and waste into the different sources. This leads to breaks in time series between 2018 and 2019.

In the 2020 edition, the IEA Secretariat integrated new information on the classification of power plants for the year 2018. This might lead to breaks in time series between 2017 and 2018.

Further, the Ministry of Energy and Mineral Resources has, for 2018 data and for the first time, provided the Secretariat with estimates for Indonesia's off-grid electricity production. This information has been added to the 2018 electricity data and leads to breaks in time series, foremost but not exclusively for solid biofuels data.

In the 2018 edition, the Ministry of Energy and Mineral Resources allocated power generation from solid biofuels and waste to waste power plants according to new information received from PLN. This leads to a break in time series between 2016 and 2017.

The data on electricity generation from other vegetal materials and residues includes some electricity generation from waste until the year 2016.

Electricity consumption for the agricultural sector is estimated by the IEA Secretariat from 2000 onwards. This may lead to breaks in time series between 1999 and 2000.

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IEA Secretariat estimates.

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Kenya

General notes

Data for Kenya are available starting in 1971.

Kenya was one of the ten countries that benefited from EU Support to IEA Data for Affordable and Sustainable Energy System for Sub-Saharan Africa.

Solar photovoltaic data comes from the International Renewable Energy Agency (IRENA) estimations of the off-grid generation up to 2018.

In the 2025 edition, data for electricity consumption in the Residential and Commercial and public services sectors were revised from 2018 to 2022 to align with data published by the Kenya National Bureau of Statistics.

In the 2025 edition, some other bituminous coal consumption in the Non-metallic minerals sector was reallocated to the Iron and steel sector for 2020 to 2022 based on IEA Secretariat estimates.

In the 2024 edition, data for other bituminous coal and bitumen were revised back to 2006 and 2010, respectively. These revisions were made to align with time series data published in the Kenya National Bureau of Statistics Statistical Abstract.

In the 2024 edition, data for bio-gasoline (bioethanol) were added based on publications by the Kenya Energy and Petroleum Regulatory Authority and Ministry of Energy.

In the 2023 edition, IEA Secretariat estimates of charcoal and primary solid biofuel production and consumption were revised for the entire time series.

In the 2022 edition, electricity data were revised from 2003 to 2019 to be reported on a calendar year basis. In previous editions, electricity data were reported on a fiscal year basis, beginning on 1 July and ending on 30 June of the subsequent year.

In the 2022 edition, oil product data were revised to more accurately reflect the final consumption by sector reported by the Kenya National Bureau of Statistics.

In the 2021 edition, new information became available on the detailed generation of electricity from oil products. Generation per product is now available from 2016 onwards.

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In the 2021 edition, new information became available on the food and tobacco industry activity, leading to revisions of the estimations for energy consumption in the sector from 1996 onward.

In the 2020 edition, refinery data have been revised from 2014 onwards, as the national refinery have stopped its activity in 2013.

In the 2020 edition, new data regarding primary and secondary biofuels production and consumption became available, leading to breaks in time series between 2017 and 2018.

In the 2014 edition, fuelwood and other vegetal matters and residues are estimated based on 2000 data. Charcoal data are derived from the wood input to charcoal production with assumed efficiency of 33%; bagasse production and input to power plants is back-estimated from data on Mumias cogeneration.

In 2014, the Olkaria geothermal plant came online, significantly increasing the country's geothermal electricity production capacity. Breaks in time series can be observed between 2013 and 2014 in electricity output from geothermal energy.

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IEA Secretariat estimates.

IEA. All rights reserved.

Kosovo

General notes

Data for Kosovo are available starting in 2000. Between 1990 and 1999, data for Kosovo are included in Serbia. Prior to 1990, they are included in Former Yugoslavia.

In the 2025 edition the IEA Secretariat estimated the electricity consumption by electric boilers between 2015 and 2021, because the implied efficiencies calculated based on the figures submitted were implausible.

In 2021, imported and exported electricity present a significant increase with respect to previous years, as Kosovo was used more as transit.

In 2011, electricity transit trade data became available. As a result, a break in time series occurs between 2010 and 2011.

In 2011, a desulphurization unit operated in Kosovo for a few months only. As a result, breaks in time series occur in 2011 for transfer and refinery input of refinery feedstocks as well as transfer and production of kerosene, gas/diesel oil and fuel oil.

A break in time series between 2015 and 2016 may be observed in biofuels and waste due to a survey conducted on household consumption.

Sources

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IEA Secretariat estimates.

IEA. All rights reserved.

Sources 2000 to 2002:

IEA Secretariat estimates.

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Malta

General notes

Data for Malta are available starting in 1971.

In the 2026 edition, data for biodiesel density is not available.

In the 2025 edition, it is reported that 0.043 MWe of wind plant capacity was decommissioned in 2023.

In the 2022 edition, gross electricity generation from Solar PV autoproducers and several data points in electricity final consumption were revised for the years 2018 and 2019, using new data provided by the National Statistics Office.

In the 2020 edition, biodiesel use was reclassified by the Central Office of Statistics as transformation from 2016 onwards. This may lead to breaks in time series of transport, industry and other sector final consumption between 2015 and 2016.

In the 2020 edition, for several oil products, the final consumption in transport, industry and commerce, services and other sectors was also revised, for the period 2013-2016.

In 2017, Malta imported LNG for the first time. It is used in power generation engines that have been upgraded to operate on natural gas, from heavy fuel oil previously. 2015 and 2016 data reflects this transition with high imports of electricity via the interconnector with Italy.

In the 2019 edition, oil products consumption data have been revised following the results of a fuel survey conducted by the country in 2018.

In 2017, Malta carried out a household energy survey which led to revisions of the solar thermal data series for 2010-2016. This may lead to breaks in time series between 2009 and 2010.

In 2011, a new power generation station fuelled by biogas became operational in Malta. This may lead to breaks in time series for some products and flows.

