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| 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 Kazakhstandated January 13, 2023№ 1 |

Approved

by order of the Chairmanof the

Committee on Statisticsof the

Ministry of National

Economy 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 sector**

**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 sector (hereinafter referred to as 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 used 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) jointly 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 Methodology uses the following definitions:

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

2) the energy intensity of the gross domestic product (hereinafter referred to as GDP) is a general indicator characterizing the level of consumption of fuel and energy resources per unit of GDP;

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

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

5) standard fuel - a unit adopted in technical and economic calculations, regulated in regulations and standards, which serves to compare the thermal value of various types of organic fuel;

6) total energy consumption - characterizes the gross domestic identified energy consumption and is calculated using a formula that takes into account data on production, imports, exports, international bunkers and changes in reserves of all types of fuel.

**Chapter 2. Structure of the FEB 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 industry energy statistics, characterizing the system of indicators on the level of production (extraction), export, import and consumption of fuel and energy resources in the Republic of Kazakhstan is data obtained or registered in statistical forms of national statistical observations (hereinafter – data) given in Appendix 1 to this Methodology, as well as administrative data.

7. The formation of a fuel and energy balance allows for the analysis and assessment of changes in the structure of production and consumption of fuel and energy, their effective use in economic sectors, monitoring the depletion of energy resources, as well as calculating gas emissions into the atmosphere and determining the main directions of development of the fuel and energy complex.

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

9. Data for the energy industry are:

1) enterprises or separate divisions (part of an enterprise) with the main 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 electrical 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 activity, the added value of which does not exceed the added value of the main activity;

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

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

10. 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 during chemical or other processes (including combustion) are subject to statistical observation. The list of energy products of the FEB, broken down into primary and secondary energy products, is presented in Appendix 2.

Fuel and energy resources are a collection 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 source of energy that releases thermal energy when burned or otherwise exposed to external influences.

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

**Paragraph 2. Structure of fuel and energy balance**

12. The fuel and energy balance 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 according to Appendix 3 to this Methodology .

13. The headings of the columns of the balance table 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 sheet items that characterize the movement of flows of primary and secondary energy and their equivalents.

14. The list of balance sheet items is conditionally divided into four blocks balancing among themselves. For each block, by summing the data of the corresponding items of food balances in compliance with arithmetic rules (that is, taking into account the «+» and «–» signs), the final values are formed.

15. The first block (energy supplies) contains balance sheet items characterizing the structure of primary energy flows and its equivalents, supplying energy in the form of production and import into the country or export outside its borders, as well as changes in reserves 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 stock levels (+,–);

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 some types of energy into others, as well as transmission, energy consumption by energy sectors for their own needs and losses during transportation and distribution.

17. In the input transformation sector, energy resources used as raw materials for transformation at the output into other types of energy products are taken into account for the following energy enterprises:

1) power plants (by main type of activity);

2) power plants that produce electricity for their own needs;

3) combined heat and power plants (hereinafter referred to as CHP plants) producing electrical and thermal energy (according to the main type of activity);

4) CHP plants producing electrical and thermal energy for the enterprise’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 that produce thermal energy for the enterprise’s own needs;

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

8) blast furnaces;

9) oil refineries;

10) factories for the production of compressed coal;

11) gas processing plants;

12) petrochemical industry enterprises;

13) plants for the production of pressed brown coal;

14) other enterprises not specified in other categories.

Data on conversion processes associated with the production of thermal and electrical energy are provided by category of energy installations, 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 characterizing the consumption of fuel and energy resources by final consumers and the statistical discrepancy with estimated consumption:

final consumption (=);

statistical discrepancies (+,–).

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

**Paragraph 3. Main 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 divided into production (extraction) of fuel and energy products, transformation, foreign trade, changes in inventories, final consumption and non-energy use.

22. Production (extraction) is defined as the capture, extraction or production of a fuel and energy product from natural energy flows, the biosphere and natural fossil fuel reserves in a country in a form suitable for use. Production (extraction) 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 designated as «primary» products.

