



STATE OF THE ENVIRONMENT REPORT – SLOVAK REPUBLIC

2018

25th anniversary of annual reports

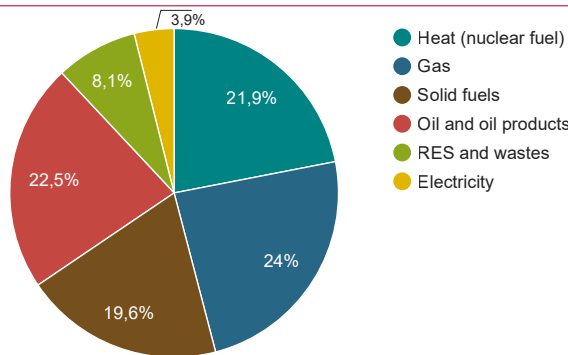
THE ENERGY SECTOR

ENERGY SOURCES BALANCE/ENERGY SECURITY

The SR has high import dependency. Almost 90% of primary energy sources are imported from territories outside the EU internal market. Inland primary energy sources include brown coal, hydropower and biomass. Inland oil and gas production is minimal and most gas and oil is imported from the Russian Federation and Azerbaijan. All black coal is also imported. Nuclear fuel is also imported from the Russian Federation.

The structure of the primary energy sources used in 2017 showed a balanced share of individual energy sources in gross inland consumption (the so-called energy mix). The long-term decrease in solid fuel and natural gas consumption and the increase in renewables consumption is positive. Gross inland energy consumption reached 722 039 TJ in 2017, or approximately a 10.0% fall compared to 2005. GIEC increased year-on-year (6.1%), while the consumption of liquid and gaseous fuels increased most significantly (10.2% and 6.2%).

Chart 053 | Energy mix (2017)



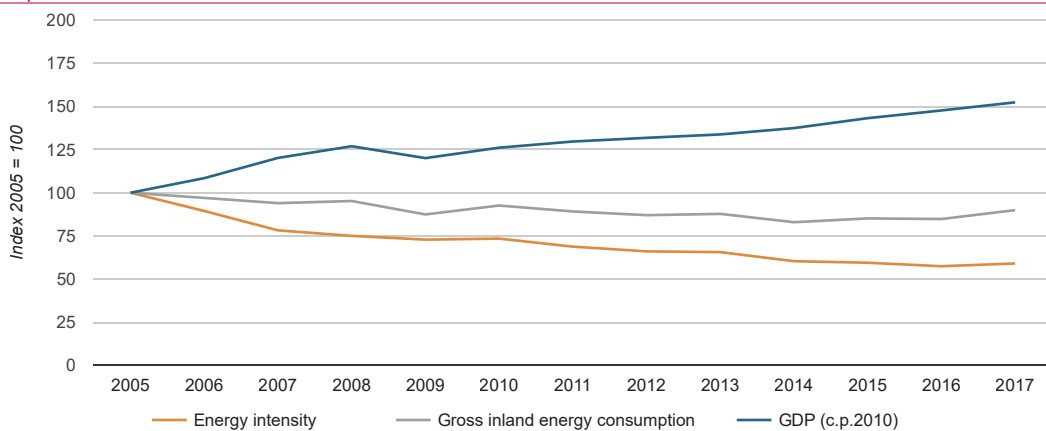
Source: Statistical Office of the Slovak Republic

ENERGY INTENSITY AND ENERGY EFFICIENCY

Reducing the energy intensity (EI) of the Slovak economy, defined as the ratio of gross inland energy consumption to GDP, is one of the long-term goals of the Slovak energy policy. Between 2005 and 2017 the energy intensity of the

Slovak Republic fell by 41.0%. This decrease is the result of an increase in GDP at constant prices 2010 (52.4%) and a concurrent decrease in GIEC (10.0%). In a year-on-year comparison EI increased by 2.8%.

