Appendix to the order of the Head of the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan

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**Methodology for the formation of the fuel and energy balance and the calculation of individual statistical indicators characterizing the energy industry**

**Chapter 1. General provisions**

1. The methodology for the formation of the fuel and energy balance and the calculation of individual statistical indicators characterizing the energy industry (hereinafter - the Methodology) in accordance with international standards and recommendations refers to the statistical methodology formed and approved in accordance with the Law of the Republic of Kazakhstan "On State Statistics".

2. This Methodology is applied by the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan and its territorial divisions in the formation of the fuel and energy balance and the calculation of individual statistical indicators characterizing the energy sector.

3. The methodology establishes the procedure for the formation of the fuel and energy balance and the calculation on its basis of individual statistical indicators characterizing the level of consumption of fuel and energy resources, in accordance with the International Recommendations on Energy Statistics (IRES) developed by the UN Statistics Division, as well as taking into account the Guidelines for energy statistics prepared by the International Energy Agency (IEA) in collaboration with the Statistical Office of the European Community.

4. The fuel and energy balance (hereinafter - FEB) is a system of statistical indicators formed in the form of a balance table and characterizing the total volume and structure of the formation of fuel and energy resources, the processes of their transformation (transformation), as well as end use.

5. The following definitions are used in the Methodology:

1) primary energy - sources of energy (energy carriers) that require only extraction or capture, with or without consideration for their separation from the accompanying rock, purification or sorting, before the energy contained in these sources can be converted;

2) the energy intensity of the gross domestic product (hereinafter - GDP) is a general indicator that characterizes the level of consumption of fuel and energy resources per unit of GDP;

3) calorific value (heat of combustion) - the amount of heat (in joules or kilocalories) released during the complete combustion of a unit of fuel;

4) renewable energy sources - energy sources continuously renewable due to naturally occurring natural processes, including the following types: solar radiation energy, wind energy, hydrodynamic water energy; geothermal energy: heat of the soil, groundwater, rivers, reservoirs; as well as anthropogenic sources of primary energy resources: consumer waste, biomass, biogas and other fuel from consumer waste used for the production of electrical and (or) thermal energy;

5) conventional fuel - a unit adopted in technical and economic calculations, regulated in norms and standards, used to compare the thermal value of various types of fossil fuels;

6) total energy consumption - characterizes the gross domestic identified energy consumption and is calculated according to a formula that takes into account data on production, import, export, international bunker and change in stocks of all types of fuel.

**Chapter 2 FEB Structure and Main Energy Flows**

**Paragraph 1. Sources of formation of FEB indicators**

6. The information base for the formation of official statistical information on the energy statistics sector, characterizing the system of indicators on the level of production (production), export, import and consumption of fuel and energy resources in the Republic of Kazakhstan, is the data obtained or registered in the statistical forms of national statistical observations (hereinafter – data) given in Appendix 1 to this Methodology, as well as administrative data.

7. The formation of FEB allows to analyze and evaluate changes in the structure of production and consumption of fuel and energy, their efficient use in sectors of the economy, track the depletion of energy resources, as well as calculate gas emissions into the atmosphere and determine the main directions for the development of the fuel and energy complex.

8. The objects of statistical observation on energy statistics are the following main groups of statistical units: energy industry enterprises, other producers and consumers of energy.

9. Data for the energy industry are:

1) enterprises or separate subdivisions (part of an enterprise) with the main type of activity in the field of extraction (production), transmission and distribution of fuel and energy resources (coal, crude oil, natural gas and products of their processing, as well as electric and thermal energy);

2) other energy producers (economic units) engaged in the production, transformation and transportation and distribution of energy for their own consumption and (or) for supply to other units as a secondary or auxiliary type of activity, the added value of which does not exceed the added value of the main type of activity;

3) enterprises engaged in trading activities in the energy sector;

4) energy consumers using energy products for various purposes (for example, as a source material for the production of secondary energy products or for final consumption).

10. Statistical observation is subject to fuel and energy products used as energy sources, forms of energy that are suitable for direct use (for example, electricity and heat), as well as energy products that release energy in the course of chemical or other processes (including combustion). The list of FEB energy products, broken down into primary and secondary energy products, is set out in Appendix 2.

Fuel and energy resources are a combination of various types of non-renewable energy resources of both inorganic and organic origin, found in the earth's crust in solid, liquid and gaseous form.

A fuel and energy product is a product used as an energy carrier or a source of energy that releases thermal energy during its combustion or other external influence.

11. Data on the main characteristics and activities of the energy industry are filled in in the original natural units. Solid fuels such as coal and coke are measured in units of mass, while most liquid and gaseous fuels are based on units of volume.

**Paragraph 2. Structure of the FEB**

12. FEB is a comprehensive balance that combines the balances of various types of energy resources for the reporting year in the form of a single balance table in the form in accordance with Appendix 3 to this Methodology .

13. The headings of the columns of the balance sheet contain the names of the group of fuel and energy products and product balances corresponding to a certain type of primary or secondary energy products. The sidebar contains balance items that characterize the movement of primary and secondary energy flows and their equivalents.

14. The list of balance sheet items is conventionally divided into four balancing blocks. For each block, by summing up the data of the corresponding items of product balances in compliance with arithmetic rules (that is, taking into account the signs "+" and "-"), final values are formed.

15. The first block (energy supplies) contains balance sheet items that characterize the structure of primary energy flows and its equivalents, supplying energy in the form of production and import into the country's territory or export outside it, as well as changes in stocks and international bunkering, in order to provide information on energy supplies to the national territory during the reporting period:

production (extraction) of primary energy (+);

import (+);

export (-);

international bunkering (–);

change in the volume of stocks (+,–);

gross consumption of primary energy and its equivalents (=).

16. The second block (energy supplies) contains balance sheet items related to the transformation sector (+,–) and characterizing the processes of transformation of one type of energy into another, as well as transmission, energy consumption by energy industries for their own needs and losses during transportation and distribution.

1 7. In the transformation sector, the input takes into account energy resources used as raw materials for conversion at the output into other types of energy products for the following energy enterprises:

1) power plants (according to the main type of activity);

2) power plants producing electricity for their own needs;

3) combined heat and power plants (hereinafter - CHP) producing electricity and heat energy (according to the main activity);

4) CHP producing electricity and heat for the company's own needs;

5) thermal installations, heating boiler houses producing thermal energy (according to the main type of activity);

6) thermal installations, heating boiler houses producing thermal energy for the enterprise's own needs;

7) plants for the production of coke from coal and brown coal;

8) blast furnaces;

9) oil refineries;

10) factories for the production of pressed coal;

11) gas processing plants;

12) enterprises of the petrochemical industry;

13) factories for the production of pressed brown coal;

14) other enterprises not specified in other categories.

Data on conversion processes associated with the production of heat and electricity are provided by category of power plants, with processing into other types of fuel - by type of processing.

18. The third block (final consumption for non-energy purposes) contains balance sheet items characterizing the non-energy use of fuel and energy.

19. The fourth block (final consumption for energy purposes) contains balance sheet items that characterize the consumption of fuel and energy resources by end consumers and the statistical discrepancy with the calculated consumption:

final consumption (=);

statistical discrepancies (+,–).

20. The statistical discrepancy is a balance sheet item that is calculated as the difference between the gross consumption items and the sum of the balance sheet items (converted energy, losses during transportation and distribution, non-energy use and final consumption).

**Paragraph 3. Basic energy flows**

21. Energy flows cover the activities of economic units on the territory of the republic in accounting for fuel and energy products. Flows are subdivided into production (extraction) of fuel and energy products, transformation, foreign trade, change in stocks, final consumption and non-energy use.

22. Production (extraction) is defined as the capture, extraction or manufacture of a fuel and energy product from natural energy flows, the biosphere and natural fossil fuel reserves in the country in a form suitable for use. The production (mining) does not take into account the inert material removed from the extracted fuel, as well as the volumes returned to the process, flared and released into the atmosphere. The fuel and energy products obtained as a result of production (extraction) are referred to as “primary” products.

Primary energy products are energy products that require only extraction or capture from the natural environment, with or without consideration for their separation from the accompanying rock, purification or sorting, before the energy contained in these sources can be converted.

Non-renewable energy sources are energy sources that are accumulated in nature in the form of fossil resources: coal, oil, gas, peat, oil shale, as well as other energy sources that are practically not formed in new geological conditions.

Secondary energy is the energy content of secondary energy products obtained as a result of the transformation (transformation) of primary energy products.

Secondary energy products are energy products that are the result of the transformation (transformation) of primary energy products using chemical, physical and other methods.

23. “Secondary” fuels or energy are products produced by conversion (transformation), in which part or all of the energy content of a product entering the process is transferred from this product of one type of energy to one or more different products that exit from process (for example, from coking coal to coke, from crude oil to petroleum products, from heating oil to electricity).

24. The allocation of energy transformation flows in FEB avoids double counting in energy production for individual energy products that can be converted to other types of them before they are consumed. In the transformation sector, primary energy consumption (input) is reported with a “-” sign, and secondary energy production (output) is reported with a “+” sign.

Data reported in the transformation sector with a “-” sign include fuel consumption for the production of heat and electricity as a result of fuel combustion in power plants, CHP, combined cycle and gas turbine plants, diesel generators, boilers and other fuel-consuming installations. Also included are the costs of fuel as a raw material for processing into other types of fuel, including by briquetting, distillation, grinding, mixing and other methods (for example, coal consumption in coke ovens for the production of coke and coke oven gas, as well as oil for the production of fuel oil products, biofuels and diesel fuel).

The data reported in the conversion sector with a “+” sign include data on the output of secondary energy after the conversion of primary energy, as a result of fuel combustion and conversion into heat and electricity, as well as the processing of oil and other secondary energy products.

25. The transformation sector does not reflect data on the production of electricity and heat through the use of energy from the environment (hydro, wind, geothermal, solar and other energy from the environment), as well as as a result of the utilization of secondary energy resources.

26. In energy statistics, inventories are considered as the volumes of energy products that are held to maintain supply. Remains of fuel and energy resources are taken into account at the beginning and end of the reporting year, which are listed in the remnants of departmental warehouses and supply bases, boiler houses, shop storerooms and other storage places. Reserves also include oil, oil products and natural gas residues in pipelines, intermediate tanks, gas holders and gas residues in underground gas storage facilities of oil pipeline enterprises and gas pipeline enterprises. The remaining fuel deposited in the state reserve is not taken into account.