Primary energy products are energy products that require only extraction or capture from the natural environment, with or without separation from associated 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 represents 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» types of fuel or energy include products produced by transformation (transformation), in which part or all of the energy content of the product entering the process is transferred from this product of one type of energy into one or more different products that come out of process (for example, from coking coal to coke, from crude oil to petroleum products, from heating oil to electricity).

24. Isolation of energy conversion flows in the fuel and energy balance makes it possible to avoid double counting in the production of energy for individual energy products that can be converted into other types before their consumption. In the transformation sector, data on primary energy consumption (input) is reflected with a «–» sign, and on secondary energy production (output) – with a «+» sign.

Data reflected in the transformation sector with a «–» sign include fuel consumption for the production of thermal and electrical energy as a result of fuel combustion at power plants, combined heat and power plants, combined cycle and gas turbine plants, diesel generators, boiler houses and other fuel-consuming installations. Also included are the consumption of fuel as a raw material for processing into other types of fuel, including by briquetting, distillation, crushing, mixing and other methods (for example, consumption of coal in coke ovens for the production of coke and coke oven gas, as well as oil for the production of fuel oil products, biofuel and diesel fuel).

Data reported in the transformation sector with a «+» sign includes data on the output of secondary energy after primary energy conversion, from fuel combustion and conversion to heat and electricity, as well as from the refining of oil and other secondary energy products.

25. The transformation sector does not reflect data on the production of electrical and thermal energy 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, stocks are considered as the volumes of energy products that are held to maintain supplies. The balances of fuel and energy resources are taken into account at the beginning and end of the reporting year, listed in the balances of departmental warehouses and supply bases, boiler houses, workshop storerooms and other storage places. Also included in reserves are the remains of oil, petroleum products and natural gas in pipelines, intermediate tanks, gas holders and the remains of gas in the underground gas storage facilities of oil pipeline enterprises and main gas pipeline enterprises. Remaining fuel set aside 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 for organizations that are consumers and suppliers of fuel and energy resources. A value with a «+» sign means inventory involvement when the amount of inventory at the end of the year is less important than at the beginning of the year. A value with a «–» sign means that the volume of inventories 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 fuel and energy resources of the country are taken into account in the fuel and energy balance as exports. For these foreign trade transactions, indicators for transit trade and 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 fuel and energy resources of the country are recorded in the fuel and energy balance as imports.

30. Losses reflect data on losses during transmission, distribution and transportation of energy resources. 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 balance sheet products of the fuel and energy balance are reflected in line 2.4, which takes into account:

1) losses of coal along with rock during enrichment, sorting and distribution at processing factories of the coal, metallurgical and coke industries, as well as during briquetting;

2) losses of electricity and heat in public electrical and heating 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 for the 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 plants), as well as losses during transportation and distribution.

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

1) exported to other territories;

2) stored for subsequent consumption (included in inventories);

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

4) consumed in the energy industries themselves;

5) delivered for final consumption.

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

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

34. Non-energy use includes volumes of 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; petroleum - lubricating oils, tar, construction and roofing petroleum bitumen, paraffin, gasoline solvent, white spirit.

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

36. When generating data on final energy consumption by industrial sectors 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 taken into account in 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 the economic sector in which this activity is carried out. This category of «transport» is divided into the following types: domestic aviation, road, rail, water and pipeline transport, as well as transport not described in other categories.

38. The category of final consumption by transport does not include:

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

2) fuel for the operation of loading and unloading, agricultural, forestry, road construction, municipal, fire and other equipment not intended for the transportation of passengers and cargo, as well as for the operation of special purpose vehicles, including fuel for military vehicles. These expenses are reflected in the relevant 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 supply by organizations for non-cash payments to their workers and employees.

40. The statistical discrepancy is a calculation item of the fuel and energy balance 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. Energy statistics indicators**

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

41. Fuel and fuel balance is formed in three units of fuel measurement: physical, energy units (terajoules) and units of standard fuel - 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 measuring instruments.

The conversion factor of fuel into tons of standard fuel is the ratio of the lower calorific value of a physical unit of mass (volume) of fuel to the lower calorific value of a unit of mass of standard fuel.