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Sources

Sources up to 2024:

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IEA Secretariat estimates.

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Moldova

General notes

Data for Moldova are available starting in 1990. Prior to that, they are included in Former Soviet Union.

Moldova is one of the 11 EU4Energy focus countries.

Official figures on natural gas imports, natural gas inputs to power plants, electricity production, foreign trade and consumption are modified by the IEA Secretariat to include estimates for supply and demand for the districts from the left side of the river Nistru and municipality Bender. Other energy production or consumption from these districts is not included in the Moldovan data. This may lead to breaks in the time series for some products.

In the 2025 edition, data for 2024p for primary solid biofuels has been estimated by the IEA Secretariat.

In the 2024 edition, preliminary 2023 figure for primary solid biofuels have been estimated by the IEA Secretariat.

In the 2024 edition, consumption of other bituminous coal in non-metallic industry for 2022 has been partially replaced by other fuels, like anthracite and petroleum coke, but it also reflects the drop of cement production in the country. Instead, the increase in residential use is due to the surge in price of other energy products.

In the 2024 edition, trade of motor gasoline from Romania to Ukraine is recorded in the database, in accordance with Moldovan national regulations – only goods remaining on the national territory for less than 8 calendar days can be considered in transit.

In the 2023 edition, data for capacity have been added. Data are obtained by modifying official figures to include estimates from the districts from the left side of the river Nistru and municipality Bender.

In the 2022 edition, 2019 and 2020 natural gas imports data was estimated due to data confidentiality.

Due to the inclusion of estimated data in the Moldova energy balance, indicators for per capita energy consumption or energy intensity may appear inconsistent with expected trends.

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The National Bureau of Statistics has revised time series when possible to align with International Recommendations for Energy Statistics. As a consequence, breaks in time series may occur in 1993 for heat, in 2012 for aviation bunkers and in 2005 for other products. More survey data on solid biofuels, including wood, animal waste and other plant residues are available since 2010. As a consequence, breaks in time series may occur in 2010 for primary solid biofuels.

Sources

Sources 2008 to 2024:

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IEA Secretariat estimates.

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The United Nations Energy Statistics Database, United Nations Statistical Division, New York.

IEA Secretariat estimates.

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Montenegro

General notes

Data for Montenegro are available starting in 2005. Between 1990 and 2004, they are included in Serbia. Prior to 1990, they are included in Former Yugoslavia.

The drop in electricity consumption of non-ferrous metals industry in 2022 is due to the shutdown of the sole aluminium smelter industry in the country, KAP, at the end of December 2021. The last few cells stopped operating in May 2023.

In the 2023 edition, capacity data for solar photovoltaic for 2020 was revised due to new information becoming available.

In the 2022 edition, 2020 electricity trade data include transit of electricity, which was not considered for previous years. This led to breaks in the time series of imports and exports of electricity between 2019 and 2020.

In the 2021 edition, lignite calorific values from 2016 to 2018 were revised due to new information becoming available.

In the 2020 edition, the whole time series of solid biofuel transformation were revised due to new information becoming available.

Charcoal imports data might include minor quantities of charcoal produced domestically until the year 2017.

Breaks in time series appearing in solid biofuels between 2010 and 2011 can be explained by a new survey carried out by Montenegro in 2013.

A survey on energy consumption in industry was conducted by Montenegro in 2014. Breaks in time series may therefore occur between 2004 and 2005.

Sources

Sources 2005 to 2024:

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Joint IEA/Eurostat/UNECE annual energy questionnaires.

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Sources 2021:

Proposal for a decision on the Energy Balance of Montenegro for 2022, www.gov.me

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Morocco

General notes

The statistical data for Morocco are supplied by and under the responsibility of the relevant Moroccan authorities. The use of such data by the IEA are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

Data for Morocco are available starting in 1971.

Morocco joined the IEA Family as an Association country in November 2016. Morocco started filling the five Joint IEA/Eurostat/UNECE questionnaires for the year 2015. This may lead to breaks in time series between 2014 and 2015.

Crude oil consumption in the oil and gas sector corresponds to condensates.

The breakdown of natural gas production by type is not available.

In the 2024 edition, revisions were made for gross and net electricity production from diesel, fuel oil and petcoke (from 1990 to 2012). This may lead to breaks in time series.

In the 2023 edition, revisions were made for rail transport (2021), gross and net electricity production and electricity consumption (from 2004 to 2012). This may lead to breaks in time series.

In the 2022 edition, revisions were made to disaggregate autoproducer electricity production from main activity electricity production for wind (2013-2019) and fuel oil electricity only plants (2019). Breaks in time series may occur.

In the 2019 edition, revisions in solar thermal electricity production were made for 2015 and 2016. This may lead to breaks in time series.

In the 2018 edition, revisions in biofuels were made for the period 2004-2014. This may lead to breaks in time series between 2003 and 2004.

Data for autoproducer electricity are based on an old survey. Revisions are expected in the next cycles.

The Samir-Mohammedia refinery expansion was completed in 2009, accommodating new feedstocks and additives. This may lead to breaks in time series between 2009 and 2010.

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In August 2015, refinery activity stopped, causing significant decreases in refined oil products production and breaks in time series between 2014, 2015, and 2016.

Sources

Sources 2015 to 2024 :

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IEA. All rights reserved.

The United Nations Energy Statistics Database, United Nations Statistical Division, New York.

IEA Secretariat estimates.

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Republic of North Macedonia

General notes

Data for North Macedonia are available starting in 1990. Prior to that, they are included in Former Yugoslavia.

North Macedonia changed the methodology for reporting autoproducer heat consumption for own use in 2010, which can lead to breaks in time series between 2009 and 2010.

The refinery OKTA in North Macedonia was shut down in 2014. This may lead to breaks in time series between 2013 and 2014.

The State Statistical Office revised the energy balances from 2005 to 2014 in accordance with the survey conducted in 2014 on household energy consumption.