27. The change in the volume of reserves of primary energy and its equivalents reflects the arithmetic difference in the volume of reserves at the beginning and end of the year in organizations that are consumers and suppliers of fuel and energy resources. A value with a “+” sign indicates inventory involvement when year-end inventory is less than at the beginning of the year. A value with a “-” sign means that the volume of stocks at the end of the year exceeds the volume at the beginning of the year, and this indicates their accumulation.

28. Flows that reflect the movement of energy outside the Republic of Kazakhstan include the export of both primary and secondary energy products, as well as international bunkering. Fuel and energy products exported outside the territory of the Republic of Kazakhstan and deducted from the reserves of the country's fuel and energy resources are treated as exports in FEB. For these foreign trade operations, indicators for transit trade, bunkering for international transport are excluded.

29. Fuel and energy products imported into the territory of the Republic of Kazakhstan and added to the reserves of the country's fuel and energy resources are treated as imports in FEB.

30. Losses reflect data on losses during the transmission, distribution and transportation of energy carriers. Loss data does not include losses associated with the processes of transformation (transformation) of primary energy products into secondary energy products. Data on losses for the corresponding FEB balance products are reflected in line 2.4, which takes into account:

1) loss of coal together with rock during enrichment, sorting and distribution at enrichment plants of the coal, metallurgical and coke industries, as well as during briquetting;

2) losses of electricity and heat energy in public electric and heat networks, as well as losses in transformers that are not an integral part of power plants;

3) oil losses during desalting and dehydration, transportation in main oil pipelines, as well as technological losses associated with processing into other types and production of chemical, petrochemical and other non-fuel products;

4) gas losses during cleaning and drying, oil and gas processing (at oil refineries and gas processing enterprises), as well as losses during transportation and distribution.

31. After production or transformation, fuel and energy products may be:

1) exported to other territories;

2) stored for later consumption (included in stocks);

3) used for refueling ships and aircraft on international routes (international bunkering);

4) consumed in the energy industries themselves;

5) supplied for final consumption.

32. Own consumption by the energy industries represents the consumption of fuel and energy to directly support the production and preparation for the use of fuel and energy.

33. Final energy consumption covers a group of energy consumers who act as end users of energy - use fuel and energy products for energy and non-energy purposes.

34. Non-energy use includes energy consumption as:

1) material used directly for non-fuel needs, for example, as a lubricant, sealant, preservative, solvent;

2) raw materials for the manufacture of non-fuel products, for example, with the consumption of coke, the production of electrodes; fuel oil - road surfaces; natural gas - sulfur, ammonia, hydrogen, methanol, mineral fertilizers; oil - lubricating oils, tar, building and roofing oil bitumen, paraffin, solvent gasoline, white spirit.

35. Final energy consumption for energy purposes covers the consumption of fuel and energy products by institutional economic units: enterprises in industry, construction, transport, households and other non-energy sectors.

36. When generating data on the final consumption of energy by industries and identifying the type of economic activity, the General Classifier of Types of Economic Activities is used.

37. The consumption of energy products for transport is recorded under a separate category “transport”, which takes into account the consumption of fuel and electricity for the transport of goods or people between points of departure and destination within the territory of the republic, regardless of which economic sector this activity is carried out in. This category of "transport" is subdivided into the following types: domestic aviation, road, rail, water and pipeline transport, as well as transport not described in other categories.

38. Transport final consumption does not include:

1) energy resources for the maintenance of administrative buildings owned by transport organizations (railway stations, airports, car parks, depots). These expenses are reflected in the service sector;

2) fuel for the operation of loading and unloading, agricultural, forestry, road construction, municipal, fire and other equipment not intended for the transport of passengers and goods, as well as for the operation of special-purpose motor vehicles, including fuel for military vehicles . These costs are reflected in the respective sectors;

3) fuel classified as international bunkering.

39. The final consumption of fuel and energy resources in the housing sector includes their sale by fuel and energy supply organizations directly to individuals, associations of citizens, as well as their release by organizations for non-cash payments to their workers and employees.

40. The statistical discrepancy is the FEB settlement item and is calculated by subtracting the total final energy consumption for energy and non-energy purposes from the total supply of fuel and energy resources.

**Chapter 3. Indicators of energy statistics**

**Paragraph 1. Units of measurement in energy statistics**

41. FEB is formed in three units of fuel measurement: physical, energy units (terajoules) and units of standard fuel - a ton of oil equivalent (hereinafter - toe).

Physical units of measurement of fuel and energy - units of measurement of fuel and energy that most fully correspond to its physical state and require the simplest methods and measurement instruments.

Conversion factor of fuel into tons of reference fuel is the ratio of the net calorific value of a physical unit of mass (volume) of fuel to the net calorific value of a unit of mass of reference fuel.

The reference fuel unit is a conventional unit of measurement used to reflect the total amount of all types of fuel and energy .

42. Formation of FEB in physical terms is carried out only for product balances (without filling in column 41 of the balance sheet). Filling in data on balance sheet items is based on the sources of information and the procedure for calculating balance sheet items given in accordance with Appendixes 1 and 4.

43. The formation of FEB indicators into a common unit of measurement is carried out to ensure the unity and generalization of accounting, comparison and evaluation of the efficiency of fuel and energy conversion. The joule is used as a common unit of energy in the International System of Units.

the calorific value given for each energy resource in statistical forms by energy enterprises during its generation or production . The calorific value or calorific value of a fuel expresses the amount of heat obtained from one unit of fuel and may vary depending on the type of flow.

The calorific value of a fuel is the energy content of the fuel, expressed as the amount of heat released during its combustion, minus the heat required to evaporate the water contained in the fuel or formed during its combustion .

45. When expressing the energy content of each energy product in terms of a common unit of energy, the net calorific value shall be used. The exceptions are gases that are characterized by volumetric energy content based on the process of their production, and not the chemical composition. The conversion into a common unit of energy for them is carried out according to the gross calorific value.

separate conversion factors may be applied that take into account the specific energy content of fossil fuel and energy products and their caloric equivalents in accordance with Appendix 5 to this Methodology.

**Paragraph 2. Calculation of indicators of energy statistics**

47. The total consumption of primary energy and its equivalents reflects the total supply of primary energy and its equivalents to the domestic market for all needs (consumption in the transformation sector, non-energy needs, final consumption in sectors of the economy), taking into account losses and is determined by the following formula:



Where,

OPPE - the total consumption of primary energy and its equivalents, thousand toe;

PPE - production of primary energy and its equivalents, thousand toe;

I - imports, thousand toe;

E - export, thousand toe;

IZ - change in the volume of stocks (takes a negative value in the case of an increase in stocks, thousand toe).

48. Total energy consumption per capita reflects the total amount of energy consumed by the population during the reporting period is determined by the following formula:



Where,

OPEN - total energy consumption per capita, toe/person;

OPPE - the total consumption of primary energy and its equivalents, thousand toe;

CN - the average annual population for the reporting year, people.

49. Energy intensity per unit of GDP determines the economic efficiency of consumption of fuel and energy resources in the production of GDP in the whole country and is calculated as the ratio of the volume of gross consumption of fuel and energy resources for all production and non-production needs in toe to the value of GDP according to the formula:



Where,

E - energy intensity per unit of GDP, thousand toe / US dollars;

OPPE - total consumption of primary energy and its equivalents, thousand toe;

GDP - the value of the gross domestic product of the republic in constant prices in US dollars.

The value of GDP is determined through the total value of final goods and services produced in the economic territory of the country during the year. The values of the gross domestic product for different periods of time are calculated at constant prices of any year using the GDP deflator index. The value of GDP is expressed at constant prices, to exclude the effect of inflation, and is presented with the indication of the base year.

50. Energy intensity of the industry per unit of gross value added:



Where,

Eotr - Energy intensity of the industry per GVA unit;

KPO - final consumption of the industry, thousand toe;

GVA - gross value added at constant US dollars.

51. Energy supply is defined as the ratio of the volume of production (production) of primary energy to the volume of gross consumption of fuel and energy resources and is calculated by the formula:



Where,

EO - energy supply, in percent;

PPE - the total volume of production (extraction) of primary energy in the republic, thousand toe;

TPES - total consumption of primary energy and its equivalents, thousand toe

52. The share of electricity produced by renewable energy sources (hereinafter - RES) in the total electricity production characterizes the share of hydraulic, geothermal, solar, wind energy, as well as biomass and other types of renewable energy in the total electricity production, and is calculated by the formula:



Where,

VIE - the ratio of the volume of production (extraction) of primary energy from renewable energy sources to the volume of gross consumption of fuel and energy resources, in percent;

PPVIE - the volume of production (extraction) of primary energy from renewable energy sources, thousand toe;

OPPE - total consumption of primary energy and its equivalents, thousand toe

Appendix 1

to the Methodology for the formation of the fuel and energy balance and the calculation of individual statistical indicators characterizing the energy industry

List of statistical forms of national statistical observations used in the formation of FEB

|  |  |  |
| --- | --- | --- |
| Index | Name | Periodicity |
| 1-COAL | Report on the activities of coal enterprises | annual |
| 1-GAS | Report on the activities of gas enterprises» | annual |
| 1-OIL | Report on the activities of oil producing, oil refining enterprises and enterprises trading in petroleum products | annual |
| 1-ELECTRICITY | Report on the generation, transmission, distribution and sale of electrical energy | annual |
| 6-TP | Report on the operation of thermal power plants and boiler houses | annual |
| 1-KPI | Final energy consumption | annual |
| 1-TS | Report on Mutual Trade in Goods with Member States of the Eurasian Economic Union | monthly (annual settlement) |
| 1-P | Enterprise report on the production and shipment of products (goods, services) | annual |

appendix 2

to the Methodology for the formation of the fuel and energy balance and the calculation of individual statistical indicators characterizing the energy industry