A standard fuel unit is a conventional unit of measurement used to reflect the total quantity of all types of fuel and energy .

42. The formation of fuel and energy balance in physical terms is carried out only according to product balances (without filling out column 41 of the balance sheet). Filling out data on balance sheet items is carried out on the basis of information sources and the procedure for calculating balance sheet items given in accordance with Appendices 1 and 4.

43. The formation of fuel and energy indicators into a common unit of measurement is carried out to ensure unity and generalization of accounting, comparison and assessment of the efficiency of fuel and energy conversion. The common unit of energy in the International system of units is the joule.

44. The recalculation of quantitative indicators is carried out on the basis of the actual values of calorific value given for each energy resource in statistical forms by energy enterprises during its development or production. The calorific value or heat of combustion of a fuel expresses the amount of heat produced from one unit of fuel and can vary depending on the type of flow.

The calorific value of a fuel is the energy content of the fuel, expressed by 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 using a common energy unit, the net calorific value value is used. The exception is gases, which are characterized by volumetric energy content based on their production process rather than their chemical composition. Conversion into a common energy unit is carried out according to the gross calorific value.

46. For each type of fuel and energy, separate conversion coefficients may be applied for the transition from one accounting unit of measurement of fuels and energy to another, taking into account the specific energy content of fossil fuels and energy products and their caloric equivalents in accordance with Annex 5 to this Methodology.

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

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



Where,

TCPP – total consumption of primary energy and its equivalents, thousand tons of oil equivalent;

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

I – import, thousand tons of oil equivalent;

E – export, thousand tons of oil equivalent;

CR – change in the volume of reserves (takes a negative value in the case of an increase in reserves, thousand tons of oil equivalent).

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



Where,

TECPC – total energy consumption per capita, t.e./person;

TCPP – total consumption of primary energy and its equivalents, thousand tons of oil equivalent;

NP – average annual number of 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 republic as a whole 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 GDP value according to the formula:



Where,

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

TCPP – total consumption of primary energy and its equivalents, thousand tons of oil equivalent;

GDP – is 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 gross domestic product for different periods of time are calculated in constant prices of any year using the GDP deflator index. GDP values are expressed in constant prices to exclude the impact of inflation, and are presented with a base year.

50. Industry energy intensity per unit of gross value added:



Where,

Eind – Energy intensity of the industry per unit of GVA;

FCI – final consumption of the industry, thousand tons of oil equivalent;

GVA – is gross value added at constant prices in US dollars.

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



Where,

ES – energy supply, in percent;

PPE – total volume of production (extraction) of primary energy in the republic, thousand tons of oil equivalent;

TCPP – total consumption of primary energy and its equivalents, thousand tons of oil equivalent.

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



Where,

RES – 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;

PPERES – volume of production (extraction) of primary energy from renewable energy sources, thousand tons of oil equivalent;

TCPP – total consumption of primary energy and its equivalents, thousand tons of oil equivalent.

Appendix 1

to the Methodology for the formation of

fuel and energy balance

and calculation of individual statistical indicators characterizing the energy sector

List of statistical forms of national statistical observations used in the formation of fuel and energy balance

|  |  |  |
| --- | --- | --- |
| 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 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-FEC | Final energy consumption | annual |
| 1-TC | Report on mutual trade in goods with member states of the Eurasian Economic Union | monthly (annual calculation) |
| 1-P | Enterprise report on production and shipment of products (goods, services) | annual |

Appendix 2

to the Methodology for the formation of

fuel and energy balance

and calculation of individual statistical indicators characterizing the energy sector