In the 2024 edition, the North Macedonian administration informed the IEA Secretariat that consumption of aviation gasoline in non-energy use transport will be reallocated to energy-use. Revisions are expected in the next publication.

In the 2023 edition, electricity imports and exports were revised from 2019 to 2020 to include transit trade. Electricity trade prior to 2019 represents net trade values and does not include the amount in transit, leading to breaks in the time series between 2018 and 2019.

Sources

Sources 1990 to 2024:

Direct communication with the State Statistical Office of North Macedonia, Department for Environment, Energy and Transport, Skopje.

Joint IEA/Eurostat/UNECE annual energy questionnaires.

IEA Secretariat estimates.

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Romania

General notes

Data for Romania are available starting in 1971.

Romania became IEA Accession country in April 2026. For April 2026 edition it is not yet included in IEA Family aggregates.

Romania's methodology for estimating indigenous production of geothermal energy differs from the one that IEA has adopted. Therefore, data comparisons between Romania and other countries might be misleading.

Data on quantities of coke oven coke used in blast furnaces do not correspond to the official submission of the national administration, as they have been estimated by the IEA Secretariat to ensure a carbon balance in the blast furnace transformation.

In the 2025 edition, preliminary data for 2024p supply of Coking Coal was estimated by the IEA Secretariat as no official data were received by the time the database was finalised.

In the 2021 edition, net calorific values (NCVs) reported by Romania were used to convert physical data to energy units. In previous years, IEA standard NCVs were used. As a result, the time series of primary and secondary oil products in energy units were revised for varying periods between 1990 and 2018. Furthermore, the NCVs for coal products have been aligned to the reported ones, leading to revisions especially for the coal data in energy units used in power plants.

The break in time series for geothermal consumption in the Residential sector in 2020 is due to reporting issues in Romania. Geothermal consumption in 2020 is expected to be revised in the 2024 edition.

Heat production from Geothermal Autoproducer heat plants for 2018 and 2020 are missing in the 2023 edition. Heat production values are expected to be revised in the 2024 edition.

Disaggregated Heat production for preliminary 2022 data is estimated by the IEA secretariat except of Natural Gas and Residual Fuel Oil.

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Sources

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IEA Secretariat estimates.

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Senegal

General notes

Data for Senegal are available starting in 1971.

Senegal was one of the ten countries that benefited from EU Support to IEA Data for Affordable and Sustainable Energy System for Sub-Saharan Africa.

In the 2021 edition, previously reported hydroelectricity production was revised as imports from 2009 onwards, as the dam is not located within the borders of the country.

In addition, in the 2021 edition, the electricity output was split per oil product from 2017 onwards thanks to new information available. Thanks to improvements in the data collection system, the final consumption of electricity is monitored more accurately in 2019. This may lead in breaks in time series between 2018 and 2019.

Finally, in the 2021 edition, quantities of diesel used to start ignite the power plants were reported for the first time, related to the 2019 diesel consumption.

In the 2020 edition, data for 2017 have been revised based on new data received from the Ministère de l'Energie et des Mines.

In the 2018 edition, data for 2014 and 2015 are revised based on information received from the Ministère de l'Energie et des Mines.

In the 2014 edition, the time series for solid biofuels were revised from 2009 onwards based on newly available information. Breaks in time series may occur between 2008 and 2009.

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Serbia

General notes

Data for Serbia are available starting in 1990. Prior to that, they are included in Former Yugoslavia.

Serbia energy data include Montenegro until 2004 and Kosovo until 1999. Breaks in time series for oil products and natural gas may appear between 2006 and 2007 due to newly available data for 2007.

Heat production from autoproducers includes all heat produced but for **biogases**, **industrial wastes** and **municipal wastes** (renewable and not) where the amounts of heat autoconsumed are reported directly in the final consumption of these energy products, in accordance with international recommendations for energy statistics.

In the 2026 edition, the significant increases in 2024 in inputs for **electricity** and **heat** production from **industrial waste** and **municipal waste** (renewable and non-renewable) in autorproducer CHP plants are due to the addition of a new large-scale facility for industrial waste, as well as the municipal waste facility's transition from limited testing in 2023 to full-scale operation in 2024.

In the 2024 edition, primary solid biofuels consumption in main activity producer CHP and, consequently, its heat production for the years from 2019 to 2021 were reallocated to main activity producer heat due to new available information.

In the 2024 edition, preliminary data for 2023 **coke oven coke** were fully estimated due to a low due to extremely low blast furnace efficiency. In the 2022 edition, the lignite input to heat autoproducers and the lignite own use in BKB/peat briquettes plants time series have been revised from 2014 to 2019, due to new information provided by the Ministry of Mining and Energy and the Statistical Office of the Republic of Serbia.

In the 2022 edition, the large increase observed in primary solid biofuels final consumption in the residential sector for year 2020 is due to a specific survey carried out under the authority of the Ministry of Mining and Energy, concerning only year 2020. This creates a break in-series with historic data.

In the 2021 edition, the time series for non-bio diesel consumption from 2016, lignite input into power plants from 2014, and inputs into blast furnaces from 2017 have been revised due to new information and improved methodologies.

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Singapore

General notes

Data for Singapore are available starting in 1971.

Singapore joined the IEA as an Association country in October 2016.

Due to confidentiality requirements, part of supply and demand flows for oil products are not reported, resulting in a large statistical difference since 2003.

At the time of publication of the 2025 edition, refinery input and output figures for 2023 were not available and they have therefore been estimated by IEA Secretariat. These values may differ significantly from actual figures published later in Singapore's official sources. The 2022 refinery input and output became available, leading to revisions of the numbers published in the 2024 edition.

In the 2022 edition, the 2006-2019 electricity road consumption data were revised to take into account estimated Electric Vehicle (EV) consumption under transport sector.