**List of food balances**

| No. p / p | Product balance | Type of energy products | Physical unit of measurement | Type of product (P-primary,B-secondary) |
| --- | --- | --- | --- | --- |
|  | Coal and products of its processing: | Coking coal with a calorific value of more than 23.865 MJ / t on an ash-free but wet basis for the production of coke, also used for blast-furnace smelting | thousand tons 1 | P |
| 1 | Coal concentrate | Coal concentrate | thousand tons | IN |
| 2 | Coal stone energy | Hard coal with a calorific value of more than 23.865 MJ/t on an ash-free but wet basis for the production of steam, also used for heating;Coal coal energy with high ash content;Coal stone other. | thousand tonsthousand tonsthousand tons | PPP |
| 3 | Lignite (brown coal) | Lignite (brown coal) | thousand tons | P |
| 4 | Coke and semi-coke from coal | Coke and semi-coke from coal, lignite or peat; retort coal | thousand tons | IN |
| 5 | Resins obtained by distillation from coal | Resins (mixtures consisting of aromatic and aliphatic components) obtained by distillation from coal, lignite or peat | thousand tons | IN |
| 6 | Coke oven gas | Coke oven gas | thousand tons | IN |
| 7 | Blast furnace gas | Blast furnace gas | thousand tons | IN |
| 8 | Natural gas (natural) in gaseous state (commercial output) | Natural gas (natural) in a gaseous state (commercial outputAssociated petroleum gas (commercial output)Coal bed methane - compressed (compressed) natural gas (methane) | mln . cube m 2mln . cube mmillion cubic meters m | PPP |
| 9 | Oil and oil products:Crude oil, including gas condensate | Crude oil, including gas condensate | thousand tons | P |
| 10 | Other hydrocarbons | Other hydrocarbons | thousand tons | IN |
| 11 | Gas condensate | gas condensate | thousand tons | IN |
| 12 | Liquefied hydrocarbon gases | Liquefied hydrocarbon gases (liquefied propane (propane fraction), butane, isobutane or a mixture of these hydrocarbons) | thousand tons | IN |
| 13 | Additives, mixture components to improve the properties of the final oil product | Monomethylaniline, gasoline octane booster (MMA)Ether-methyl-tert-butyl (MTBE)Methanol (methyl alcohol)Lubricants | thousand tonsthousand tonsthousand tonsthousand tons | ININININ |
| 14 | Ethane | Bioethanol | thousand tons | IN |
| 15 | Straight-run naphtha | Straight-run naphtha | thousand tons | IN |
| 16 | Propane and butane liquefied | Propane and butane liquefied | thousand tons | IN |
| 17 | Aviation gasoline | Aviation gasoline (distillation temperature - 30-220 degrees Celsius) for aviation piston engines | thousand tons | IN |
| 18 | Motor gasoline | Motor gasoline of all brands (distillation temperature - 30-220 degrees Celsius) for engines with spark ignition, with a lead content of not more than 0.013 g / l, without TEL or TML additives | thousand tons | IN |
| 19 | Jet fuel type gasoline | Jet fuel type gasoline | thousand tons | IN |
| 20 | Jet fuel like kerosene | Jet fuel like kerosene | thousand tons | IN |
| 21 | Kerosene | Kerosene | thousand tons | IN |
| 22 | Diesel fuel for transport | Diesel fuel summer, winter (distillation temperature 180-380 degrees Celsius) for road and rail transport | thousand tons | IN |
| 23 | Heating and other gas oils | Fuel oilVacuum gas oilHeavy petroleum distillates (gas oils) (distillation temperature 180-380 degrees Celsius) used for heating and steam production | thousand tonsthousand tonsthousand tons | INININ |
| 2425 | Oil liquid fuel (fuel oil):Fuel oil (fuel oil), with a sulfur content of less than 1%Fuel oil (fuel oil), with a sulfur content of more than 1% | Fuel oil (fuel oil), with a sulfur content of less than 1%Fuel oil (fuel oil), with a sulfur content of more than 1% | thousand tonsthousand tons | ININ |
| 26 | Petroleum and shale coke | Petroleum and shale coke | thousand tons | IN |
| 27 | Oil and shale bitumen | Oil and shale bitumen | thousand tons | IN |
| 28 | Gas obtained by distillation at REFINERY | Gas obtained by distillation in refineries | million cubic meters m | IN |
| 29 | White Spirit | White Spirit | thousand tons | IN |
| 30 | Lubricants | Lubricants |  |  |
| 31 | Petroleum paraffin | Petroleum paraffin |  |  |
| 32 | Other petroleum products:Sulfur, purified, except sublimated, precipitated and colloidal | Sulfur, purified, except sublimated, precipitated and colloidal | thousand tons | IN |
| 33 | Renewable energy sources:Electricity (hydroelectric) | Electricity generated by small hydro power plantsElectricity generated by other hydroelectric power plants | TJ 3TJ | PP |
| 34 | Electricity (solar power plants) | Electricity produced by solar power plants | TJ | P |
| 35 | Electricity (wind farms) | Electricity generated by wind farms | TJ | P |
| 36 | Electricity (biogas plants) | Electricity from biogas produced by biogas plants | TJ | P |
| 37 | Wood fuel | Sawdust and wood waste | thousand tons | P |
| 38 | Charcoal, including agglomerated | Charcoal, including agglomerated | thousand tons | IN |
| 39 | Electricity | Electricity generated by small hydro power plantsElectricity generated by other hydroelectric power plantsElectricity generated by wind farmsElectricity produced by solar power plantsElectricity produced by burning fuel:Electricity generated by thermal power plants (except CHP)Electricity produced by condensing power plants (CPP)Electricity produced by combined heat and power plants (CHP)Electricity produced by gas turbine power plants (GTPP) Electricity produced by other means | GWh 4GWhGWhGWhGWhGWhGWhGWhGWh | PPPPINININININ |
| 40 | Thermal energy | Steam and hot water (thermal energy) produced by using biomassSteam and hot water (thermal energy) produced by boiler housesSteam and hot water (thermal energy) produced by thermal power plants (CHP)Steam and hot water (thermal energy), other | TJTJTJTJ | ININININ |

Note:

1 thousand tons - here and further thousand tons;

2 million cubic meters m - hereinafter one million cubic meters;

3 TJ - hereinafter terajoule;

4 GWh - hereinafter gigawatt-hour.

Appendix 3

to the Methodology for the formation of the fuel and energy balance and the calculation of individual statistical indicators characterizing the energy industry

Fuel and energy balance

thousand toe

|  |  |  |  |
| --- | --- | --- | --- |
| No. of the balance sheet item | Balance sheet items | Coal and products of its processing | Natural gas 2 |
| Coal concentrate | Coal coal for energy 1) | Lignite (brown coal) | Coke and semi-cokefrom coal | Resins obtained by distillation from coal | Coke oven gas | Blast furnace gas |
| B | IN | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| G | Calorific value, TJ/thous. tons, TJ/million cubic meters m |  |  |  |  |  |  |  |  |
| 1. | Production (extraction) of primary energy (+) |  |  |  |  |  |  |  |  |
| 1.1. | Production (extraction) of primary energy |  |  |  |  |  |  |  |  |
| 1.2. | Import |  |  |  |  |  |  |  |  |
| 1.3. | Export |  |  |  |  |  |  |  |  |
| 1.4. | International bunkering |  |  |  |  |  |  |  |  |
| 1.5. | Inventory change (+,–) |  |  |  |  |  |  |  |  |
| 1.5.1. | Stocks at the beginning of the year |  |  |  |  |  |  |  |  |
| 1.5.2. | Stocks at the end of the year |  |  |  |  |  |  |  |  |
| 1.6. | Gross consumption of primary energy and its equivalents (=) |  |  |  |  |  |  |  |  |
| 1.7. | Statistical discrepancies |  |  |  |  |  |  |  |  |
| 2. | Transformation sector, energy consumption sector, losses |  |  |  |  |  |  |  |  |
| 2.1. | Transformation Sector - Login |  |  |  |  |  |  |  |  |
| 2.1.1. | Power plants (TPP) (main activity) |  |  |  |  |  |  |  |  |
| 2.1.2. | Power plants (TPP) (secondary activity) |  |  |  |  |  |  |  |  |
| 2.1.3. | Combined Heat and Power Plants (CHP) (core business) |  |  |  |  |  |  |  |  |
| 2.1.4. | Combined Heat and Power Plants (CHP) (secondary activity) |  |  |  |  |  |  |  |  |
| 2.1.5. | Heating boiler houses (main activity) |  |  |  |  |  |  |  |  |
| 2.1.6. | Heating boiler houses (secondary activity) |  |  |  |  |  |  |  |  |
| 2.1.7. | Coke ovens |  |  |  |  |  |  |  |  |
| 2.1.8. | Blast furnaces |  |  |  |  |  |  |  |  |
| 2.1.9. | Oil refineries |  |  |  |  |  |  |  |  |
| 2.1.10. | Production of coal briquettes |  |  |  |  |  |  |  |  |
| 2.1.11. | Gas works |  |  |  |  |  |  |  |  |
| 2.1.12. | Petrochemical industry |  |  |  |  |  |  |  |  |
| 2.1.13. | Production of brown coal briquettes |  |  |  |  |  |  |  |  |
| 2.1.14. | Charcoal production |  |  |  |  |  |  |  |  |
| 2.1.15. | Not listed above (transformation) |  |  |  |  |  |  |  |  |
| 2.2. | Conversion Sector - Exit |  |  |  |  |  |  |  |  |
| 2.2.1. | Power plants (TPP) (main activity) |  |  |  |  |  |  |  |  |
| 2.2.2. | Power plants (TPP) (secondary activity) |  |  |  |  |  |  |  |  |
| 2.2.3. | Combined Heat and Power Plants (CHP) (core business) |  |  |  |  |  |  |  |  |
| 2.2.4. | Combined Heat and Power Plants (CHP) (secondary activity) |  |  |  |  |  |  |  |  |
| 2.2.5. | Heating boiler houses (main activity) |  |  |  |  |  |  |  |  |
| 2.2.6. | Heating boiler houses (secondary activity) |  |  |  |  |  |  |  |  |
| 2.2.7. | Coke ovens |  |  |  |  |  |  |  |  |
| 2.2.8. | Blast furnaces |  |  |  |  |  |  |  |  |
| 2.2.9. | Oil refineries |  |  |  |  |  |  |  |  |
| 2.2.10. | Production of coal briquettes |  |  |  |  |  |  |  |  |
| 2.2.11. | Gas works |  |  |  |  |  |  |  |  |
| 2.2.12. | Petrochemical industry |  |  |  |  |  |  |  |  |
| 2.2.13. | Production of brown coal briquettes |  |  |  |  |  |  |  |  |
| 2.2.14. | Charcoal production |  |  |  |  |  |  |  |  |
| 2.2.15. | Not listed above (transformation) |  |  |  |  |  |  |  |  |
| 2.3. | Consumption in the energy sector (own needs) |  |  |  |  |  |  |  |  |
| 2.3.1. | Coal mines |  |  |  |  |  |  |  |  |
| 2.3.2. | Mining of oil and gas |  |  |  |  |  |  |  |  |
| 2.3.3. | Power plants (TPP) (main activity) |  |  |  |  |  |  |  |  |
| 2.3.4. | Power plants (TPP) (secondary activity) |  |  |  |  |  |  |  |  |
| 2.3.5. | Combined Heat and Power Plants (CHP) (core business) |  |  |  |  |  |  |  |  |
| 2.3.6. | Combined Heat and Power Plants (CHP) (secondary activity) |  |  |  |  |  |  |  |  |
| 2.3.7. | Heating boiler houses (main activity) |  |  |  |  |  |  |  |  |
| 2.3.8. | Heating boiler houses (secondary activity) |  |  |  |  |  |  |  |  |
| 2.3.9. | Coke ovens |  |  |  |  |  |  |  |  |
| 2.3.10. | Blast furnaces |  |  |  |  |  |  |  |  |
| 2.3.11. | Oil refineries |  |  |  |  |  |  |  |  |
| 2.3.12. | Production of coal briquettes |  |  |  |  |  |  |  |  |
| 2.3.13. | Gas plants |  |  |  |  |  |  |  |  |
| 2.3.14. | petrochemical industry |  |  |  |  |  |  |  |  |
| 2.3.15. | Production of brown coal briquettes |  |  |  |  |  |  |  |  |
| 2.3.16. | Charcoal production |  |  |  |  |  |  |  |  |
| 2.3.17. | Use of transmission and distribution networks |  |  |  |  |  |  |  |  |
| 2.3.18. | Not listed above (transformation) |  |  |  |  |  |  |  |  |
| 2.4. | Distribution loss |  |  |  |  |  |  |  |  |
| 2.5. | Available for final consumption |  |  |  |  |  |  |  |  |
| 3. | Final consumption for non-energy purposes |  |  |  |  |  |  |  |  |
| 3.1. | in the transformation sector |  |  |  |  |  |  |  |  |
| 3.2. | in the energy sector |  |  |  |  |  |  |  |  |
| 3.3. | in the transport sector |  |  |  |  |  |  |  |  |
| 3.4. | in the industrial sector |  |  |  |  |  |  |  |  |
| 3.4.1 | in the chemical industry (including petrochemical) |  |  |  |  |  |  |  |  |
| 3.5. | in the agricultural sector |  |  |  |  |  |  |  |  |
| 3.6. | in other sectors |  |  |  |  |  |  |  |  |
| 4. | Final energy consumption |  |  |  |  |  |  |  |  |
| 4.1. | Industry sector |  |  |  |  |  |  |  |  |
| 4.1.1. | Ferrous metallurgy |  |  |  |  |  |  |  |  |
| 4.1.2. | Chemical industry (including petrochemical) |  |  |  |  |  |  |  |  |
| 4.1.3. | Non-ferrous metallurgy |  |  |  |  |  |  |  |  |
| 4.1.4. | Production of non-metallic products |  |  |  |  |  |  |  |  |
| 4.1.5. | Transport equipment |  |  |  |  |  |  |  |  |
| 4.1.6. | mechanical engineering |  |  |  |  |  |  |  |  |
| 4.1.7. | mining industry |  |  |  |  |  |  |  |  |
| 4.1.8. | Manufacture of food, beverages and tobacco products |  |  |  |  |  |  |  |  |
| 4.1.9 | Pulp and paper production and printing |  |  |  |  |  |  |  |  |
| 4.1.10. | Woodworking industry |  |  |  |  |  |  |  |  |
| 4.1.11. | Construction |  |  |  |  |  |  |  |  |
| 4.1.12. | Textile and leather industry |  |  |  |  |  |  |  |  |
| 4.1.13. | Not listed in other categories |  |  |  |  |  |  |  |  |
| 4.2. | Transport sector |  |  |  |  |  |  |  |  |
| 4.2.1. | International air transportation |  |  |  |  |  |  |  |  |
| 4.2.2. | Domestic air transportation |  |  |  |  |  |  |  |  |
| 4.2.3. | Road transport |  |  |  |  |  |  |  |  |
| 4.2.4. | Railway transport |  |  |  |  |  |  |  |  |
| 4.2.5. | Inland water transport |  |  |  |  |  |  |  |  |
| 4.2.6. | Pipeline transport |  |  |  |  |  |  |  |  |
| 4.2.7. | Not listed in other categories |  |  |  |  |  |  |  |  |
| 4.3. | Other |  |  |  |  |  |  |  |  |
| 4.3.1. | Housing sector |  |  |  |  |  |  |  |  |
| 4.3.2. | Commercial and government services |  |  |  |  |  |  |  |  |
| 4.3.3. | Agriculture/forestry |  |  |  |  |  |  |  |  |
| 4.3.4. | Fishing |  |  |  |  |  |  |  |  |
| 4.3.5 | Not listed in other categories |  |  |  |  |  |  |  |  |
| 5. | Statistical discrepancies |  |  |  |  |  |  |  |  |