**List of product balances**

| № i/o | Product balance | Type of energy products | Physical unit of measurement | Type of product (P-primary,S-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 | S |
| 2 | Energy coal | Energy 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;Energy coal with high ash content;Other hard coal. | 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 | S |
| 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 | S |
| 6 | Coke gas | Coke gas | thousand tons | S |
| 7 | Blast furnace gas | Blast furnace gas | thousand tons | S |
| 8 | Natural gas (natural) in gaseous state (commercial release) | Natural gas (natural) in gaseous state (commercial releaseAssociated petroleum gas (commercial release)Coal bed methane - compressed (compressed) natural gas (methane) | million cubic meters m2million cubic metersmillion cubic meters  | PPP |
| 9 | Oil and petroleum products:Crude oil, including gas condensate | Crude oil, including gas condensate | thousand tons | P |
| 10 | Other hydrocarbons | Other hydrocarbons | thousand tons | S |
| 11 | Gas condensate | Gas condensate | thousand tons | S |
| 12 | Liquefied hydrocarbon gases | Liquefied hydrocarbon gases (liquefied propane (propane fraction), butane, isobutane or a mixture of these hydrocarbons) | thousand tons | S |
| 13 | Additives, mixture components to improve the properties of the final petroleum product | Monomethylaniline, gasoline octane booster (MMA)Methyl tert-butyl ether (MTBE)Methanol (methyl alcohol)Lubricating additives | thousand tonsthousand tonsthousand tonsthousand tons | SSSS |
| 14 | Ethane | Bioethanol | thousand tons | S |
| 15 | Straight-run naphtha | Straight-run naphtha | thousand tons | S |
| 16 | Liquefied propane and butane | Liquefied propane and butane | thousand tons | S |
| 17 | Aviation gasoline | Aviation gasoline (distillation temperature - 30-220 degrees Celsius) for aviation piston engines | thousand tons | S |
| 18 | Motor gasoline | Motor gasoline of all brands (distillation temperature - 30-220 degrees Celsius) for spark-ignition engines, with a lead content of no more than 0.013 g/l, without TEL or TML additives | thousand tons | S |
| 19 | Jet fuel type gasoline | Jet fuel type gasoline | thousand tons | S |
| 20 | Jet fuel type kerosene | Jet fuel type kerosene | thousand tons | S |
| 21 | Kerosene | Kerosene | thousand tons | S |
| 22 | Diesel fuel for transport | Summer and winter diesel fuel (distillation temperature 180-380 degrees Celsius) for road and rail transport | thousand tons | S |
| 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 | SSS |
| 2425 | Liquid petroleum fuel (fuel oil):Petroleum fuel (fuel oil), with sulfur content less than 1%Petroleum fuel (fuel oil), with a sulfur content of more than 1% | Petroleum fuel (fuel oil), with sulfur content less than 1%Petroleum fuel (fuel oil), with a sulfur content of more than 1% | thousand tonsthousand tons | SS |
| 26 | Petroleum and shale coke | Petroleum and shale coke | thousand tons | S |
| 27 | Petroleum and shale bitumen | Petroleum and shale bitumen | thousand tons | S |
| 28 | Gas obtained by distillation at a refinery | Gas obtained by distillation at oil refineries | million cubic meters m | S |
| 29 | White Spirit | White Spirit | thousand tons | S |
| 30 | Lubricants | Lubricants |  |  |
| 31 | Petroleum paraffin | Petroleum paraffin |  |  |
| 32 | Other petroleum products:Purified sulfur, except sublimated, precipitated and colloidal | Purified sulfur, except sublimated, precipitated and colloidal | thousand tons | S |
| 33 | Renewable energy sources:Electricity (hydroelectric power) | Electricity produced by small hydroelectric power plantsElectricity produced by other hydroelectric power plants | TJ 3TJ | PP |
| 34 | Electricity (solar power plants) | Electricity produced by solar power plants | TJ | P |
| 35 | Electricity (wind power plants) | Electricity produced 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 | S |
| 39 | Electricity | Electricity produced by small hydroelectric power plantsElectricity produced by other hydroelectric power plantsElectricity produced by wind farmsElectricity produced by solar power plantsElectricity produced by burning fuel:Electricity produced by thermal power plants (except CHP)Electricity produced by condensing power plants (CPPs)Electricity produced by combined heat and power plants (except CHP)Electricity produced by gas turbine power plants (GTPP) Electricity produced by other methods | GWh4GWhGWhGWhGWhGWhGWhGWhGWh | PPPPSSSSS |
| 40 | Thermal energy | Steam and hot water (thermal energy) produced through the use of 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 | SSSS |

Note:

1 thousand tons – here and further thousands of tons;