Chart 054 | Trend in energy intensity, gross inland energy consumption and GDP at constant prices 2010



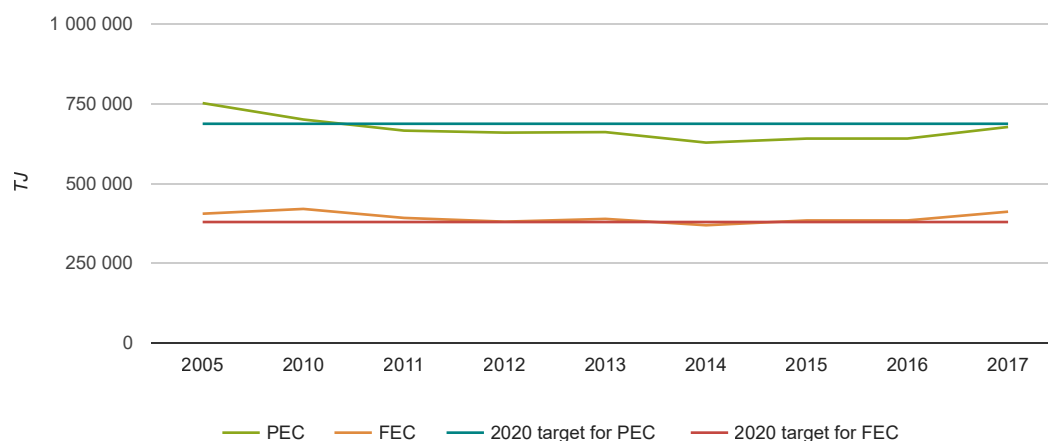
Source: Statistical Office of the Slovak Republic

Despite the favourable trend, the SR is one of the EU Member States with high energy intensity.

One of the main factors in achieving long-term energy and climate targets is energy efficiency, and its increase is enshrined in Envirostrategy 2030. Based on Directive 2012/27/EU on energy efficiency, the SR has adopted a commitment to reduce final energy consumption to 378 PJ and primary energy consumption to 686 PJ by 2020.

Primary energy consumption (PEC) was 676 034 TJ in 2017. In a year-on-year comparison between 2016 and 2017 there was a 5.7% increase in PEC. In a comparison between 2005 and 2017, PEC decreased by 10.0% with slight fluctuations.

Chart 055 | Trend in primary energy consumption and final energy consumption

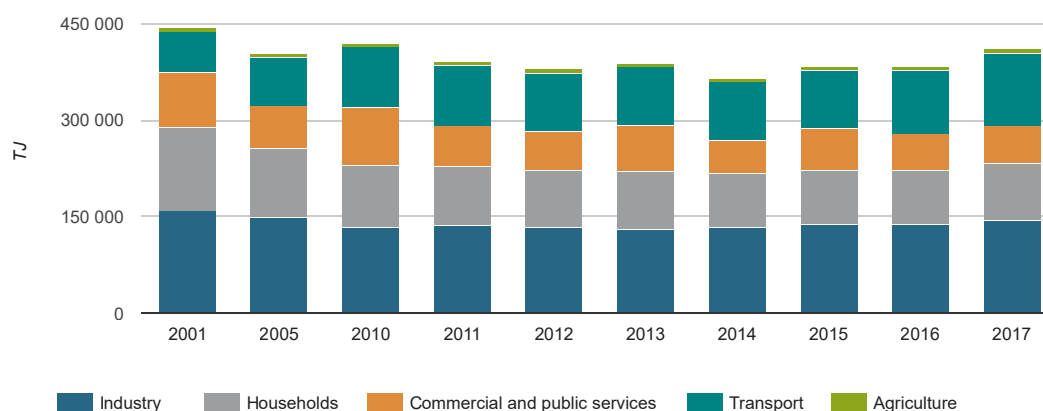


Source: Statistical Office of the Slovak Republic

In 2017 final energy consumption was 410 403 TJ. Due to a significant year-on-year increase in 2017 (7.2%), as well as in previous years, its positive falling trend to 2014 was interrupted and final energy consumption in 2017 was 1.6% higher compared to 2005. Final energy consumption decreased year-on-year in all sectors with the exception of the agriculture sector. The most significant increase was

recorded in the transport (13.8%) and trade and services (9.0%) sectors. The sector with the highest share of total energy consumption in 2017 was industry (35.0%) followed by three sectors: transport (27.5%), households (21.5%) and trade and services (14.6%). Agriculture had the lowest, with a share of only 1.5%.