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| --- | --- | --- |
| No. of the balance sheet item | Balance sheet items | Oil and oil products |
| Crude oil, includinggas condensate | Other hydrocarbons | gas condensate | Liquefied hydrocarbon gases | Additives, componentsmixtures for petroleum products | Ethane | Straight-run naphtha | Propane and butane liquefied |
| B | IN | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| G | Calorific value, TJ/thous. tons, TJ/million cubic meters m |  |  |  |  |  |  |  |  |
| 1. | Production (extraction) of primary energy (+) |  |  |  |  |  |  |  |  |
| 1.1. | Production (extraction) of primary energy |  |  |  |  |  |  |  |  |
| 1.2. | Import |  |  |  |  |  |  |  |  |
| 1.3. | Export |  |  |  |  |  |  |  |  |
| 1.4. | International bunkering |  |  |  |  |  |  |  |  |
| 1.5. | Inventory change (+,–) |  |  |  |  |  |  |  |  |
| 1.5.1. | Stocks at the beginning of the year |  |  |  |  |  |  |  |  |
| 1.5.2. | Stocks at the end of the year |  |  |  |  |  |  |  |  |
| 1.6. | Gross consumption of primary energy and its equivalents (=) |  |  |  |  |  |  |  |  |
| 1.7. | Statistical discrepancies |  |  |  |  |  |  |  |  |
| 2. | Transformation sector, energy consumption sector, losses |  |  |  |  |  |  |  |  |
| 2.1. | Transformation Sector - Login |  |  |  |  |  |  |  |  |
| 2.1.1. | Power plants (TPP) (main activity) |  |  |  |  |  |  |  |  |
| 2.1.2. | Power plants (TPP) (secondary activity) |  |  |  |  |  |  |  |  |
| 2.1.3. | Combined Heat and Power Plants (CHP) (core business) |  |  |  |  |  |  |  |  |
| 2.1.4. | Combined Heat and Power Plants (CHP) (secondary activity) |  |  |  |  |  |  |  |  |
| 2.1.5. | Heating boiler houses (main activity) |  |  |  |  |  |  |  |  |
| 2.1.6. | Heating boiler houses (secondary activity) |  |  |  |  |  |  |  |  |
| 2.1.7. | Coke ovens |  |  |  |  |  |  |  |  |
| 2.1.8. | Blast furnaces |  |  |  |  |  |  |  |  |
| 2.1.9. | Oil refineries |  |  |  |  |  |  |  |  |
| 2.1.10. | Production of coal briquettes |  |  |  |  |  |  |  |  |
| 2.1.11. | Gas works |  |  |  |  |  |  |  |  |
| 2.1.12. | petrochemical industry |  |  |  |  |  |  |  |  |
| 2.1.13. | Production of brown coal briquettes |  |  |  |  |  |  |  |  |
| 2.1.14. | Charcoal production |  |  |  |  |  |  |  |  |
| 2.1.15. | Not listed above (transformation) |  |  |  |  |  |  |  |  |
| 2.2. | Conversion Sector - Exit |  |  |  |  |  |  |  |  |
| 2.2.1. | Power plants (TPP) (main activity) |  |  |  |  |  |  |  |  |
| 2.2.2. | Power plants (TPP) (secondary activity) |  |  |  |  |  |  |  |  |
| 2.2.3. | Combined Heat and Power Plants (CHP) (core business) |  |  |  |  |  |  |  |  |
| 2.2.4. | Combined Heat and Power Plants (CHP) (secondary activity) |  |  |  |  |  |  |  |  |
| 2.2.5. | Heating boiler houses (main activity) |  |  |  |  |  |  |  |  |
| 2.2.6. | Heating boiler houses (secondary activity) |  |  |  |  |  |  |  |  |
| 2.2.7. | Coke ovens |  |  |  |  |  |  |  |  |
| 2.2.8. | Blast furnaces |  |  |  |  |  |  |  |  |
| 2.2.9. | Oil refineries |  |  |  |  |  |  |  |  |
| 2.2.10. | Production of coal briquettes |  |  |  |  |  |  |  |  |
| 2.2.11. | Gas works |  |  |  |  |  |  |  |  |
| 2.2.12. | Petrochemical industry |  |  |  |  |  |  |  |  |
| 2.2.13. | Production of brown coal briquettes |  |  |  |  |  |  |  |  |
| 2.2.14. | Charcoal production |  |  |  |  |  |  |  |  |
| 2.2.15. | Not listed above (transformation) |  |  |  |  |  |  |  |  |
| 2.3. | Consumption in the energy sector (own needs) |  |  |  |  |  |  |  |  |
| 2.3.1. | Coal mines |  |  |  |  |  |  |  |  |
| 2.3.2. | Mining of oil and gas |  |  |  |  |  |  |  |  |
| 2.3.3. | Power plants (TPP) (main activity) |  |  |  |  |  |  |  |  |
| 2.3.4. | Power plants (TPP) (secondary activity) |  |  |  |  |  |  |  |  |
| 2.3.5. | Combined Heat and Power Plants (CHP) (core business) |  |  |  |  |  |  |  |  |
| 2.3.6. | Combined Heat and Power Plants (CHP) (secondary activity) |  |  |  |  |  |  |  |  |
| 2.3.7. | Heating boiler houses (main activity) |  |  |  |  |  |  |  |  |
| 2.3.8. | Heating boiler houses (secondary activity) |  |  |  |  |  |  |  |  |
| 2.3.9. | Coke ovens |  |  |  |  |  |  |  |  |
| 2.3.10. | Blast furnaces |  |  |  |  |  |  |  |  |
| 2.3.11. | Oil refineries |  |  |  |  |  |  |  |  |
| 2.3.12. | Production of coal briquettes |  |  |  |  |  |  |  |  |
| 2.3.13. | Gas plants |  |  |  |  |  |  |  |  |
| 2.3.14. | Petrochemical industry |  |  |  |  |  |  |  |  |
| 2.3.15. | Production of brown coal briquettes |  |  |  |  |  |  |  |  |
| 2.3.16. | Charcoal production |  |  |  |  |  |  |  |  |
| 2.3.17. | Use of transmission and distribution networks |  |  |  |  |  |  |  |  |
| 2.3.18. | Not listed above (transformation) |  |  |  |  |  |  |  |  |
| 2.4. | Distribution loss |  |  |  |  |  |  |  |  |
| 2.5. | Available for final consumption |  |  |  |  |  |  |  |  |
| 3. | Final consumption for non-energy purposes |  |  |  |  |  |  |  |  |
| 3.1. | in the transformation sector |  |  |  |  |  |  |  |  |
| 3.2. | in the energy sector |  |  |  |  |  |  |  |  |
| 3.3. | in the transport sector |  |  |  |  |  |  |  |  |
| 3.4. | in the industrial sector |  |  |  |  |  |  |  |  |
| 3.4.1 | in the chemical industry (including petrochemical) |  |  |  |  |  |  |  |  |
| 3.5. | in the agricultural sector |  |  |  |  |  |  |  |  |
| 3.6. | in other sectors |  |  |  |  |  |  |  |  |
| 4. | Final energy consumption |  |  |  |  |  |  |  |  |
| 4.1. | Industry sector |  |  |  |  |  |  |  |  |
| 4.1.1. | Ferrous metallurgy |  |  |  |  |  |  |  |  |
| 4.1.2. | Chemical industry (including petrochemical) |  |  |  |  |  |  |  |  |
| 4.1.3. | Non-ferrous metallurgy |  |  |  |  |  |  |  |  |
| 4.1.4. | Production of non-metallic products |  |  |  |  |  |  |  |  |
| 4.1.5. | Transport equipment |  |  |  |  |  |  |  |  |
| 4.1.6. | mechanical engineering |  |  |  |  |  |  |  |  |
| 4.1.7. | mining industry |  |  |  |  |  |  |  |  |
| 4.1.8. | Manufacture of food, beverages and tobacco products |  |  |  |  |  |  |  |  |
| 4.1.9 | Pulp and paper production and printing |  |  |  |  |  |  |  |  |
| 4.1.10. | Woodworking industry |  |  |  |  |  |  |  |  |
| 4.1.11. | Construction |  |  |  |  |  |  |  |  |
| 4.1.12. | Textile and leather industry |  |  |  |  |  |  |  |  |
| 4.1.13. | Not listed in other categories |  |  |  |  |  |  |  |  |
| 4.2. | Transport sector |  |  |  |  |  |  |  |  |
| 4.2.1. | International air transportation |  |  |  |  |  |  |  |  |
| 4.2.2. | Domestic air transportation |  |  |  |  |  |  |  |  |
| 4.2.3. | Road transport |  |  |  |  |  |  |  |  |
| 4.2.4. | Railway transport |  |  |  |  |  |  |  |  |
| 4.2.5. | Inland water transport |  |  |  |  |  |  |  |  |
| 4.2.6. | Pipeline transport |  |  |  |  |  |  |  |  |
| 4.2.7. | Not listed in other categories |  |  |  |  |  |  |  |  |
| 4.3. | Other |  |  |  |  |  |  |  |  |
| 4.3.1. | Housing sector |  |  |  |  |  |  |  |  |
| 4.3.2. | Commercial and government services |  |  |  |  |  |  |  |  |
| 4.3.3. | Agriculture/forestry |  |  |  |  |  |  |  |  |
| 4.3.4. | Fishing |  |  |  |  |  |  |  |  |
| 4.3.5 | Not listed in other categories |  |  |  |  |  |  |  |  |
| 5. | Statistical discrepancies |  |  |  |  |  |  |  |  |