The IEA Secretariat, the Energy Market Authority (EMA) and the National Climate Change Secretariat (NCCS) have worked closely together on improving data quality for Singapore. Therefore, breaks in time series between 2008 and 2009 and differences in trends when compared to previous publications may occur for some products.

From 2009, Singapore publishes splits of refinery output between light, middle and heavy distillates and residuum only. Further breakdown between products is estimated by the IEA Secretariat. Singapore aggregates petrochemical and refinery consumption. The split between refining and petrochemical consumption is estimated by the IEA Secretariat.

Refinery input is broken down between crude oil and feedstocks. Splits of feedstock by product are not provided by Singapore. By default, IEA estimates that feedstocks come from naphtha as a result of residual calculation plus gas/diesel and fuel oil in equal proportions.

Other data remain aggregated due to lack of data availability. Electricity consumption in the industry sector from 2005 includes electricity consumption by refineries. Electricity consumption in transport includes all electricity consumption at airport terminals. Municipal waste production and consumption may include biogas.

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Refinery gas production and consumption may include syngas produced by the petrochemical sector.

Due to Singapore's large trade volume in comparison to its final consumption, slight misalignment of trade figures can have a significant impact on the energy balance of Singapore. The IEA Secretariat has adjusted total imports of gas/diesel from 2009 onwards to match demand.

A coal-fired power plant started operations in 2013. This might lead to breaks in time series between 2012 and 2013.

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IEA Secretariat estimates.

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South Africa

General notes

Data for South Africa are available starting in 1971.

South Africa became an IEA Association country in November 2018.

Data may be revised from Y-2 to Y to reflect the Y-2 and Y-1 energy balances published by the Department of Mineral Resources and Energy as they become available.

Coal

Outputs from gas-to-liquids and coal-to-liquids plants are presented in the "Transfers" flow.

Coking coal, coke oven coke, coke oven gas and blast furnace gas production and consumption are estimated using reported crude steel production figures.

For the 2019 edition, the estimation methodology was changed for gas work gas, which may lead to break in time series between 2009 and 2010. The IEA Secretariat uses the industrial activity data reported by the World Steel Association to estimate the consumption of the industry sector.

In the 2017 edition, new information became available which allowed the separation of non-energy use of coal in Coal to Liquids (CTL) plants from the coal used for energy purposes in these same plants. Non-energy conversion efficiencies for CTL plants in South Africa are assumed to be 60% in physical units. Due to specific calorific values used for this specific process, the efficiency is 73% in our energy balance format. This methodology may lead to breaks in time series between 2010 and 2011 for these products and flows.

In the 2013 edition, breaks in time series may occur for anthracite and coking coal between 2009 and 2010 as new information became available. Prior to 2010, coking coal data may include anthracite.

Oil

In the 2023 edition, the split of oil consumption between domestic and international aviation was revised from 2013 onwards based on new information.

In 2020 and 2021, oil production declined due to shutdowns at several refineries.

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In the 2021 edition, the 2016-2019 inputs to refineries and outputs of refined oil products for were revised to avoid refinery gains in energy terms. This may result in high statistical difference for crude oil data.

In the 2019 edition, new information became available that led to changes in the split of kerosene type jet fuel consumption in domestic aviation and international bunker. Breaks in time series may occur between 2008 and 2009.

New information became available in 2015 on refinery output of lubricants. Data have been revised from 1998. This may lead to breaks in time series between 1997 and 1998. Reported quantities of synthetic fuels output may not include quantities from PetroSA.

Natural gas

In 2021, natural gas production declined as natural gas field feeding the Mossel Bay GTL plant neared end-of-life.

In the 2014 edition, new information became available on consumption of natural gas in industrial sectors. Breaks in time series may occur between 2009 and 2010.

Biofuels and waste

In the 2025 edition, the time series of black liquor was revised starting in 1971 using estimates from IEA Secretariat. The purpose is to better capture the bioenergy input in the pulp and paper industry.In the 2025 edition, the time series of “other solid biomass” and “biogas” were added, using estimates from IEA Secretariat. The purpose is to better capture the electricity generated from these products.

In the 2024 edition, the time series of charcoal and primary solid biofuels were revised starting in 2000 using estimates from IEA Secretariat. Production, transformation, and consumption estimates were revised accordingly. Breaks in time series may occur between 1999 and 2000.

In the 2022 edition, the estimation methodology of bagasse and other vegetal materials and residues (primary solid biofuels) was changed to utilize data from the Department of Mineral Resources and Energy, FAO, and IRENA. Breaks in time series may occur between 1998 and 1999.

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Electricity and Heat

In the 2025 edition, the time series of electricity production from Nuclear, Hydro, Pumped Hydro, Solar Thermal, Solar PV, Wind, Biomass, Biogases, Coal, Diesel were revised using NERSA data.

Before 2021, Nuclear and Hydro electricity generation data are reported on a fiscal year basis, beginning on the 1 April Y and ending on the 31 March Y+1.

In the 2024 edition, electricity generation from liquid fossil fuels (OCGT) was revised to align it with ESKOM reporting.

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Thailand

General notes

Data for Thailand are available starting in 1971.

Thailand joined the IEA as an Association country in November 2015.

Data for lubricants, refinery gas and non-specified oil products are not published by the Ministry of Energy and are estimated by the IEA Secretariat. Up to 2012 data, IEA Secretariat also estimated naphtha.

Data for production, own use and non-energy use of natural gas may include propane, butane and ethane produced in gas separation plants.

Stock changes may include statistical difference for certain products.

In the 2025 edition, in an effort to better reflect the energy consumption of paper, pulp and print industry, the IEA Secretariat reallocated black liquor (included in primary solid biofuels) consumption in autoproducer electricity to autoproducer CHP and final consumption in paper, pulp and print industry for the entire time series. Furthermore, a portion of primary solid biofuels use in non-specified industry was also attributed to such industry.

In the 2025 edition, the IEA Secretariat revised the methodology to estimate refinery gas production from 2010 onwards to depict more accurately the expected output from Thailand refinery sector.