2 million cubic meters –here and further a million cubic meters;

3 TJ – hereinafter terajoule;

4 GWh – hereinafter gigawatt-hour.

Appendix 3

to the Methodology for the formation of

fuel and energy balance

and calculation of individual statistical indicators characterizing the energy sector

Fuel and energy balance

thousand toe

|  |  |  |  |
| --- | --- | --- | --- |
| № of balance sheet items | Balance sheet items | Coal and products of its processing | Natural gas 2 |
| Coal concentrate | Energy coal 1) | Lignite (brown coal) | Coke and semi-cokefrom coal | Resins obtained by distillation from coal | Coke gas | Blast furnace gas |
| B | S | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| G | Calorific value, TJ/thousand 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. | Change in inventory volume (+,–) |  |  |  |  |  |  |  |  |
| 1.5.1. | Inventories at the beginning of the year |  |  |  |  |  |  |  |  |
| 1.5.2. | Inventories 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) (main activity) |  |  |  |  |  |  |  |  |
| 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 lignite briquettes |  |  |  |  |  |  |  |  |
| 2.1.14. | Charcoal production |  |  |  |  |  |  |  |  |
| 2.1.15. | Not listed above (conversion) |  |  |  |  |  |  |  |  |
| 2.2. | Transformation 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) (main activity) |  |  |  |  |  |  |  |  |
| 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 lignite briquettes |  |  |  |  |  |  |  |  |
| 2.2.14. | Charcoal production |  |  |  |  |  |  |  |  |
| 2.2.15. | Not listed above (conversion) |  |  |  |  |  |  |  |  |
| 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) (main activity) |  |  |  |  |  |  |  |  |
| 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 lignite briquettes |  |  |  |  |  |  |  |  |
| 2.3.16. | Charcoal production |  |  |  |  |  |  |  |  |
| 2.3.17. | Use of transmission and distribution networks |  |  |  |  |  |  |  |  |
| 2.3.18. | Not listed above (conversion) |  |  |  |  |  |  |  |  |
| 2.4. | Distribution losses |  |  |  |  |  |  |  |  |
| 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. | Production of food, beverages and tobacco products |  |  |  |  |  |  |  |  |
| 4.1.9 | Pulp and paper production and printing |  |  |  |  |  |  |  |  |
| 4.1.10. | Wood 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 transport |  |  |  |  |  |  |  |  |
| 4.2.2. | Domestic air transport |  |  |  |  |  |  |  |  |
| 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. | Others |  |  |  |  |  |  |  |  |
| 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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| --- | --- | --- |
| № of balance sheet items | Balance sheet items | Oil and petroleum products |
| Crude oil, includinggas condensate | Other hydrocarbons | Gas condensate | Liquefied hydrocarbon gases | Additives, componentsmixtures for petroleum products | Ethane | Straight-run naphtha | Liquefied propane and butane |
| B | S | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| G | Calorific value, TJ/thousand 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. | Change in inventory volume (+,–) |  |  |  |  |  |  |  |  |
| 1.5.1. | Inventories at the beginning of the year |  |  |  |  |  |  |  |  |
| 1.5.2. | Inventories 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 - Input |  |  |  |  |  |  |  |  |
| 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) (main activity) |  |  |  |  |  |  |  |  |
| 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 lignite briquettes |  |  |  |  |  |  |  |  |
| 2.1.14. | Charcoal production |  |  |  |  |  |  |  |  |
| 2.1.15. | Not listed above (conversion) |  |  |  |  |  |  |  |  |
| 2.2. | Transformation 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) (main activity) |  |  |  |  |  |  |  |  |
| 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 lignite briquettes |  |  |  |  |  |  |  |  |
| 2.2.14. | Charcoal production |  |  |  |  |  |  |  |  |
| 2.2.15. | Not listed above (conversion) |  |  |  |  |  |  |  |  |
| 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) (main activity) |  |  |  |  |  |  |  |  |