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| --- | --- | --- |
| No. of the balance sheet item | Balance sheet items | Oil and oil products |
| Aviation gasoline | Motor gasoline | Jet fuel type gasoline | Jet fuel like kerosene | Kerosene | Diesel fuel for transport | Heating andother gas oils | Fuel oil (fuel oil), with a sulfur content of less than 1% |
| B | IN | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| G | Calorific value, TJ/thous. tons, TJ/million cubic meters m |  |  |  |  |  |  |  |  |
| 1. | Production (extraction) of primary energy (+) |  |  |  |  |  |  |  |  |
| 1.1. | Production (extraction) of primary energy |  |  |  |  |  |  |  |  |
| 1.2. | Import |  |  |  |  |  |  |  |  |
| 1.3. | Export |  |  |  |  |  |  |  |  |
| 1.4. | International bunkering |  |  |  |  |  |  |  |  |
| 1.5. | Inventory change (+,–) |  |  |  |  |  |  |  |  |
| 1.5.1. | Stocks at the beginning of the year |  |  |  |  |  |  |  |  |
| 1.5.2. | Stocks at the end of the year |  |  |  |  |  |  |  |  |
| 1.6. | Gross consumption of primary energy and its equivalents (=) |  |  |  |  |  |  |  |  |
| 1.7. | Statistical discrepancies |  |  |  |  |  |  |  |  |
| 2. | Transformation sector, energy consumption sector, losses |  |  |  |  |  |  |  |  |
| 2.1. | Transformation Sector - Login |  |  |  |  |  |  |  |  |
| 2.1.1. | Power plants (TPP) (main activity) |  |  |  |  |  |  |  |  |
| 2.1.2. | Power plants (TPP) (secondary activity) |  |  |  |  |  |  |  |  |
| 2.1.3. | Combined Heat and Power Plants (CHP) (core business) |  |  |  |  |  |  |  |  |
| 2.1.4. | Combined Heat and Power Plants (CHP) (secondary activity) |  |  |  |  |  |  |  |  |
| 2.1.5. | Heating boiler houses (main activity) |  |  |  |  |  |  |  |  |
| 2.1.6. | Heating boiler houses (secondary activity) |  |  |  |  |  |  |  |  |
| 2.1.7. | Coke ovens |  |  |  |  |  |  |  |  |
| 2.1.8. | Blast furnaces |  |  |  |  |  |  |  |  |
| 2.1.9. | Oil refineries |  |  |  |  |  |  |  |  |
| 2.1.10. | Production of coal briquettes |  |  |  |  |  |  |  |  |
| 2.1.11. | Gas works |  |  |  |  |  |  |  |  |
| 2.1.12. | petrochemical industry |  |  |  |  |  |  |  |  |
| 2.1.13. | Production of brown coal briquettes |  |  |  |  |  |  |  |  |
| 2.1.14. | Charcoal production |  |  |  |  |  |  |  |  |
| 2.1.15. | Not listed above (transformation) |  |  |  |  |  |  |  |  |
| 2.2. | Conversion Sector - Exit |  |  |  |  |  |  |  |  |
| 2.2.1. | Power plants (TPP) (main activity) |  |  |  |  |  |  |  |  |
| 2.2.2. | Power plants (TPP) (secondary activity) |  |  |  |  |  |  |  |  |
| 2.2.3. | Combined Heat and Power Plants (CHP) (core business) |  |  |  |  |  |  |  |  |
| 2.2.4. | Combined Heat and Power Plants (CHP) (secondary activity) |  |  |  |  |  |  |  |  |
| 2.2.5. | Heating boiler houses (main activity) |  |  |  |  |  |  |  |  |
| 2.2.6. | Heating boiler houses (secondary activity) |  |  |  |  |  |  |  |  |
| 2.2.7. | Coke ovens |  |  |  |  |  |  |  |  |
| 2.2.8. | blast furnaces |  |  |  |  |  |  |  |  |
| 2.2.9. | Oil refineries |  |  |  |  |  |  |  |  |
| 2.2.10. | Production of coal briquettes |  |  |  |  |  |  |  |  |
| 2.2.11. | Gas works |  |  |  |  |  |  |  |  |
| 2.2.12. | petrochemical industry |  |  |  |  |  |  |  |  |
| 2.2.13. | Production of brown coal briquettes |  |  |  |  |  |  |  |  |
| 2.2.14. | Charcoal production |  |  |  |  |  |  |  |  |
| 2.2.15. | Not listed above (transformation) |  |  |  |  |  |  |  |  |
| 2.3. | Consumption in the energy sector (own needs) |  |  |  |  |  |  |  |  |
| 2.3.1. | coal mines |  |  |  |  |  |  |  |  |
| 2.3.2. | Mining of oil and gas |  |  |  |  |  |  |  |  |
| 2.3.3. | Power plants (TPP) (main activity) |  |  |  |  |  |  |  |  |
| 2.3.4. | Power plants (TPP) (secondary activity) |  |  |  |  |  |  |  |  |
| 2.3.5. | Combined Heat and Power Plants (CHP) (core business) |  |  |  |  |  |  |  |  |
| 2.3.6. | Combined Heat and Power Plants (CHP) (secondary activity) |  |  |  |  |  |  |  |  |
| 2.3.7. | Heating boiler houses (main activity) |  |  |  |  |  |  |  |  |
| 2.3.8. | Heating boiler houses (secondary activity) |  |  |  |  |  |  |  |  |
| 2.3.9. | Coke ovens |  |  |  |  |  |  |  |  |
| 2.3.10. | Blast furnaces |  |  |  |  |  |  |  |  |
| 2.3.11. | Oil refineries |  |  |  |  |  |  |  |  |
| 2.3.12. | Production of coal briquettes |  |  |  |  |  |  |  |  |
| 2.3.13. | Gas plants |  |  |  |  |  |  |  |  |
| 2.3.14. | petrochemical industry |  |  |  |  |  |  |  |  |
| 2.3.15. | Production of brown coal briquettes |  |  |  |  |  |  |  |  |
| 2.3.16. | Charcoal production |  |  |  |  |  |  |  |  |
| 2.3.17. | Use of transmission and distribution networks |  |  |  |  |  |  |  |  |
| 2.3.18. | Not listed above (transformation) |  |  |  |  |  |  |  |  |
| 2.4. | Distribution loss |  |  |  |  |  |  |  |  |
| 2.5. | Available for final consumption |  |  |  |  |  |  |  |  |
| 3. | Final consumption for non-energy purposes |  |  |  |  |  |  |  |  |
| 3.1. | in the transformation sector |  |  |  |  |  |  |  |  |
| 3.2. | in the energy sector |  |  |  |  |  |  |  |  |
| 3.3. | in the transport sector |  |  |  |  |  |  |  |  |
| 3.4. | in the industrial sector |  |  |  |  |  |  |  |  |
| 3.4.1 | in the chemical industry (including petrochemical) |  |  |  |  |  |  |  |  |
| 3.5. | in the agricultural sector |  |  |  |  |  |  |  |  |
| 3.6. | in other sectors |  |  |  |  |  |  |  |  |
| 4. | Final energy consumption |  |  |  |  |  |  |  |  |
| 4.1. | Industry sector |  |  |  |  |  |  |  |  |
| 4.1.1. | Ferrous metallurgy |  |  |  |  |  |  |  |  |
| 4.1.2. | Chemical industry (including petrochemical) |  |  |  |  |  |  |  |  |
| 4.1.3. | Non-ferrous metallurgy |  |  |  |  |  |  |  |  |
| 4.1.4. | Production of non-metallic products |  |  |  |  |  |  |  |  |
| 4.1.5. | Transport equipment |  |  |  |  |  |  |  |  |
| 4.1.6. | mechanical engineering |  |  |  |  |  |  |  |  |
| 4.1.7. | mining industry |  |  |  |  |  |  |  |  |
| 4.1.8. | Manufacture of food, beverages and tobacco products |  |  |  |  |  |  |  |  |
| 4.1.9 | Pulp and paper production and printing |  |  |  |  |  |  |  |  |
| 4.1.10. | Woodworking industry |  |  |  |  |  |  |  |  |
| 4.1.11. | Construction |  |  |  |  |  |  |  |  |
| 4.1.12. | Textile and leather industry |  |  |  |  |  |  |  |  |
| 4.1.13. | Not listed in other categories |  |  |  |  |  |  |  |  |
| 4.2. | Transport sector |  |  |  |  |  |  |  |  |
| 4.2.1. | International air transportation |  |  |  |  |  |  |  |  |
| 4.2.2. | Domestic air transportation |  |  |  |  |  |  |  |  |
| 4.2.3. | Road transport |  |  |  |  |  |  |  |  |
| 4.2.4. | Railway transport |  |  |  |  |  |  |  |  |
| 4.2.5. | Inland water transport |  |  |  |  |  |  |  |  |
| 4.2.6. | Pipeline transport |  |  |  |  |  |  |  |  |
| 4.2.7. | Not listed in other categories |  |  |  |  |  |  |  |  |
| 4.3. | Other |  |  |  |  |  |  |  |  |
| 4.3.1. | Housing sector |  |  |  |  |  |  |  |  |
| 4.3.2. | Commercial and government services |  |  |  |  |  |  |  |  |
| 4.3.3. | Agriculture/forestry |  |  |  |  |  |  |  |  |
| 4.3.4. | Fishing |  |  |  |  |  |  |  |  |
| 4.3.5 | Not listed in other categories |  |  |  |  |  |  |  |  |
| 5. | Statistical discrepancies |  |  |  |  |  |  |  |  |