In the 2025 edition, kerosene production was revised from 2017 onwards to avoid double counting of kerosene quantities used for diesel and jet kerosene production.

For the first time, in 2022 data the Thailand energy balance reports disaggregated figures for stock change and statistical difference. Breaks in time series of these flows may occur between 2021 and 2022.

In the 2024 edition, final consumption of natural gas in some industry sectors (iron and steel, non-metallic minerals, machinery and non-specified industry) and non-energy use in the chemical and petrochemical sector have been estimated to avoid unexplained breaks in their time series.

In the 2024 edition, the IEA Secretariat estimated production of diesel/gasoil for 2022 based on official data from the Petroleum Institute of Thailand.

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In the 2024 edition, the IEA Secretariat revised the consumption of gas/diesel oil and fuel oil in main activity producer electricity consumption and the corresponding electricity output from 2020 and 2019, respectively, to better reflect official data from the Electricity Generation Authority of Thailand and the Energy Policy & Planning Office of the Ministry of Energy. Furthermore, for the same years and for both products, the IEA Secretariat revised the estimations of stock change and, only for diesel, of non-specified industry consumption.

In the 2024 edition, the split between domestic and international aviation consumption of jet kerosene has been revised from 2014 onwards due to new available information.

In the 2023 edition, non-energy use of kerosene from 2016 onwards was reported due to new available information.

In the 2023 edition, coke oven coke and blast furnace gas were revised to zero by the IEA Secretariat to reflect the absence of blast furnaces in the country.

In the 2022 edition, the IEA Secretariat revised the methodology for reporting LPG output from the condensate splitter and the corresponding field condensates input. As a result, crude oil input to petrochemical plants between 2013 and 2019 has been deleted, while input to oil refineries has been revised. This also led to the removal of the time series on refinery feedstock production from other sources – oil products and transfers between 1996 and 2019, which also affected naphtha and LPG production figures between 1996 and 2019 and 2008 and 2019, respectively.

In the 2022 edition, NGL non-energy use in 2013 and 2014 was revised due to new available information.

In the 2021 edition, natural gas consumption in the industry sector was revised to reflect official data more accurately.

In the 2021 electricity generation data for hydropower, fuel oil and other bituminous coal plants were revised to take into account new information available on the split between main activity and autoproducer plants.

Naphtha production data from 2018 onwards, motor gasoline from 2019 and gas/diesel oil for 2018 were estimated by the IEA Secretariat to avoid refinery gains.

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In the 2021 edition in an effort to report the consumption of aviation fuels more accurately across the time series, the IEA Secretariat estimated the split between international and domestic aviation consumption prior to 2006

In the 2020 edition, motor gasoline, other kerosene and fuel oil total final consumption as well as gas/diesel oil used in transformation processes were revised to reflect official data more accurately.

In the 2020 edition, natural gas flows between 2014 and 2017 were revised as new information on its consumption in the industry sector became available. Electricity consumption in the rail sector between 2014 and 2017 was revised as new information became available. Primary solid biofuel flows between 1989 and 1994 were revised as new information became available.

In the 2014 edition, information became available for the consumption of anthracite and lignite coal in industry. Breaks in time series may occur between 2011 and 2012.

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IEA Secretariat estimates.

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Ukraine

General notes

Data for Ukraine are available starting in 1990. Prior to that, they are included in Former Soviet Union.

Ukraine is one of the six Eastern Partnership countries participating in the EU 4Energy programme and it received technical assistance and policy support under Phase II of the initiative (2021–2025).

Ukraine has been under martial law since Russia's invasion in February 2022. As a result, the State Statistics Service of Ukraine is no longer able to submit detailed energy statistics to the IEA via the Annual Questionnaires. Therefore, data from 2021 have been estimated by the IEA Secretariat using a variety of sources. In particular, national activity information on industrial and services sectors has been used to estimate demand. However, due to the difficulty associated with estimating data in a wartime environment, several flows have been marked as "not available" and/or reported at an aggregated level. This has led to breaks in some time series, particularly for the product total in the road sector, and consequently for total transport and total final consumption, due to the unavailability of detailed oil products consumption data in these sectors. Since the invasion, distributed energy sources, such as diesel generator sets and solar PV generation, are challenging to track accurately. As a result, they are either not included or only partially reflected in the energy balances of the affected years.

In the 2025 edition, the IEA Secretariat benefited from the support of national energy experts and think tanks, including Green Deal Ukraine (GDU). Valuable insights were drawn from the Energy Map, the most comprehensive database of official information covering all segments of the Ukrainian energy sector.

Due to limited information being available to the State Statistics Service of Ukraine from part of the Donetsk and Luhansk regions of Ukraine and from the Autonomous Republic of Crimea, breaks in the time series occur after 2013 for coal products and in 2016, for diesel energy industry own use.

The IEA Secretariat and the State Statistics Service of Ukraine have worked closely on the revision of historical data. Therefore, breaks in time series may occur between 2006 and 2007.

From 2007 onwards the transparency of data may be reduced because of confidentiality issues. For instance: peat includes lignite and patent fuel; other

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kerosene includes aviation fuels (aviation gasoline, gasoline-type jet fuel and kerosene-type jet fuel) for the period 2007-2015; other products include petroleum coke; since 2016 aviation fuels and kerosene are included in other products; since 2017 bituminous coal includes anthracite.

Coal

In the 2025 edition, IEA secretariat estimated coking coal production of 2021 and 2022 whereas there were no data in the two previous editions. Productions of other bituminous coal and coke oven coke have also been reviewed accordingly, as well as blast furnace gas and other recovered gas for 2022.

IEA statistics refer to coal after washing and screening for the removal of inorganic matter. Official Ukrainian coal statistics refer to unwashed and unscreened coal prior to 1995.

The decline in coal production observed since 2013 is the reflection of lack of data availability in these regions, not of an actual decrease in coal production.