| 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 lignite briquettes |  |  |  |  |  |  |  |  |
| 2.3.16. | Charcoal production |  |  |  |  |  |  |  |  |
| 2.3.17. | Use of transmission and distribution networks |  |  |  |  |  |  |  |  |
| 2.3.18. | Not listed above (conversion) |  |  |  |  |  |  |  |  |
| 2.4. | Distribution losses |  |  |  |  |  |  |  |  |
| 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. | Production of food, beverages and tobacco products |  |  |  |  |  |  |  |  |
| 4.1.9 | Pulp and paper production and printing |  |  |  |  |  |  |  |  |
| 4.1.10. | Wood 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 transport |  |  |  |  |  |  |  |  |
| 4.2.2. | Domestic air transport |  |  |  |  |  |  |  |  |
| 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. | Others |  |  |  |  |  |  |  |  |
| 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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| --- | --- | --- |
| № of balance sheet items | Balance sheet items | Oil and petroleum products |
| Aviation gasoline | Motor gasoline | Jet fuel type gasoline | Jet fuel type kerosene | Kerosene | Diesel fuel for transport | Heating andother gas oils | Petroleum fuel (fuel oil), with sulfur content less than 1% |
| B | S | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| G | Calorific value, TJ/thousand 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. | Change in inventory volume (+,–) |  |  |  |  |  |  |  |  |
| 1.5.1. | Inventories at the beginning of the year |  |  |  |  |  |  |  |  |
| 1.5.2. | Inventories 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) (main activity) |  |  |  |  |  |  |  |  |
| 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 lignite briquettes |  |  |  |  |  |  |  |  |
| 2.1.14. | Charcoal production |  |  |  |  |  |  |  |  |
| 2.1.15. | Not listed above (conversion) |  |  |  |  |  |  |  |  |
| 2.2. | Transformation 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) (main activity) |  |  |  |  |  |  |  |  |
| 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 lignite briquettes |  |  |  |  |  |  |  |  |
| 2.2.14. | Charcoal production |  |  |  |  |  |  |  |  |
| 2.2.15. | Not listed above (conversion) |  |  |  |  |  |  |  |  |
| 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) (main activity) |  |  |  |  |  |  |  |  |
| 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 lignite briquettes |  |  |  |  |  |  |  |  |
| 2.3.16. | Charcoal production |  |  |  |  |  |  |  |  |
| 2.3.17. | Use of transmission and distribution networks |  |  |  |  |  |  |  |  |
| 2.3.18. | Not listed above (conversion) |  |  |  |  |  |  |  |  |
| 2.4. | Distribution losses |  |  |  |  |  |  |  |  |
| 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. | Production of food, beverages and tobacco products |  |  |  |  |  |  |  |  |
| 4.1.9 | Pulp and paper production and printing |  |  |  |  |  |  |  |  |
| 4.1.10. | Wood 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 transport |  |  |  |  |  |  |  |  |
| 4.2.2. | Domestic air transport |  |  |  |  |  |  |  |  |
| 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. | Others |  |  |  |  |  |  |  |  |
| 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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| --- | --- | --- |
| № of balance sheet items | Balance sheet items | Oil and petroleum products |
| Petroleum fuel (fuel oil), with a sulfur content of more than 1% | Petroleum and shale coke | Petroleum and shale bitumen | Gas receivedDistillation at the refinery | White Spirit | Lubricants | Petroleum paraffin | Other petroleum products |
| B | S | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 |
| G | Calorific value, TJ/thousand 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. | Change in inventory volume (+,–) |  |  |  |  |  |  |  |  |
| 1.5.1. | Inventories at the beginning of the year |  |  |  |  |  |  |  |  |
| 1.5.2. | Inventories 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) (main activity) |  |  |  |  |  |  |  |  |
