

## METHODOLOGICAL NOTES

This publication is compiled from energy statistics data for 2023, in specific and fuel efficiency units. It contains 5 parts. Data in the parts 2 and 3 is published also on regional level.

Individual data pursuant to the Act No. 540/2001 Coll. in the wording of the later rulings are not published (aggregated group of data can be published only in case if the data are taken at least from 3 or more reporting units).

### Part 1 Fuels, Electricity and Heat Balances

It contains balance tables of individual kinds of fuels, electricity and heat in the Slovak Republic.

#### **Primary Production**

- *extraction of fuels* intended for sale, after primary improvement (e.g. treatment by sorting, washing)
- *electricity* produced by hydro power plants
- *heat* produced by nuclear stations, geothermal heat

#### **Import**

- *import of all types of fuels*
- *electricity import*. Transit supplies of electricity are included in data on import.

#### **Export**

- *export of all kinds of fuels*
- *electricity export*. Transit supplies of electricity are included in data on export.

#### **Stock Changes**

Stock draw (+), stock build (-)

- fuels stocks of mining and producing organisations and consumers (stocks are intended for sale, not for own consumption)
- sellers' stocks of fuels in retail-trade (coal-store)
- consumers' stocks (i.e. stocks of individual consumers intended to their own production and operation)

#### **Gross Inland Consumption**

is calculated like:

- Primary Production
- + Recovered Products
- + Import
- Export
- + Stock Changes

#### **Transformation - Input**

- amount of fuels transformed to obtain derived fuels or electricity and a part of fuels consumed for heat production. The total amount of fuels used in public power, CHP and heat plants is reported. Autoproducer's fuel consumption for electricity production is reported. There is also included a part of fuels which corresponds to heat sold from autoproducer's CHP and heat plants production. Fuels which were used for autoproducer's heat production for own consumption is reported in energy sector or other sectors which covers autoproducer's main activity.

**Transformation - Output**

- amount of produced fuels and energy obtained by upgrading of other fuels and energy. Individual items of output meet items of Transformation – input.

**Exchanges and Transfers, Backflows**

- amount of products which were reclassified to feedstocks or to other products and amount of products returned from petrochemical industry for further processing.

**Consumption of the Energy Sector**

- fuels used by the energy industry to support the mining (mining coal, oil and gas production) or transformation activity.

**Distribution and Transmission Losses**

- figure a difference between fuels and energy input into the long-distance transport systems (pipelines, gas-lines and public electricity and heat distribution) and output from them (intra-plant losses being a part of consumption are excluded). Well-founded losses caused by depreciation or destruction are included.

**Final Consumption**

is calculated like:

- Gross Inland Consumption
- Transformation – Input
- + Transformation – Output
- + Exchanges and Transfers, Backflows
- Consumption of the Energy Sector
- Distribution and Transmission Losses

**Final Non-Energy Consumption**

- energy products used as raw materials in the different sectors; i.e. is not consumed as a fuel or transformed into another fuel.

**Final Energy Consumption**

- final consumption minus Final Non-Energy Consumption. See also Transformation – Input.

## **Part 2 Fuels, Electricity and Heat Consumption in Industrial Branches**

It includes data on fuels, electricity and heat consumption in industrial branches by individual types of fuels. Data are collected for organisations with 20 or more employees.

**Fuels Consumption** - figures consumption of individual fuels types including input and operating consumption in processes of electricity and heat generation as well as in fuels upgrading. The consumption of gasolines and diesel oils include the consumption in road transport.

**Heat Consumption** - figures purchased heat consumption and consumption of heat produced from own sources, which is presented only for heat produced on boilers with nominal capacity 0,35 MW (eventually for heat produced in boiler plants, where is one boiler with nominal capacity 0,35 MW /t/ or higher, at least). **In comparison with previous years the heat consumption is reported differently (includes heat consumption for electricity generation).**

**Electricity Consumption** - figures electricity consumption including own consumption for electricity and heat generation and consumption for pumping, as well.

## Part 3 Electricity and Heat

It contains data on electricity and heat production, fuels consumption for electricity and heat generation and on plants producing electricity and heat. Data were collected from organisations of heat and electricity production and distribution and from organisations of other sectors, which had in their register enrolled power stations, CHP or heat plants.

Heat data are surveyed only in case that reporting unit services at least one source with installed capacity 0,35 MW or higher.