Chart 056 | Trend in final energy consumption in sectors of the economy



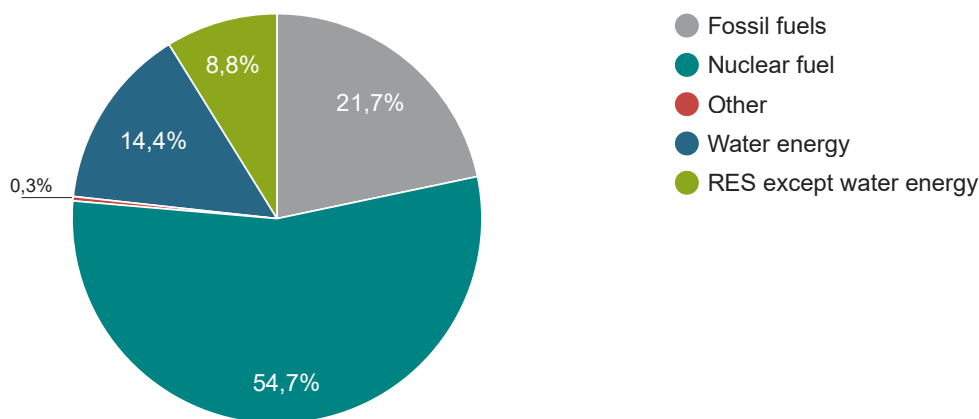
Source: Statistical Office of the Slovak Republic

ENERGY SUSTAINABILITY

Electricity generation has a fluctuating trend. In a long-term comparison between 1993 and 2018, a 12.8% increase in electricity generation was recorded, while there were decreases in electricity generation in a medium-term comparison between 2005 and 2018 (13.2%) and in a year-on-year comparison between 2017 and 2018 (3.1%). In 2018 27 149 GWh of electricity was generated in the SR. The SR

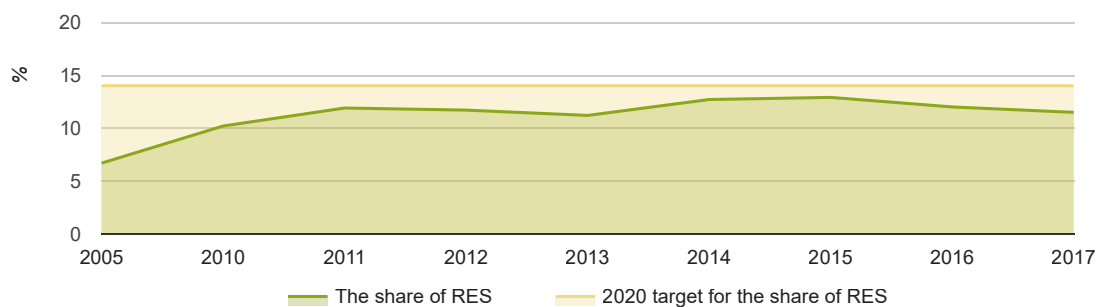
already has a low-carbon mix of electricity sources, since the share of carbon-free electricity generation in 2018 was around 80%. As in previous years, in 2018 the majority of electricity was generated from nuclear fuel. From a long-term perspective **electricity generation in thermal power plants** is gradually **falling** while the importance of nuclear energy and energy from renewables is rising.

Chart 057 | Electricity generation by source (2018)