| 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 lignite briquettes |  |  |  |  |  |  |  |  |
| 2.1.14. | Charcoal production |  |  |  |  |  |  |  |  |
| 2.1.15. | Not listed above (conversion) |  |  |  |  |  |  |  |  |
| 2.2. | Transformation 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) (main activity) |  |  |  |  |  |  |  |  |
| 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 lignite briquettes |  |  |  |  |  |  |  |  |
| 2.2.14. | Charcoal production |  |  |  |  |  |  |  |  |
| 2.2.15. | Not listed above (conversion) |  |  |  |  |  |  |  |  |
| 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) (main activity) |  |  |  |  |  |  |  |  |
| 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 lignite briquettes |  |  |  |  |  |  |  |  |
| 2.3.16. | Charcoal production |  |  |  |  |  |  |  |  |
| 2.3.17. | Use of transmission and distribution networks |  |  |  |  |  |  |  |  |
| 2.3.18. | Not listed above (conversion) |  |  |  |  |  |  |  |  |
| 2.4. | Distribution losses |  |  |  |  |  |  |  |  |
| 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. | Production of food, beverages and tobacco products |  |  |  |  |  |  |  |  |
| 4.1.9 | Pulp and paper production and printing |  |  |  |  |  |  |  |  |
| 4.1.10. | Wood 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 transport |  |  |  |  |  |  |  |  |
| 4.2.2. | Domestic air transport |  |  |  |  |  |  |  |  |
| 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. | Others |  |  |  |  |  |  |  |  |
| 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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| --- | --- | --- | --- | --- | --- |
| № of balance sheet items | Balance sheet items | Renewable Energy | Electricity | Thermal energy | Summary fuel and energy indicator(sum of columns from 1 to 40) |
| Electricity (hydroelectric power) | Electricity(solar power plants) | Electricity(wind power plants) | Electricity(biogas plants) | Wood fuel | Charcoal, including agglomerated |  |  |  |
| B | S | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 |
| G | Calorific value, TJ/thousand 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. | Change in inventory volume (+,–) |  |  |  |  |  |  |  |  |  |
| 1.5.1. | Inventories at the beginning of the year |  |  |  |  |  |  |  |  |  |
| 1.5.2. | Inventories 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) (main activity) |  |  |  |  |  |  |  |  |  |
| 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 lignite briquettes |  |  |  |  |  |  |  |  |  |
| 2.1.14. | Charcoal production |  |  |  |  |  |  |  |  |  |
| 2.1.15. | Not listed above (conversion) |  |  |  |  |  |  |  |  |  |
| 2.2. | Transformation 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) (main activity) |  |  |  |  |  |  |  |  |  |
| 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 lignite briquettes |  |  |  |  |  |  |  |  |  |
| 2.2.14. | Charcoal production |  |  |  |  |  |  |  |  |  |
| 2.2.15. | Not listed above (conversion) |  |  |  |  |  |  |  |  |  |
| 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) (main activity) |  |  |  |  |  |  |  |  |  |
| 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 lignite briquettes |  |  |  |  |  |  |  |  |  |
| 2.3.16. | Charcoal production |  |  |  |  |  |  |  |  |  |
| 2.3.17. | Use of transmission and distribution networks |  |  |  |  |  |  |  |  |  |
| 2.3.18. | Not listed above (conversion) |  |  |  |  |  |  |  |  |  |
| 2.4. | Distribution losses |  |  |  |  |  |  |  |  |  |
| 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. | Production of food, beverages and tobacco products |  |  |  |  |  |  |  |  |  |
| 4.1.9 | Pulp and paper production and printing |  |  |  |  |  |  |  |  |  |
| 4.1.10. | Wood 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 transport |  |  |  |  |  |  |  |  |  |
| 4.2.2. | Domestic air transport |  |  |  |  |  |  |  |  |  |
| 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. | Others |  |  |  |  |  |  |  |  |  |
| 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) Steam coal includes steam 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, steam coal with a high ash content and other coal.