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| --- | --- | --- |
| No. of the balance sheet item | Balance sheet items | Oil and oil products |
| Fuel oil (fuel oil), with a sulfur content of more than 1% | Petroleum and shale coke | Oil and shale bitumen | Gas receivedDistillation on REFINERY | White Spirit | Lubricants | Petroleum paraffin | Other petroleum products |
| B | IN | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 |
| G | Calorific value, TJ/thous. tons, TJ/million cubic meters m |  |  |  |  |  |  |  |  |
| 1. | Production (extraction) of primary energy (+) |  |  |  |  |  |  |  |  |
| 1.1. | Production (extraction) of primary energy |  |  |  |  |  |  |  |  |
| 1.2. | Import |  |  |  |  |  |  |  |  |
| 1.3. | Export |  |  |  |  |  |  |  |  |
| 1.4. | International bunkering |  |  |  |  |  |  |  |  |
| 1.5. | Inventory change (+,–) |  |  |  |  |  |  |  |  |
| 1.5.1. | Stocks at the beginning of the year |  |  |  |  |  |  |  |  |
| 1.5.2. | Stocks at the end of the year |  |  |  |  |  |  |  |  |
| 1.6. | Gross consumption of primary energy and its equivalents (=) |  |  |  |  |  |  |  |  |
| 1.7. | Statistical discrepancies |  |  |  |  |  |  |  |  |
| 2. | Transformation sector, energy consumption sector, losses |  |  |  |  |  |  |  |  |
| 2.1. | Transformation Sector - Login |  |  |  |  |  |  |  |  |
| 2.1.1. | Power plants (TPP) (main activity) |  |  |  |  |  |  |  |  |
| 2.1.2. | Power plants (TPP) (secondary activity) |  |  |  |  |  |  |  |  |
| 2.1.3. | Combined Heat and Power Plants (CHP) (core business) |  |  |  |  |  |  |  |  |
| 2.1.4. | Combined Heat and Power Plants (CHP) (secondary activity) |  |  |  |  |  |  |  |  |
| 2.1.5. | Heating boiler houses (main activity) |  |  |  |  |  |  |  |  |
| 2.1.6. | Heating boiler houses (secondary activity) |  |  |  |  |  |  |  |  |
| 2.1.7. | Coke ovens |  |  |  |  |  |  |  |  |
| 2.1.8. | Blast furnaces |  |  |  |  |  |  |  |  |
| 2.1.9. | Oil refineries |  |  |  |  |  |  |  |  |
| 2.1.10. | Production of coal briquettes |  |  |  |  |  |  |  |  |
| 2.1.11. | Gas works |  |  |  |  |  |  |  |  |
| 2.1.12. | Petrochemical industry |  |  |  |  |  |  |  |  |
| 2.1.13. | Production of brown coal briquettes |  |  |  |  |  |  |  |  |
| 2.1.14. | Charcoal production |  |  |  |  |  |  |  |  |
| 2.1.15. | Not listed above (transformation) |  |  |  |  |  |  |  |  |
| 2.2. | Conversion Sector - Exit |  |  |  |  |  |  |  |  |
| 2.2.1. | Power plants (TPP) (main activity) |  |  |  |  |  |  |  |  |
| 2.2.2. | Power plants (TPP) (secondary activity) |  |  |  |  |  |  |  |  |
| 2.2.3. | Combined Heat and Power Plants (CHP) (core business) |  |  |  |  |  |  |  |  |
| 2.2.4. | Combined Heat and Power Plants (CHP) (secondary activity) |  |  |  |  |  |  |  |  |
| 2.2.5. | Heating boiler houses (main activity) |  |  |  |  |  |  |  |  |
| 2.2.6. | Heating boiler houses (secondary activity) |  |  |  |  |  |  |  |  |
| 2.2.7. | Coke ovens |  |  |  |  |  |  |  |  |
| 2.2.8. | Blast furnaces |  |  |  |  |  |  |  |  |
| 2.2.9. | Oil refineries |  |  |  |  |  |  |  |  |
| 2.2.10. | Production of coal briquettes |  |  |  |  |  |  |  |  |
| 2.2.11. | Gas works |  |  |  |  |  |  |  |  |
| 2.2.12. | petrochemical industry |  |  |  |  |  |  |  |  |
| 2.2.13. | Production of brown coal briquettes |  |  |  |  |  |  |  |  |
| 2.2.14. | Charcoal production |  |  |  |  |  |  |  |  |
| 2.2.15. | Not listed above (transformation) |  |  |  |  |  |  |  |  |
| 2.3. | Consumption in the energy sector (own needs) |  |  |  |  |  |  |  |  |
| 2.3.1. | Coal mines |  |  |  |  |  |  |  |  |
| 2.3.2. | Mining of oil and gas |  |  |  |  |  |  |  |  |
| 2.3.3. | Power plants (TPP) (main activity) |  |  |  |  |  |  |  |  |
| 2.3.4. | Power plants (TPP) (secondary activity) |  |  |  |  |  |  |  |  |
| 2.3.5. | Combined Heat and Power Plants (CHP) (core business) |  |  |  |  |  |  |  |  |
| 2.3.6. | Combined Heat and Power Plants (CHP) (secondary activity) |  |  |  |  |  |  |  |  |
| 2.3.7. | Heating boiler houses (main activity) |  |  |  |  |  |  |  |  |
| 2.3.8. | Heating boiler houses (secondary activity) |  |  |  |  |  |  |  |  |
| 2.3.9. | Coke ovens |  |  |  |  |  |  |  |  |
| 2.3.10. | Blast furnaces |  |  |  |  |  |  |  |  |
| 2.3.11. | Oil refineries |  |  |  |  |  |  |  |  |
| 2.3.12. | Production of coal briquettes |  |  |  |  |  |  |  |  |
| 2.3.13. | Fas plants |  |  |  |  |  |  |  |  |
| 2.3.14. | Petrochemical industry |  |  |  |  |  |  |  |  |
| 2.3.15. | Production of brown coal briquettes |  |  |  |  |  |  |  |  |
| 2.3.16. | Charcoal production |  |  |  |  |  |  |  |  |
| 2.3.17. | Use of transmission and distribution networks |  |  |  |  |  |  |  |  |
| 2.3.18. | Not listed above (transformation) |  |  |  |  |  |  |  |  |
| 2.4. | Distribution loss |  |  |  |  |  |  |  |  |
| 2.5. | Available for final consumption |  |  |  |  |  |  |  |  |
| 3. | Final consumption for non-energy purposes |  |  |  |  |  |  |  |  |
| 3.1. | in the transformation sector |  |  |  |  |  |  |  |  |
| 3.2. | in the energy sector |  |  |  |  |  |  |  |  |
| 3.3. | in the transport sector |  |  |  |  |  |  |  |  |
| 3.4. | in the industrial sector |  |  |  |  |  |  |  |  |
| 3.4.1 | in the chemical industry (including petrochemical) |  |  |  |  |  |  |  |  |
| 3.5. | in the agricultural sector |  |  |  |  |  |  |  |  |
| 3.6. | in other sectors |  |  |  |  |  |  |  |  |
| 4. | Final energy consumption |  |  |  |  |  |  |  |  |
| 4.1. | Industry sector |  |  |  |  |  |  |  |  |
| 4.1.1. | Ferrous metallurgy |  |  |  |  |  |  |  |  |
| 4.1.2. | Chemical industry (including petrochemical) |  |  |  |  |  |  |  |  |
| 4.1.3. | Non-ferrous metallurgy |  |  |  |  |  |  |  |  |
| 4.1.4. | Production of non-metallic products |  |  |  |  |  |  |  |  |
| 4.1.5. | Transport equipment |  |  |  |  |  |  |  |  |
| 4.1.6. | mechanical engineering |  |  |  |  |  |  |  |  |
| 4.1.7. | mining industry |  |  |  |  |  |  |  |  |
| 4.1.8. | Manufacture of food, beverages and tobacco products |  |  |  |  |  |  |  |  |
| 4.1.9 | Pulp and paper production and printing |  |  |  |  |  |  |  |  |
| 4.1.10. | Woodworking industry |  |  |  |  |  |  |  |  |
| 4.1.11. | Construction |  |  |  |  |  |  |  |  |
| 4.1.12. | Textile and leather industry |  |  |  |  |  |  |  |  |
| 4.1.13. | Not listed in other categories |  |  |  |  |  |  |  |  |
| 4.2. | Transport sector |  |  |  |  |  |  |  |  |
| 4.2.1. | International air transportation |  |  |  |  |  |  |  |  |
| 4.2.2. | Domestic air transportation |  |  |  |  |  |  |  |  |
| 4.2.3. | Road transport |  |  |  |  |  |  |  |  |
| 4.2.4. | Railway transport |  |  |  |  |  |  |  |  |
| 4.2.5. | Inland water transport |  |  |  |  |  |  |  |  |
| 4.2.6. | Pipeline transport |  |  |  |  |  |  |  |  |
| 4.2.7. | Not listed in other categories |  |  |  |  |  |  |  |  |
| 4.3. | Other |  |  |  |  |  |  |  |  |
| 4.3.1. | Housing sector |  |  |  |  |  |  |  |  |
| 4.3.2. | Commercial and government services |  |  |  |  |  |  |  |  |
| 4.3.3. | Agriculture/forestry |  |  |  |  |  |  |  |  |
| 4.3.4. | Fishing |  |  |  |  |  |  |  |  |
| 4.3.5 | Not listed in other categories |  |  |  |  |  |  |  |  |
| 5. | Statistical discrepancies |  |  |  |  |  |  |  |  |