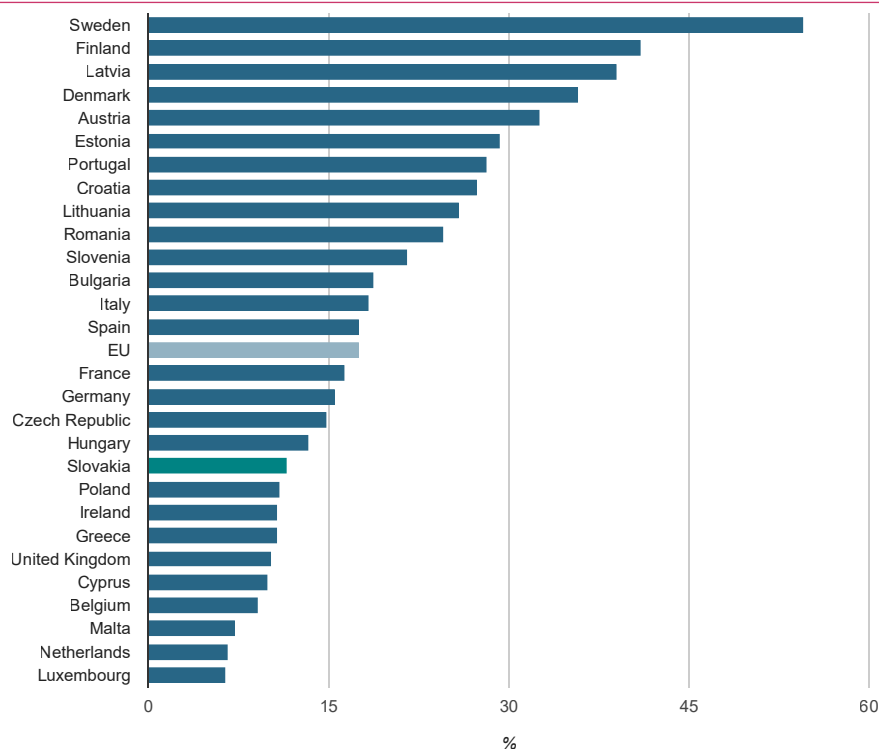
Source: SEPS, a. s.

Chart 058 | Trend in the share of energy from renewables from the perspective of meeting the national target in 2020



Source: Ministry of Economy of the Slovak Republic, Statistical Office of the Slovak Republic

Chart 059 I International comparison of the share in energy from renewables (2017)



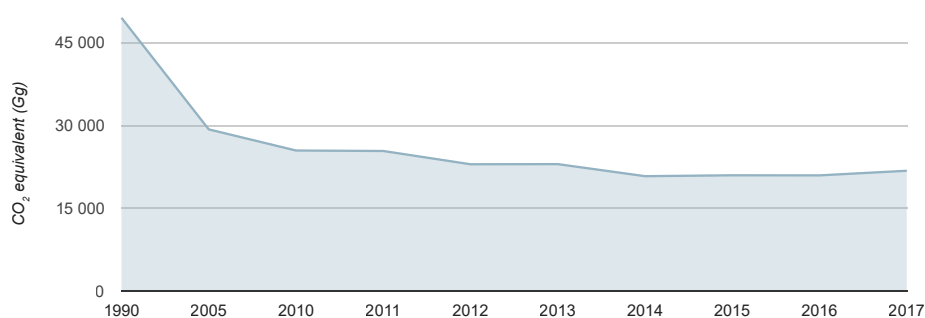
Source: Eurostat

THE ENVIRONMENTAL IMPACT OF THE ENERGY, HEAT AND GAS SECTORS

Despite a significant decrease in **greenhouse gas emissions** from the **energy sector** compared to 1990, this sector remains one of the largest producers. In 2017 the energy sector generated 21 782.6 Gg of CO₂ equivalent greenhouse gas emissions, or **50.3% of total emissions** generated in the SR. Compared to 1990 **emissions had decreased by 55.9% by 2017**. This significant decrease in emissions is a result of the

increased share of services in GDP creation, the increased share of natural gas in the fuel mix, structural changes, and a decrease in energy consumption in energy-intensive sectors. A year-on-year comparison between 2016 and 2017 shows an increase in greenhouse gas emissions from the energy sector of 4.0%, caused primarily by an increase in industrial output and fuel consumption in services.

Chart 060 I Trend in greenhouse gas emissions from the energy sector



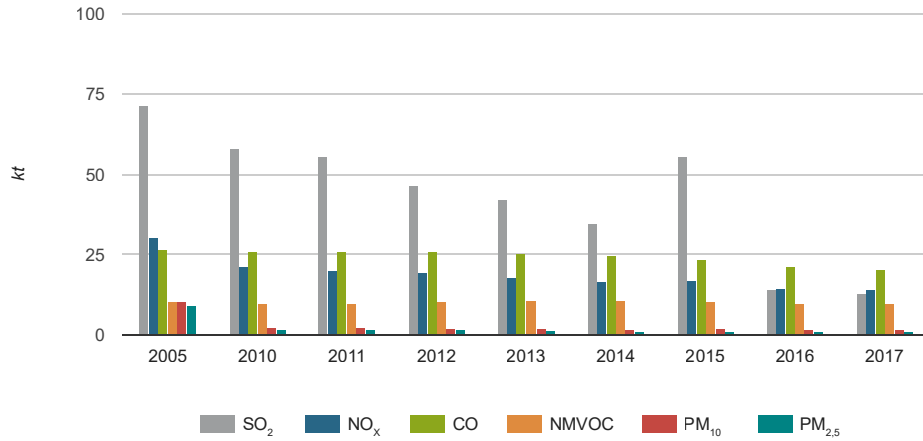
Source: Slovak Hydrometeorological Institute
 Note: Emissions determined as of 11 April 2019