2) Natural gas includes 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

fuel and energy balance

and calculation of individual statistical indicators characterizing the energy sector

**The procedure for calculating balance sheet items\***

|  |  |  |
| --- | --- | --- |
| № of balance sheet items | Balance sheet item | The 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-FEC |
| 1.2. | Import | Statistical form 1-TC “Report on mutual trade in goods with the member states of the EAEU, 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-ELECTRIC ENERGY, 6-TP, 1-FEC |
| 1.5. | Change in inventory volume (+,–) | = volume of inventories at the beginning of the period (line 1.5.1.) – volume of inventories at the end of the period (1.5.2.) |
| 1.5.1. | Inventories at the beginning of the year | Statistical forms 1-COAL, 1-GAS, 1-OIL, 1 -ELECTRICITY, 6-TP, 1-FEC |
| 1.5.2. | Inventories 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 | decoding by categories of energy sources;sum of articles 2.1.1 - 2.1.15 |
| 2.2. | Transformation Sector - Exit | decoding by type of processing;sum of articles 2.2.1 - 2.2.15 |
| 2.3. | Consumption in the energy sector (own needs) | decoding by type of processing;sum of articles 2.3.1 - 2.3.18 |
| 2.4. | Distribution losses | Statistical forms 1-COAL, 1-GAS, 1-OIL, 1-ELECTRIC ENERGY, 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 | decoding 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 sector

**Conversion factors**

Table 1. Conversion factors for volume units

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| To which unitFrom which unit | GallonUSA(gal) | GallonBritannia(gal) | Barrel(bbl) | Cubicfoot(ft 3 ) | Liter(l) | Cubic meter( m3 ) |
| 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 ( m3 ) | 264,2 | 220,0 | 6,289 | 35,3147 | 1000 | 1 |

Table 2. Conversion factors for mass units

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| To which 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

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| To which 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 |
| Millions of tons of oil equivalent (1,000,000 toe)MTOE | 4,1868x104 | 107 | 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/p)\*\*MJ/t | Low calorific value(g/p)MJ/t | Carbon content(g/p)kg/t | Moisture contents(g/p)% | 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 bituminized coal | 23.85 – 26.75 | 22.60 - 25.50 | 590 - 657 | 13 - 18 | 810 - 845 |

Table 2. Calorific value for cokes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Coke type | High calorific value(g/p)MJ/t | Low calorific value(g/p)MJ/t | Carbon content(g/p)kg/t | Moisture contents(g/p)% | Carbon content(sbmo) |
| Metallurgical coke | 27.90 | 27.45 | 820 | 8 - 12 | 965 - 970 |
| Gas coke | 28.35 | 27.91 | 853 | 1 - 2 | 856 |
| Semi-coke | 26.30 | 25.40 | 710 | 15 | 900 |
| Petroleum coke | 30.5 – 35.8 | 30.0 - 35.3 | 875 | 1 - 2 | 890 |

Table 3. Calorific value of individual petroleum products

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type of petroleum product | Densitykg/m 3 | Liter per ton | High calorific valueGj/m | Low calorific 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 |
| Liquefied Petroleum Gas (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 |
| Automotive 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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Coke type | High calorific value(g/i)MJ/m 3 | Low calorific value(g/i)MJ/m 3 | Low calorific value(g/i)MJ/t | Carbon content(g/i)% |
| Coke gas | 19.01 | 16.90 | 37.54 | 464 |
| Blast gas | 2.89 | 2.89 | 2.24 | 179 |

Table5. Conversion factors for units of measurement of liquefied and gaseous natural gas

|  |  |  |  |
| --- | --- | --- | --- |
| From | Metric tonsLiquefied natural gasmultiply by | Liquefied natural gasm3 | St. m 3 |
| Metric tons Liquefied natural gas | 1 | 0.948 | 1360 |
| Liquefied natural gas, m3 | 0.45 | 1 | 615 |
| st. m3 | 7.35x10 -4 | 1.626x10 -3 | 1 |

Ministry of Justice of the Republic of Kazakhstan

\_\_\_\_\_\_\_\_ Department of Justice of the region/city

Regulatory legal act of 16.01.2023

Regulatory legal acts

are included in the Register of State Registration № 31692

Reconciliation results

Agency for Strategic Planning and Reforms of the Republic of Kazakhstan - Director of the Department Samat Sovetovich Zhasuzakov, 06.01.2023 14:43:59, positive result of digital signature verification

Ministry of Justice of the Republic of Kazakhstan - Acting Minister of Justice of the Republic of Kazakhstan Alma Kayratovna Mukanova, 12.01.2023 20:24:45, positive result of digital signature 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. Shaimardanov, 13.01.2023 09:40:09, positive result of digital signature verification