**Electricity (Only) Plants** refers to a plant (generating sets or units) which is designed to produce electricity only.

**Combined Heat and Power (CHP) Plants** refers to a plant (generating sets or units) which is designed to produce both heat and electricity.

**Heat (Only) Plants** refers to a plant (generating sets or units) which is designed to produce heat only.

**Electricity Production** is the sum of the electrical energy production by all the generating sets concerned (including pumped storage) measured at the output terminals of the main generators.

**Electricity Supply** is difference between electricity generation and own consumption of electricity. Electricity consumed in other services of reporting unit is included. (*Own consumption of electricity* - figures own consumption of electricity for electricity production. It doesn't include consumption for pumping in water pumping generating sets, consumption in electric boilers and heat pumps.)

**Heat Production** is the total heat produced by the installations.

**Heat Supply** is the heat from own production supplied to the distribution system. Heat consumed in other plants and establishments of the reporting unit is included.

### **Electricity producing units by type of generation**

**Steam** - steam turbines are of two main types: non-condensing (or open cycle), also called back-pressure turbines, and condensing turbines (or closed cycle). In non-condensing turbines, the exhaust steam leaving the turbine is used for technological consumption in enterprise. In a condensing turbine, the exhaust steam is condensed and the water thus formed supplies the feedwater for the generator. The boilers supplying steam turbines can be fuelled by all forms of fossil fuels.

**Internal Combustion** - the internal combustion engines referred to in this heading are the engine based on the gasoline or diesel cycle, which work on the spark ignition or the compression-ignition principle. Diesel-type engines can use a variety of fuels ranging from natural gas to liquid fuels.

**Gas Turbines** - the gas turbine uses high temperature, high pressure gas as fuel, in which part of the heat supplied by the gas is converted into rotational energy. Fuel can be natural gas, coal gases or liquid fuels.

**Combined Cycle** - the combined cycle system refers to electricity produced by coupling two heat engines in a sequence to drive generators. The heat discharged from one heat engine serves as the energy source for the next engine. The gas turbine is generally used as the first heat engine, and a conventional condensing steam turbine at the second stage.

### **Fuel Input**

Fuel used for electricity and/or heat generation.

## Part 4 Annual International Questionnaires Eurostat/IEA/OECD/UN

### **Joint methodology for questionnaires:**

- Coal (solid fuels and manufactured gases)
- Natural gas
- Oil
- Renewables and wastes
- Electricity and heat.

### ***Production***

- *extraction of fuels* intended for sale, after primary improvement (e.g. treatment by sorting, washing)
- *returns of energy processes*, i.e. amount of produced fuels and energy obtained by upgrading of other fuels and energy

### ***Import***

- *import of all types of fuels* - Transit supplies and distribution losses (losses arisen by transit) are not included in data on import.
- *electricity import*

### ***Export***

- *export of all kinds of fuels* - Transit supplies and distribution losses (losses arisen by transit) are not included in data on export.
- *electricity export*

### ***Stock Changes***

- fuels stocks of mining and producing organisations and consumers (stocks are intended to sale, not for own consumption)
- sellers' stocks of fuels in retail-trade (coal-store)
- consumers' stocks (i.e. stocks of individual consumers intended to their own production and operation)

### ***Gross Consumption***

- supply of fuels to transformation sector, energy sector and final consumption plus distribution and transit losses.

### ***Transformation Sector***

- amount of fuels transformed to obtain derived fuels or electricity and a part of fuels consumed for heat production. The total amount of fuels used in public power, CHP and heat plants is reported. Autoproducer's fuel consumption for electricity production is reported. There is also included a part of fuels which corresponds to heat sold from autoproducer's CHP and heat plants production. Fuels which were used for autoproducer's heat production for own consumption is reported in energy sector or other sectors which covers autoproducer's main activity. See also methodology for electricity and heat.

### ***Energy Sector***

- fuels used by the energy industry to support the mining (mining coal, oil and gas production) or transformation activity. Consumption used in support of the operation of pipelines (oil, gas) is reported in the Transport sector. The energy sector covers NACE<sup>1</sup> Divisions 05, 06, 19 and 35, Group 09.1, Classes 07.21 and 08.92.