The energy sector is an important producer of **emissions of SO₂, NO_x, CO, NMVOC, PM₁₀ and PM_{2.5}**.

In the period from 2005 to 2017 a **positive trend** in monitored emissions of pollutants was achieved. Similarly, a positive trend was also achieved in a year-on-year comparison

between 2017 and 2016. A year-on-year decrease of over 7% was recorded for emissions of PM₁₀ (7.5%), SO₂ (7.2%) and PM_{2.5} (7.1%). In 2017 the energy sector generated around 48.5% of total emissions of SO₂, 21.6% of NO_x and 11.0% of NMVOC. The energy sector's share in emissions of other monitored substances was less than 7%.

Chart 061 | Trend in emissions of SO₂, NO_x, CO, NMVOC, PM₁₀ and PM_{2.5} from the energy sector

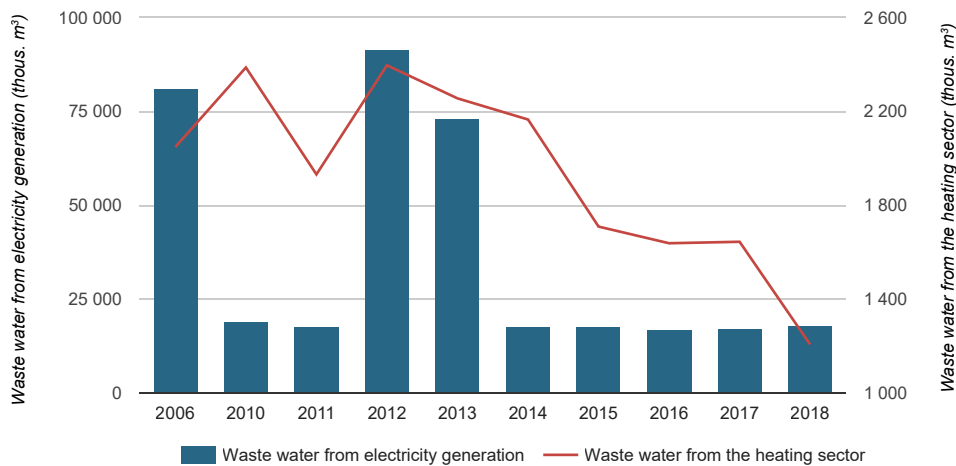


Source: Slovak Hydrometeorological Institute

The highest share of the total volume of **discharged waste water** in the energy sector was from power engineering. Waste water generated by power plants is primarily water from technological and cooling processes, and to a lesser extent a public sewerage system. Technology waste water

is contaminated with chemicals, and also radiochemical pollution in the case of the primary circuits of nuclear power plants. Water used for cooling is predominantly subject to thermal pollution.

Chart 062 | Trend in the volume of discharged waste water from the energy sector



Source: Slovak Hydrometeorological Institute

In 2018 a 4.5% increase in the volume of discharged waste water from **electricity generation** was recorded compared to 2017. On the other hand, the quantity of waste water from the heating sector fell year-on-year by 26.6%. Compared to 2006 there was a significant decrease in the quantity of waste water from electricity generation (77.8%), as well as the quantity of waste water from the **heating sector** (41.1%).

In 2018 the electricity, gas, steam and cold air supply sectors generated 1 083 487.9 tonnes of **waste placed on the market**, an increase in generation by approx. 20.9% compared to 2017. Hazardous waste only accounted for 0.2% (2 367 t) and other waste 99.8% (1 081 121 t). According to the classification of economic activities, this sector only contributed 9.7% of total waste generation in 2018.