In the 2022 edition and for the year 2020, coking coal production has been reclassified as other bituminous coal production due to the lower quality of the extracted coal. This creates a break in the time series of indigenous production between 2019 and 2020 for both coal products.

Anthracite supply and demand data since 2017 are included in other bituminous coal due to confidentiality issues.

Bituminous coal from other sources refers to coal mined in informal sector.

Due to a plant closure in 2008, a stock of lignite/peat became available, without details about its consumption. This may lead to breaks in time series and high statistical difference for 2008.

Since 2013, quantities of other bituminous coal reported under patent fuel transformation are used to make briquettes from dust and due to confidentiality and calorific value of this output, it is reported in peat products and not in patent fuel production.

Oil

From the 2020 edition, the Statistics Service of Ukraine is encountering confidentiality issues that lead to lack of refinery output data availability. Since 2018 data, the resulting large refinery losses reflect the missing output data, notably motor gasoline and gas/diesel oil. Part of the production of Ukraine's

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refinery is included with “other non-specified oil products”, for example all motor gasoline produced in 2018, and part of this production in 2019. Because of this, from the 2022 edition the IEA Secretariat decided to report motor gasoline and gas/diesel oil production from 2018 onwards as confidential.

Large statistical differences exist for some oil products such as transport fuels and LPG. These are due to identified reporting issues in Ukraine. The State Statistics Service of Ukraine continues to work with data providers to solve these issues.

Due to lack of disaggregated data, aviation fuels are included with “Other non-specified oil products”.

In the 2017 edition, refinery inputs have been estimated for 2015 by the IEA Secretariat based on supply to correct the disbalance between inputs and outputs; discrepancies may appear in the 2015 refinery balance.

In the 2016 edition, refinery gas is reported in the transformation sector. A break in time series and statistical difference appear as more information on the supply side remains unavailable.

Quantities of other hydrocarbons reported correspond to petroleum coke produced from coal tar. This information is not available for 2016.

Natural gas

The data for the stock draw and statistical difference of natural gas in 2010 are a consequence of the accounting method chosen by the Ukrainian administration to reflect the ruling of the Stockholm Arbitration Tribunal of March 30, 2010.

Gas stocks include stocks supplied to the Autonomous republic of Crimea.

Due to the new annual survey form, there was reclassification between main activity producers and autoproducers in 2016.

Biofuels and waste

Charcoal production has included pyrolysis and calculated amounts of traditional production since 2008.

Electricity and heat

For 2024, autoproducer solar photovoltaic electricity production has been estimated based on residential solar photovoltaic capacity. This creates a break with previous years. In addition, due to data availability constraints, discrepancies

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may exist between reported solar output and capacity figures for some years. Historic revisions are pending.

Statistical difference for electricity includes electricity supplied to the Autonomous Republic of Crimea and the Donetsk and Luhansk regions of Ukraine.

In the 2016 edition, power plants have been reclassified due to the implementation of more detailed survey forms.

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IEA Secretariat estimates.

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Notes on data quality

Methodology

For OECD Member countries, the data shown in this publication are based on information provided in the five annual OECD questionnaires[5]: “Oil”, “Natural Gas”, “Coal (Solid Fossil Fuels and Manufactured Gases)”, “Renewables and Wastes” and “Electricity and Heat” completed by the national administrations. For the member countries of the Economic Commission for Europe of the United Nations (UNECE) and a few others, the data shown in this publication are mostly based on information provided by the national administrations through the same annual questionnaires. The commodity balances for all other countries are based as much as possible on national official energy data, but also potentially on other data of heterogeneous nature, converted and adapted to fit the IEA format and methodology.

Considerable effort has been made to ensure that the data presented in this publication adhere to the IEA definitions reported in the section on Methodological notes. These definitions, based on the *United Nations International Recommendations for Energy Statistics*[6], are used by most of the international organisations that collect energy statistics.

Nevertheless, energy statistics at the national level are often collected using criteria and definitions which differ, sometimes considerably, from those of international organisations. This is especially true for non-OECD countries, which are submitting data to the IEA on a voluntary basis. The IEA Secretariat has identified and documented most of these differences and, where possible, adjusted the data to meet international definitions.

Recognised differences occurring in specific countries are presented in the section on Country notes and sources. Country notes present the most important deviations from the IEA methodology, and are by no means a comprehensive list of those. To ensure transparency, country notes also describe how data are estimated or revised, where relevant for the data user.

[5] See link to the annual questionnaires: https://www.iea.org/areas-of-work/data-and-statistics/questionnaires/
[6] https://unstats.un.org/UNSD/energy/ires/default.htm.

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Estimation

In addition to adjustments addressing differences in definitions, estimations[7] are sometimes required to complete major aggregates, when key statistics are missing.

The IEA secretariat has attempted to provide all the elements of energy balances down to the level of final consumption, for all countries and years. Providing all the elements of supply, as well as all inputs and outputs of the main transformation activities (such as oil refining and electricity generation), has often required estimations. Estimations have been generally made after consultation with national statistical offices, oil companies, electricity utilities and national or international energy experts.

Time series and political changes

The IEA secretariat reviews its databases each year. In the light of new assessments, important revisions may be made to time series of individual countries during the course of this review. Therefore, some data in this publication have been substantially revised with respect to previous editions. Please always consult the section on Country notes and sources.

Generally speaking, energy statistics for some countries undergo continuous changes in their coverage or methodology. Consequently, breaks in time series are considered to be unavoidable.

For example, energy balances for the individual countries of the Former Soviet Union and the Former Yugoslavia have been constructed since 1990 and are not available for previous years. These balances are generally based on official submissions, but estimations also have been made by the IEA secretariat. The section on Country notes and sources describes in detail these elements country by country.