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<sup>1</sup> Statistical classification of economic activities (NACE Revision 2)

### ***Distribution and Transmission Losses***

- fuels and energy distribution losses figure a difference between fuels and energy input into the long-distance transport systems (pipelines, gas-lines and public electricity and heat distribution) and output from them (intra-plant losses being a part of consumption are excluded).
- well-founded losses caused by depreciation or destruction

### ***Final Consumption***

- gross consumption lowered by transformation sector minus energy sector minus distribution losses.

### ***Non-Energy Consumption***

- energy products used as raw materials in the different sectors; i.e. is not consumed as a fuel or transformed into another fuel.

### ***Final Energy Consumption***

- final consumption minus non-energy use.

### ***Industry***

- the fuels consumed by the industrial undertaking in support of its primary activities. Quantities of fuels consumed in heat only or CHP plants for the production of heat used by the plant itself. Quantities of fuels consumed for the production of heat that is sold, and for the production of electricity are reported under the appropriate transformation sector.

Industry sector is divided into the following sub-sectors :

*Iron and Steel:* NACE Groups 24.1, 24.2, 24.3, Classes 24.51 and 24.52.

*Chemical including petrochemical:* NACE Divisions 20 and 21.

*Metallurgy of Non-ferrous Metals:* NACE Group 24.4, Classes 24.53 and 24.54.

*Non-metallic Minerals Products:* Glass, ceramic, cement and other building materials industries. NACE Division 23.

*Transport Equipment:* NACE Divisions 29 and 30.

*Machinery:* Fabricated metal products, machinery and equipment other than transport equipment. NACE Divisions 25, 26, 27 and 28.

*Mining (excluding energy producing industries) and Quarrying:* NACE Divisions 07, 08, Group 09.9.

*Food Processing, Beverages and Tobacco:* NACE Divisions 10, 11 and 12.

*Pulp, Paper and Printing:* NACE Divisions 17 and 18.

*Wood and Wood products (other than pulp and paper):* NACE Division 16.

*Construction:* NACE Divisions 41, 42 and 43.

*Textile and Leather:* NACE Divisions 13, 14 and 15.

*Not elsewhere specified:* NACE Divisions 22, 31 and 32.

### ***Transport***

- the fuels used in all transport activities irrespective of the economic sector in which the activity occurs.

### ***Other Sectors***

*Commercial and Public Services:* NACE Divisions 33, 36, 37, 38, 39, 45, 46, 47, 52, 53, 55, 56, 58, 59, 60, 61, 62, 63, 64, 65, 66, 68, 69, 70, 71, 72, 73, 74, 75, 77, 78, 79, 80, 81, 82, 84, 85, 86, 87, 88, 90, 91, 92, 93, 94, 95, 96 and 99.

*Households:* fuels consumed by all households including "households with employed persons." NACE Divisions 97 and 98.

*Agriculture:* fuels consumed by users classified as agriculture, hunting and forestry. NACE 01, 02 and 03. Includes ocean, coastal and inland fishing.

*Not elsewhere specified:* fuels consumed by activities which are not included elsewhere.

### **Methodology for OIL questionnaire**

#### ***Backflows from Petrochemical Sector***

- finished or semi-finished products which are returned from final consumers to refineries for processing, blending or sale. They are usually by-products of petrochemical manufacturing.

#### ***Products Transferred***

- imported petroleum products which are reclassified as feedstocks for further processing in the refinery, without delivery to final consumers.

#### ***Direct Use***

- crude oil, NGL and other hydrocarbons which are used directly without being processed in oil refineries.

#### ***Refinery Intake***

- the total amount of fuels observed to have entered the refinery process.

#### ***Primary Product Receipts***

- imported petroleum products which are reclassified as feedstocks for further processing in the refinery, without delivery to final consumers.

#### ***Refinery Fuel***

- petroleum products consumed in support of the operation of a refinery.

#### ***Interproduct Transfers***

- result from reclassification of products either because their specification has changed, or because they are blended into another product. A negative entry for one product must be compensated by a positive entry (or several entries) for one or several products,

#### ***Gross Deliveries to the Petrochemical Sector***

- quantities of fuels delivered to the petrochemical sector.

### **Methodology for NATURAL GAS questionnaire**

#### ***Associated Gas***

- natural gas produced in association with crude oil.

#### ***Non-Associated Gas***

- natural gas originating from fields producing hydrocarbons only in gaseous form.

#### ***Gas Flared***

- the volume of gas burned in flares on the production site or at the gas processing plant.