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| --- | --- | --- | --- | --- | --- |
| No. of the balance sheet item | Balance sheet items | Renewable energy sources | Electricity | Thermal energy | FEB summary(the sum of columns from 1 to 40) |
| Electricity (hydroelectric) | Electricity(solar power plants) | Electricity(wind farms) | Electricity(biogas plants) | Wood fuel | Charcoal, including agglomerated |  |  |  |
| B | IN | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 |
| G | Calorific value, TJ/thous. tons, TJ/million cubic meters m |  |  |  |  |  |  |  |  |  |
| 1. | Production (extraction) of primary energy (+) |  |  |  |  |  |  |  |  |  |
| 1.1. | Production (extraction) of primary energy |  |  |  |  |  |  |  |  |  |
| 1.2. | Import |  |  |  |  |  |  |  |  |  |
| 1.3. | Export |  |  |  |  |  |  |  |  |  |
| 1.4. | International bunkering |  |  |  |  |  |  |  |  |  |
| 1.5. | Inventory change (+,–) |  |  |  |  |  |  |  |  |  |
| 1.5.1. | Stocks at the beginning of the year |  |  |  |  |  |  |  |  |  |
| 1.5.2. | Stocks at the end of the year |  |  |  |  |  |  |  |  |  |
| 1.6. | Gross consumption of primary energy and its equivalents (=) |  |  |  |  |  |  |  |  |  |
| 1.7. | Statistical discrepancies |  |  |  |  |  |  |  |  |  |
| 2. | Transformation sector, energy consumption sector, losses |  |  |  |  |  |  |  |  |  |
| 2.1. | Transformation Sector - Login |  |  |  |  |  |  |  |  |  |
| 2.1.1. | Power plants (TPP) (main activity) |  |  |  |  |  |  |  |  |  |
| 2.1.2. | Power plants (TPP) (secondary activity) |  |  |  |  |  |  |  |  |  |
| 2.1.3. | Combined Heat and Power Plants (CHP) (core business) |  |  |  |  |  |  |  |  |  |
| 2.1.4. | Combined Heat and Power Plants (CHP) (secondary activity) |  |  |  |  |  |  |  |  |  |
| 2.1.5. | Heating boiler houses (main activity) |  |  |  |  |  |  |  |  |  |
| 2.1.6. | Heating boiler houses (secondary activity) |  |  |  |  |  |  |  |  |  |
| 2.1.7. | Coke ovens |  |  |  |  |  |  |  |  |  |
| 2.1.8. | Blast furnaces |  |  |  |  |  |  |  |  |  |
| 2.1.9. | Oil refineries |  |  |  |  |  |  |  |  |  |
| 2.1.10. | Production of coal briquettes |  |  |  |  |  |  |  |  |  |
| 2.1.11. | Gas works |  |  |  |  |  |  |  |  |  |
| 2.1.12. | Petrochemical industry |  |  |  |  |  |  |  |  |  |
| 2.1.13. | Production of brown coal briquettes |  |  |  |  |  |  |  |  |  |
| 2.1.14. | Charcoal production |  |  |  |  |  |  |  |  |  |
| 2.1.15. | Not listed above (transformation) |  |  |  |  |  |  |  |  |  |
| 2.2. | Conversion Sector - Exit |  |  |  |  |  |  |  |  |  |
| 2.2.1. | Power plants (TPP) (main activity) |  |  |  |  |  |  |  |  |  |
| 2.2.2. | Power plants (TPP) (secondary activity) |  |  |  |  |  |  |  |  |  |
| 2.2.3. | Combined Heat and Power Plants (CHP) (core business) |  |  |  |  |  |  |  |  |  |
| 2.2.4. | Combined Heat and Power Plants (CHP) (secondary activity) |  |  |  |  |  |  |  |  |  |
| 2.2.5. | Heating boiler houses (main activity) |  |  |  |  |  |  |  |  |  |
| 2.2.6. | Heating boiler houses (secondary activity) |  |  |  |  |  |  |  |  |  |
| 2.2.7. | Coke ovens |  |  |  |  |  |  |  |  |  |
| 2.2.8. | Blast furnaces |  |  |  |  |  |  |  |  |  |
| 2.2.9. | Oil refineries |  |  |  |  |  |  |  |  |  |
| 2.2.10. | Production of coal briquettes |  |  |  |  |  |  |  |  |  |
| 2.2.11. | Gas works |  |  |  |  |  |  |  |  |  |
| 2.2.12. | petrochemical industry |  |  |  |  |  |  |  |  |  |
| 2.2.13. | Production of brown coal briquettes |  |  |  |  |  |  |  |  |  |
| 2.2.14. | Charcoal production |  |  |  |  |  |  |  |  |  |
| 2.2.15. | Not listed above (transformation) |  |  |  |  |  |  |  |  |  |
| 2.3. | Consumption in the energy sector (own needs) |  |  |  |  |  |  |  |  |  |
| 2.3.1. | coal mines |  |  |  |  |  |  |  |  |  |
| 2.3.2. | Mining of oil and gas |  |  |  |  |  |  |  |  |  |
| 2.3.3. | Power plants (TPP) (main activity) |  |  |  |  |  |  |  |  |  |
| 2.3.4. | Power plants (TPP) (secondary activity) |  |  |  |  |  |  |  |  |  |
| 2.3.5. | Combined Heat and Power Plants (CHP) (core business) |  |  |  |  |  |  |  |  |  |
| 2.3.6. | Combined Heat and Power Plants (CHP) (secondary activity) |  |  |  |  |  |  |  |  |  |
| 2.3.7. | Heating boiler houses (main activity) |  |  |  |  |  |  |  |  |  |
| 2.3.8. | Heating boiler houses (secondary activity) |  |  |  |  |  |  |  |  |  |
| 2.3.9. | Coke ovens |  |  |  |  |  |  |  |  |  |
| 2.3.10. | Blast furnaces |  |  |  |  |  |  |  |  |  |
| 2.3.11. | Oil refineries |  |  |  |  |  |  |  |  |  |
| 2.3.12. | Production of coal briquettes |  |  |  |  |  |  |  |  |  |
| 2.3.13. | gas plants |  |  |  |  |  |  |  |  |  |
| 2.3.14. | petrochemical industry |  |  |  |  |  |  |  |  |  |
| 2.3.15. | Production of brown coal briquettes |  |  |  |  |  |  |  |  |  |
| 2.3.16. | Charcoal production |  |  |  |  |  |  |  |  |  |
| 2.3.17. | Use of transmission and distribution networks |  |  |  |  |  |  |  |  |  |
| 2.3.18. | Not listed above (transformation) |  |  |  |  |  |  |  |  |  |
| 2.4. | Distribution loss |  |  |  |  |  |  |  |  |  |
| 2.5. | Available for final consumption |  |  |  |  |  |  |  |  |  |
| 3. | Final consumption for non-energy purposes |  |  |  |  |  |  |  |  |  |
| 3.1. | in the transformation sector |  |  |  |  |  |  |  |  |  |
| 3.2. | in the energy sector |  |  |  |  |  |  |  |  |  |
| 3.3. | in the transport sector |  |  |  |  |  |  |  |  |  |
| 3.4. | in the industrial sector |  |  |  |  |  |  |  |  |  |
| 3.4.1 | in the chemical industry (including petrochemical) |  |  |  |  |  |  |  |  |  |
| 3.5. | in the agricultural sector |  |  |  |  |  |  |  |  |  |
| 3.6. | in other sectors |  |  |  |  |  |  |  |  |  |
| 4. | Final energy consumption |  |  |  |  |  |  |  |  |  |
| 4.1. | Industry sector |  |  |  |  |  |  |  |  |  |
| 4.1.1. | Ferrous metallurgy |  |  |  |  |  |  |  |  |  |
| 4.1.2. | Chemical industry (including petrochemical) |  |  |  |  |  |  |  |  |  |
| 4.1.3. | Non-ferrous metallurgy |  |  |  |  |  |  |  |  |  |
| 4.1.4. | Production of non-metallic products |  |  |  |  |  |  |  |  |  |
| 4.1.5. | Transport equipment |  |  |  |  |  |  |  |  |  |
| 4.1.6. | mechanical engineering |  |  |  |  |  |  |  |  |  |
| 4.1.7. | mining industry |  |  |  |  |  |  |  |  |  |
| 4.1.8. | Manufacture of food, beverages and tobacco products |  |  |  |  |  |  |  |  |  |
| 4.1.9 | Pulp and paper production and printing |  |  |  |  |  |  |  |  |  |
| 4.1.10. | Woodworking industry |  |  |  |  |  |  |  |  |  |
| 4.1.11. | Construction |  |  |  |  |  |  |  |  |  |
| 4.1.12. | Textile and leather industry |  |  |  |  |  |  |  |  |  |
| 4.1.13. | Not listed in other categories |  |  |  |  |  |  |  |  |  |
| 4.2. | Transport sector |  |  |  |  |  |  |  |  |  |
| 4.2.1. | International air transportation |  |  |  |  |  |  |  |  |  |
| 4.2.2. | Domestic air transportation |  |  |  |  |  |  |  |  |  |
| 4.2.3. | Road transport |  |  |  |  |  |  |  |  |  |
| 4.2.4. | Railway transport |  |  |  |  |  |  |  |  |  |
| 4.2.5. | Inland water transport |  |  |  |  |  |  |  |  |  |
| 4.2.6. | Pipeline transport |  |  |  |  |  |  |  |  |  |
| 4.2.7. | Not listed in other categories |  |  |  |  |  |  |  |  |  |
| 4.3. | Other |  |  |  |  |  |  |  |  |  |
| 4.3.1. | Housing sector |  |  |  |  |  |  |  |  |  |
| 4.3.2. | Commercial and government services |  |  |  |  |  |  |  |  |  |
| 4.3.3. | Agriculture/forestry |  |  |  |  |  |  |  |  |  |
| 4.3.4. | Fishing |  |  |  |  |  |  |  |  |  |
| 4.3.5 | Not listed in other categories |  |  |  |  |  |  |  |  |  |
| 5. | Statistical discrepancies |  |  |  |  |  |  |  |  |  |

1) Thermal coal includes thermal coal with a calorific value of more than 23.865 MJ/kg on an ash-free, wet basis for the production of steam, also used for heating, thermal coal with a high ash content and other coal.