Classification of fuel uses

National statistical sources often lack adequate information on the consumption of fuels in different categories of end use. Many countries do not conduct annual surveys of consumption in the main sectors of economic activity, and published

[7] Data may not include all informal and/or illegal trade, production or consumption of energy products, although the IEA Secretariat makes efforts to estimate these where reliable information is available.

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data may be based on out-of-date surveys. Therefore, sectoral disaggregation of consumption should generally be interpreted with caution.

In countries of non-OECD Europe and Eurasia and in China, the sectoral classification of fuel consumption before the reforms of the 1990's significantly differed from that of IRES. Sectoral consumption was defined according to the economic branch of the user, rather than according to the purpose or use of the fuel. For example, consumption of gasoline in the vehicle fleet of an enterprise attached to the economic branch 'Iron and steel' was classified as consumption in the 'Iron and steel' industry itself.

Where possible, data have been adjusted to fit international classifications, for example by assuming that most gasoline is consumed in transport. However, it has not been possible to reclassify products other than gasoline and jet fuel as easily, and few other adjustments have been made to other products.

Imports and exports

For a given product, imports and exports may not sum up to zero at the world level for a number of reasons. Fuels may be classified differently (i.e. fuel oil exports may be reported as refinery feedstocks by the importing country; NGL exports may be reported as LPG by the importing country, etc.). Other possible reasons include discrepancies in conversion factors, inclusion of international bunkers in exports, timing differences, data reported on a fiscal year basis instead of calendar year for certain countries, and underreporting of imports and exports for fiscal reasons.

Specific issues by fuel

Coal

Data on sectoral coal consumption are usually reported in metric tonnes. Net calorific values of different coal types used in different end use sectors are not always available. In the absence of specific information, the IEA secretariat estimates end use net calorific values based on the available net calorific values for production, imports and exports.

Oil

The IEA secretariat collects comprehensive statistics for oil supply and use, including oil for own use of refineries, oil delivered to international bunkers, and oil

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used as petrochemical feedstock. National statistics often do not report all these amounts.

Reported production of refined products may refer to net rather than gross refinery output; consumption of oil products may be limited to sales to domestic markets and may not include deliveries to international shipping or aircraft. Oil consumed as petrochemical feedstock in integrated refinery/petrochemical complexes is often not included in available official statistics.

Where possible, the IEA secretariat has estimated those unreported data, in consultation with the oil industry. In the absence of any other indication, refinery fuel use is estimated to be a percentage (e.g. 5%) of refinery throughput, and where possible, split between refinery gas and fuel oil. For a description of some adjustments made to the sectoral consumption of oil products, see the above section ‘Classification of fuel uses’.

Natural gas

Natural gas should be comprised mainly of methane; other gases, such as ethane and heavier hydrocarbons, should be reported under the heading of ‘oil’. The IEA defines natural gas production as the marketable production, i.e. net of field losses, flaring, venting and re-injection.

However, the lack of adequate definitions makes it difficult or impossible to identify all quantities of gas at all different stages of its separation into dry gas (methane) and heavier fractions. National data for natural gas do not always explicitly show separate quantities for field losses, flaring, venting and re-injection.

Natural gas supply and demand statistics are normally reported in volumetric units and it is difficult to obtain accurate data on the calorific value. In the absence of specific information, the IEA generally applies an average gross calorific value of 38 TJ/million m^3.

For the countries that report natural gas data at temperature and pressure conditions of 20°C and 101.325 kPa, the calorific values are about 1.7% lower than the equivalent at temperature and pressure conditions of 15°C and 101.325 kPa. However, in energy terms no difference is observed between the two reporting conditions as natural gas volumes measured at 20°C and 101.325 kPa are 1.7% higher than natural gas volumes at 15°C and 101.325 kPa.

Reliable consumption data for natural gas at a disaggregated level are often difficult to find. This is especially true for some of the largest natural gas

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consuming countries in the Middle East. Therefore, industrial use of natural gas for these countries is frequently missing from the data published here.

Electricity

The IEA classification shows 'main activity producers' separately from 'autoproducers' of electricity and heat. An autoproducer of electricity is an establishment which, in addition to its main activities, generates electricity wholly or partly for its own use. For non-OECD countries, data on autoproducers are not always reported. In such cases, the quantities of fuels used as input to electricity are included under the appropriate end-use sector.

When statistics of production of electricity from biofuels and waste are available, they are included in total electricity production. However, these data are not comprehensive; for example, much of the electricity generated from waste biomass in sugar refining facilities remains unreported.

When unreported, inputs of fuels for electricity generation are estimated using information on electricity output, fuel efficiency and type of generation capacity.

Heat

For heat, countries of non-OECD Europe and Eurasia and China used to adopt a different methodology from that recommended in IRES. They allocated the transformation of primary fuels (coal, oil and gas) by industry into heat *for consumption on site* to the transformation activity '*heat production'*, ***not*** to industrial consumption, as in the IEA methodology[8]. The transformation output of *Heat* was then allocated to the various end use sectors. The losses occurring in the transformation of fuels into heat in industry were not included in final consumption of industry.

Although a number of countries have recently switched to the practice of international organisations, this important issue reduces the possibility of cross-country comparisons for sectoral end use consumption.

Biofuels and waste

The IEA publishes data on production, domestic supply and consumption of biofuels and waste for all countries and all regions.

[8] For autoproducer plants, the international methodology restricts the inclusion of heat in transformation processes to that sold to third parties.

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Data for non-OECD countries are often based on secondary sources and may be of variable quality, which makes comparisons between countries difficult. For many countries, historical data are derived from surveys which were often irregular, irreconcilable and conducted at a local rather than national level.

Where official data are incomplete or unavailable, the IEA Secretariat estimates the time series based on economic indicators and secondary sources.

Those estimated time series should be treated very cautiously. The table below provides a broad indication of the estimation methodology and of the data quality by region.