### **Methodology for ELECTRICITY AND HEAT questionnaire**

**Types of Producer:** Producers are classified according to the purpose of production:

**Public** supply undertakings generate electricity and/or heat for sale to third parties, as their primary activity. They may be privately or publicly owned. The sale need not take place through the public grid.

**Autoproducer** undertakings generate electricity and/or heat, wholly (or partly) for their own use as an activity which supports their primary activity. They may be privately or publicly owned.

**Types of Plant:**

**Electricity only** refers to a plant which is designed to produce electricity only. If one or more units of the plant is a CHP unit, then the whole plant is designated as a CHP plant.

**Combined Heat and Power (CHP)** refers to a plant which is designed to produce both heat and electricity. If possible, fuel inputs and electricity/heat outputs should be reported on a unit basis rather than on a plant basis.

**Heat Only** refers to a plant which is designed to produce heat only.

**Notes:**

Electricity production reported for *Autoproducer Electricity* or *Autoproducer CHP* is total quantity of electricity generated.

All heat production from *Public CHP* and *Public Heat* plants is reported. However, heat production reported for *Autoproducer CHP* and *Autoproducer Heat* plants comprises only the heat sold to third parties. Heat consumed by autoproducers is not included.

The reporting requirements for *transformation sector* activities can be summarised schematically as follows:

	Electricity Only	CHP	Heat Only
<b>Public Production</b>	All production and all fuel used	All electricity and heat produced and all fuel used	All heat produced and all fuel used
<b>Autoproducer</b>		All electricity produced and heat <b>sold</b> with corresponding fuel used	Heat <b>sold</b> and corresponding fuel used

**Gross Electricity Production** is the sum of the electrical energy production by all the generating sets concerned (including pumped storage) measured at the output terminals of the main generators.

**Gross Heat Production** is the total heat produced.

Note that for autoproducers, heat used by the undertaking for its own processes is not included here; only heat sold to third parties should be reported. As only heat sold to third parties is reported, gross heat production for autoproducers will be equal to net heat production.

**Net Electricity Production** is equal to the gross electricity production less the electrical energy absorbed by the generating auxiliaries.

**Net Heat Production** is the heat supplied to the distribution system as determined from measurements.

**Own Use by Plants** is the difference between Gross and Net Production.

**Electricity Supplied** is equal to the net electrical energy production, reduced by the amount used simultaneously for pumping and reduced or increased by exports to or imports from abroad.

**Heat Supplied** is equal to the net heat production, reduced or increased by exports or imports from abroad.

**Total Consumption** equals the Energy Supplied minus Transmission and Distribution Losses.

**Electricity producing units by type of generation** - See part 3.

**Single-fired Capacity** refers to units equipped to burn only one fuel type on a continuous basis. Power stations consisting of several units burning different types of fuel but with each individual unit capable of burning only one fuel are considered as single-fired and have their capacity divided accordingly among the following conventional fuel types:

- *Solid* - coal and coal products including coal gases,
- *Liquid* - covers crude oil and all oil products, including refinery gas and petroleum coke,
- *Natural gas*,
- *Combustible renewables and wastes* - wood, wood waste, other biomass, industrial wastes, municipal solid wastes, biogas.

**Multi-fired Capacity** refers to units capable of generating electricity using more than one nominated type of fuel successively and/or in combination on a continuous basis. These units are capable of generating their maximum capacity, or a large proportion thereof, using any one of the fuels nominated. A multi-fired unit can have either one boiler capable of using more than one fuel or two boilers, each using a single fuel but feeding the same generator in turn or simultaneously.

## **Part 5 Sources of Fuels, Electricity and Heat from 2016**

### **Natural Sources**

- *extraction of fuels* intended for sale, after primary improvement (e.g. treatment by sorting, washing)
- *electricity* produced by hydro power plants
- *heat* produced by nuclear stations, geothermal heat

### **Import**

- *import of all types of fuels*
- *electricity import (transit supplies of electricity are included in data on import)*

### **Export**

- *export of all kinds of fuels*
- *electricity export (transit supplies of electricity are included in data on export)*

### **Stock Changes**

Stock draw (+), stock build (-)

- fuels stocks of mining and producing organisations and consumers (stocks are intended for sale, not for own consumption)
- sellers' stocks of fuels in retail-trade (coal-store)
- *consumers' stocks (i.e. stocks of individual consumers intended to their own production and operation)*

### **Production**

- amount of produced fuels and energy obtained by upgrading of other fuels and energy.