2) Natural gas includes natural (natural) gas in a gaseous state (commercial output), coal-bed methane and associated petroleum gas (commercial output).

Appendix 4

to the Methodology for the formation of the fuel and energy balance and the calculation of individual statistical indicators characterizing the energy industry

**Procedure for calculating balance sheet items\***

|  |  |  |
| --- | --- | --- |
| No. of the balance sheet item | Balance item | Procedure for calculating balance sheet items\* |
| 1.1. | Production (extraction) of primary energy | Statistical forms 1-COAL, 1-GAS, 1-OIL, 1-ELECTRICITY, 6-TP, 1-KPI |
| 1.2. | Import | Statistical form 1-TS “Report on mutual trade in goods with the EAEU member states, as well as official statistical information on foreign trade statistics based on customs declarations submitted to the State Revenue Committee of the Ministry of Finance of the Republic of Kazakhstan |
| 1.3. | Export |
| 1.4. | International bunkering | Statistical forms 1-COAL, 1-GAS, 1-OIL, 1-ELECTRICITY, 6-TP, 1-KPI |
| 1.5. | Inventory change (+,–) | = Inventory at the beginning of the period (line 1.5.1.) – Inventory at the end of the period (1.5.2.) |
| 1.5.1. | Stocks at the beginning of the year | Statistical forms 1-COAL, 1-GAS, 1-OIL, 1-ELECTRICITY, 6-TP, 1-KPI |
| 1.5.2. | Stocks at the end of the year |
| 1.6. | Total primary consumption of energy and its equivalents | = article 1.1 + article 1.2 - article 1.3 - article 1.4 - article 1.5 |
| 1.7. | Statistical discrepancies | = article 1.6 - article 2.1 + article 2.2 - article 2.3 - article 2.4 - article 2.6 - article 3 |
| 2.1. | Transformation Sector - Login | breakdown by category of energy sources;sum of articles 2.1.1 - 2.1.15 |
| 2.2. | Conversion Sector - Exit | breakdown by type of processing;sum of articles 2.2.1 - 2.2.15 |
| 2.3. | Consumption in the energy sector (own needs) | breakdown by type of processing;sum of articles 2.3.1 - 2.3.18 |
| 2.4. | Distribution loss | Statistical forms 1-COAL, 1-GAS, 1-OIL, 1-ELECTRICITY, 6-TP |
| 2.5. | Available for final consumption | = article 1.6 - article 2.1 + article 2.2 - article 2.3 - article 2.4 |
| 3. | Final consumption for non-energy purposes | breakdown by sector;sum of articles 3.1 – 3.6 |
| 4. | Final energy consumption | = article 4.1 + article 4.2 + article 4.3 |
| 5. | Statistical discrepancies | = article 2.5 - article 3. - article 4 |

\*according to the numbering of Appendix 3 to this Methodology.

Appendix 5

to the Methodology for the formation of the fuel and energy balance and the calculation of individual statistical indicators characterizing the energy industry

**Conversion factors**

Table 1. Volume unit conversion factors

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| What unitFrom which unit | GallonUSA(gal) | GallonBritannia(gal) | Barrel(bbl) | cubic foot(ft 3 ) | Liter(l) | Cubic meter(m 3 ) |
| US gallon (gal) | 1 | 0.8327 | 0.02381 | 0.1337 | 3.785 | 0.0038 |
| Gallon Brit. (gal) | 1.201 | 1 | 0.02859 | 0.1605 | 4,546 | 0.0045 |
| Barrel (bbl) | 42.0 | 34.97 | 1 | 5.615 | 159.0 | 0.159 |
| Cubic foot (ft 3 ) | 7.48 | 6.229 | 0.1781 | 1 | 28.3 | 0.0283 |
| Liter (l) | 0.2642 | 0.220 | 0.0063 | 0.0353 | 1 | 0.001 |
| Cubic meter (m 3 ) | 264.2 | 220.0 | 6.289 | 35.3147 | 1000 | 1 |

Table 2. Mass unit conversion factors

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| What unitFrom which unit | Kilogram (kg) | Ton(T) | Long ton (lt) | Short ton (st) | Lb(lb) |
| Kilogram (kg) | 1 | 0.001 | 9.84x10-4 \_ | 1.102x10-3 \_ | 2.2046 |
| Ton (t) | 1000 | 1 | 0.984 | 1.1023 | 2204.6 |
| Long ton (lt) | 1016 | 1.06 | 1 | 1.120 | 2240.0 |
| Short ton (st) | 907.2 | 0.9072 | 0.893 | 1 | 2000.0 |
| Pound (lb) | 0.454 | 4.54x10-4 \_ | 4.46x10-4 \_ | 5.0x10-4 \_ | 1 |

Table3. Energy unit conversion factors

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| What unitFrom which unit | Terajoule(TJ) | Gigacalorie(Gcal) | MTUN | BET | Gigawatt hour(GWh) |
| Terajoule (TJ) | 1 | 238.8 | 2.388x10-5 \_ | 947.8 | 0.2778 |
| Gigacalorie (Gcal) | 4.1868x10-3 \_ | 1 | 10-7 \_ | 3.968 | 1.163x10-3 \_ |
| Million tons of oil equivalent (1,000,000 toe) MTOE | 4.1868x104 \_ | 10 7 | 1 | 3.968x107 \_ | 11630 |
| MBTE | 1.0551x10-3 \_ | 0.252 | 2.52x10-8 \_ | 1 | 2.931x10-4 \_ |
| Gigawatt hour (GWh) | 3.6 | 860 | 8.6x10-5 \_ | 3412 | 1 |

**Typical calorific values**

Table 1. Calorific value of coal

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Coal | High calorific value(g/n)\*\*MJ/t | Low heating value(g/n)MJ/t | Carbon content(g/n)kg/t | Moisture contents(g/n)% | Carbon content(sbmo) |
| Anthracite | 29.65 – 30.35 | 28.95 - 30.35 | 778 - 782 | 10 - 12 | 920 - 980 |
| coking coal | 27.80 – 30.80 | 26.60 - 29.80 | 674 - 771 | 7 - 9 | 845 - 920 |
| Other bituminous coal | 23.85 – 26.75 | 22.60 - 25.50 | 590 - 657 | 13 - 18 | 810 - 845 |

Table 2. Calorific value for coke

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Type of coke | High calorific value(g/n)MJ/t | Low heating value(g/n)MJ/t | Carbon content(g/n)kg/t | Moisture contents(g/n)% | Carbon content(sbmo) |
| Metallurgical coke | 27.90 | 27.45 | 820 | 8 - 12 | 965 - 970 |
| gas coke | 28.35 | 27.91 | 853 | 12 | 856 |
| semi-coke | 26.30 | 25.40 | 710 | 15 | 900 |
| Petroleum coke | 30.5 – 35.8 | 30.0 - 35.3 | 875 | 12 | 890 |

Table 3. Calorific value of individual petroleum products

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Oil product type | Densitykg / m 3 | Liter per ton | High calorific valueGJ/m | Low heating valueGJ/t |
| Ethane | 366.3 | 2730 | 51.90 | 47.51 |
| Propane | 507.6 | 1970 | 50.32 | 46.33 |
| Butane | 572.7 | 1746 | 49.51 | 45.72 |
| LPG (2) | 522.2 | 1915 | 50.08 | 46.15 |
| Naphtha | 690.6 | 1448 | 47.73 | 45.34 |
| Aviation gasoline (3) | 716.8 | 1398 | 47.40 | 45.03 |
| Automobile gasoline | 740.7 | 1350 | 47.10 | 44.75 |
| Aviation kerosene | 802.6 | 1246 | 46.23 | 43.92 |
| Other kerosenes | 802.6 | 1246 | 46.23 | 43.92 |
| Gas oil and diesel fuel | 843.9 | 1185 | 45.66 | 43.38 |
| Low sulfur fuel oil | 925.1 | 1081 | 44.40 | 42.18 |
| High sulfur fuel oil | 963.4 | 1038 | 43.76 | 41.57 |

Table 4 Calorific value of gases obtained from coal

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type of coke | High calorific value(y/y)MJ / m 3 | Low heating value(y/y)MJ / m 3 | Low heating value(y/y)MJ/t | Carbon content(y/y)% |
| Coke oven gas | 19.01 | 16.90 | 37.54 | 464 |
| Blast furnace gas | 2.89 | 2.89 | 2.24 | 179 |

Table 5. Unit conversion factors for liquefied and gaseous natural gas

|  |  |  |  |
| --- | --- | --- | --- |
| From | Metric tonsLiquefied natural gasmultiply by | Liquefied natural gasm 3 | Art. m 3 |
| Metric tons LNG | 1 | 0.948 | 1360 |
| Liquefied natural gas, m 3 | 0.45 | 1 | 615 |
| Art. m 3 | 7.35x10-4 \_ | 1.626x10-3 \_ | 1 |

Matching results

Agency for Strategic Planning and Reforms of the Republic of Kazakhstan - Director of the Department Samat Sovetovich Zhasuzakov, 01/06/2023 14:43:59, positive result of the EDS verification

Ministry of Justice of the Republic of Kazakhstan - Acting Minister of Justice of the Republic of Kazakhstan Alma Kairatovna Mukanova, 01/12/2023 20:24:45, positive result of the EDS verification

Signing results

Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan - Head of the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan Zh.