Region	Main source of data	Data quality	Exogenous variables
Africa	FAO database and AfDB	Low	Population growth rate
Non-OECD Americas	national and OLACDE	High	None
Non-OECD Asia	surveys	high to low	Population growth rate
Non-OECD Europe and Eurasia	questionnaires and FAO	high to medium	None
Middle East	FAO	medium to low	None

Given the importance of vegetal fuels in the energy picture of many developing countries, balances down to final consumption by end-use for individual products or product categories have been compiled for all countries.

The IEA hopes that the inclusion of these data will encourage national administrations and other agencies active in the field to enhance the level and quality of data collection and coverage for biofuels and waste. More details on the methodology used by each country may be provided on request and comments are welcome.

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Units and conversions

General conversion factors for energy

To	TJ	Gcal	Mtoe	MBtu	GWh
From:	multiply by:				
terajoule (TJ)	1	2.3885×10^{2}	2.3885×10^{-5}	9.478×10^{2}	2.778×10^{-1}
gigacalorie (Gcal)	4.1868×10^{-3}	1	1.000×10^{-7}	3.968	1.163×10^{-3}
million tonnes of oil equivalent (Mtoe)	4.1868×10^{4}	1.000×10^{7}	1	3.968×10^{7}	1.163×10^{4}
million British thermal units (MBtu)	1.055×10^{-3}	2.520×10^{-1}	2.520×10^{-8}	1	2.931×10^{-4}
gigawatt hour (GWh)	3.600	8.598×10^{2}	8.598×10^{-5}	3.412×10^{3}	1

Conversion factors for mass

To	kg	t	lt	st	lb
From:	multiply by:				
kilogramme (kg)	1	1.000×10^{-3}	9.842×10^{-4}	1.102×10^{-3}	2.205
tonne (t)	1.000×10^{3}	1	9.842×10^{-1}	1.102	2.205×10^{3}
long ton (lt)	1.016×10^{3}	1.016	1	1.120	2.240×10^{3}
short ton (st)	9.072×10^{2}	9.072×10^{-1}	8.929×10^{-1}	1	2.000×10^{3}
pound (lb)	4.536×10^{-1}	4.536×10^{-4}	4.464×10^{-4}	5.000×10^{-4}	1

Conversion factors for volume

To	gal U.S.	gal U.K.	bbl	ft^3	l	m^3
From:	multiply by:					
U.S. gallon (gal U.S.)	1	8.327×10^{-1}	2.381×10^{-2}	1.337×10^{-1}	3.785	3.785×10^{-3}
U.K. gallon (gal U.K.)	1.201	1	2.859×10^{-2}	1.605×10^{-1}	4.546	4.546×10^{-3}
barrel (bbl)	4.200×10^{1}	3.497×10^{1}	1	5.615	1.590×10^{2}	1.590×10^{-1}
cubic foot (ft^3)	7.481	6.229	1.781×10^{-1}	1	2.832×10^{1}	2.832×10^{-2}
litre (l)	2.642×10^{-1}	2.200×10^{-1}	6.290×10^{-3}	3.531×10^{-2}	1	1.000×10^{-3}
cubic metre (m^3)	2.642×10^{2}	2.200×10^{2}	6.290	3.531×10^{1}	1.000×10^{3}	1

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Decimal prefixes

10^{1}	deca (da)	10^{-1}	deci (d)
10^{2}	hecto (h)	10^{-2}	centi (c)
10^{3}	kilo (k)	10^{-3}	milli (m)
10^{6}	mega (M)	10^{-6}	micro (μ)
10^{9}	giga (G)	10^{-9}	nano (n)
10^{12}	tera (T)	10^{-12}	pico (p)
10^{15}	peta (P)	10^{-15}	femto (f)
10^{18}	exa (E)	10^{-18}	atto (a)

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Qualifiers

Starting from the 2025 edition, the IEA applies the following qualifiers to label records available through the .Stat Data Explorer. These qualifiers indicate the status and nature of the data.

Qualifier legend

Code	Name	Description
A	Normal Value	Real observed value.
I	Imputed Value	A data point refers to any calculation produced by the IEA Secretariat, including aggregations (across energy products, energy flows, geographical areas or any other dimension), conversions using non-universal factors (such as the computation of energy values based on calorific values), as well as estimates.
O	Missing Value	Data point is missing.
M	Missing Value; Data cannot exist	Data point is not applicable.
P	Provisional Value	Data point is preliminary and likely to be revised.
C	Confidential Value	Data point is confidential (displayed in the CONF_STATUS column of the CSV file.
D	Definition Differs	Definition of measurement differs from the dataset definition and therefore is not comparable to other measures.
N	Not Qualified	Qualification is not available.

For non-OECD countries that do not submit annual questionnaires to the IEA Secretariat, more detailed qualification information is available starting from 2019 onwards. Information related to countries submitting annual questionnaires are available in the country notes.

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Abbreviations

Btu:	British thermal unit
GWh:	gigawatt hour
kcal:	kilocalorie
kg:	kilogramme
kJ:	kilojoule
Mt:	million tonnes
m^3:	cubic metre
t:	metric ton = tonne = 1,000 kg
TJ:	terajoule
toe:	tonne of oil equivalent = 10^7 kcal (International Steam Table calorie (1956) definition)

CHP:	combined heat and power
GCV:	gross calorific value
GDP:	gross domestic product
HHV:	higher heating value = GCV
LHV:	lower heating value = NCV
NCV:	net calorific value
PPP:	purchasing power parity
TES:	total energy supply

AfDB:	African Development Bank
EU-27:	European Union – 27
FAO:	Food and Agriculture Organisation of the United Nations
IEA:	International Energy Agency
IPCC:	Intergovernmental Panel on Climate Change
ISIC:	International Standard Industrial Classification
OECD:	Organisation for Economic Co-Operation and Development
OLACDE:	Organización Latinoamericana y Caribeña de Energía
UN:	United Nations
UNIPEDE:	International Union of Producers and Distributors of Electrical Energy

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