REPORT ON
THE ENERGY SECTOR IN SLOVENIA

2019

Agencija za energijo

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DEVELOPMENT OF THE ENERGY MARKET IN SLOVENIA

The year 2019 was marked by preparing the Integrated National Energy and Climate Plan, which sets out energy-climate policy objectives and measures and policy promoters for the period up to 2030. In the area of decarbonisation, we want to reduce overall greenhouse gas emissions by 36%, improve energy efficiency by at least 35%, achieve a 27% share of renewables in the final use of energy and ensure a 3% share of GDP for investment in research and development. Slovenia is already transforming its energy system, and according to the Energy Transition Index, the World Economic Forum ranks us the highest among the countries of South-Eastern Europe.

In Slovenia, in 2019, domestic electricity production covered 83.5% of end consumers' consumption. The share of renewables in total production amounted to 33.6%, the number of end consumers increased, and 0.6% of users on the distribution system were already acting as consumers and producers. The target European model of allocation of interregional transmission capacity has been established at all Slovenian borders. On the Slovenian stock exchange market, trading volumes increased, base and peak energy prices on the day-ahead market decreased. The wholesale electricity market remains well developed with a high degree of liquidity. There were 22 suppliers active in the retail market, supplying 960,051 customers, and final electricity prices increased despite a 3.6% decrease in the network charge. According to the purchasing power standard, the electricity supply price for typical household customers in Slovenia was below the EU average.

There were already 4686 devices for self-supply of electricity from renewable sources, and the total number of electric vehicles increased by more than a third in one year. By the end of 2019, almost three-quarters of users on the distribution system were equipped with advanced measuring devices, an important building block of smart grids and more active customer participation. End consumers were given uniform access to detailed measurement data. The Energy Agency has modernised dedicated incentives for investment in smart grids, R & D, enable the more intensive deployment of new technologies and innovative approaches to network and energy management. We conducted the first public consultation on the introduction of the market with flexibility in Slovenia. Further development of active demand and market will depend on the effective removal of normative barriers, consumer awareness of the importance of their active role, and the development of new business models.

According to the Jožef Stefan Institute, the share of renewable energy sources in Slovenia's gross final energy consumption in 2019 was 21.85%, but we are still behind the 25% target for 2020. In the field of energy efficiency, Slovenia is, according to the European Commission's assessment, one of the 15 countries that meet the cumulative obligation of final energy consumption savings. The support scheme generated 601,074 MWh of electricity from renewable sources in 2019. If projects selected on public calls were implemented, renewable electricity production within the support scheme could more than double in 2023.

Consumption of natural gas by end consumers increased slightly again, amounting to 9652 GWh, as well as the booking of interconnection points for the transport of natural gas to Croatia. The supply of natural gas has been uninterrupted; 22 suppliers supplied natural gas to 135,391 end consumers. The final prices of natural gas in Slovenia decreased slightly and remained below the average EU prices for household customers.

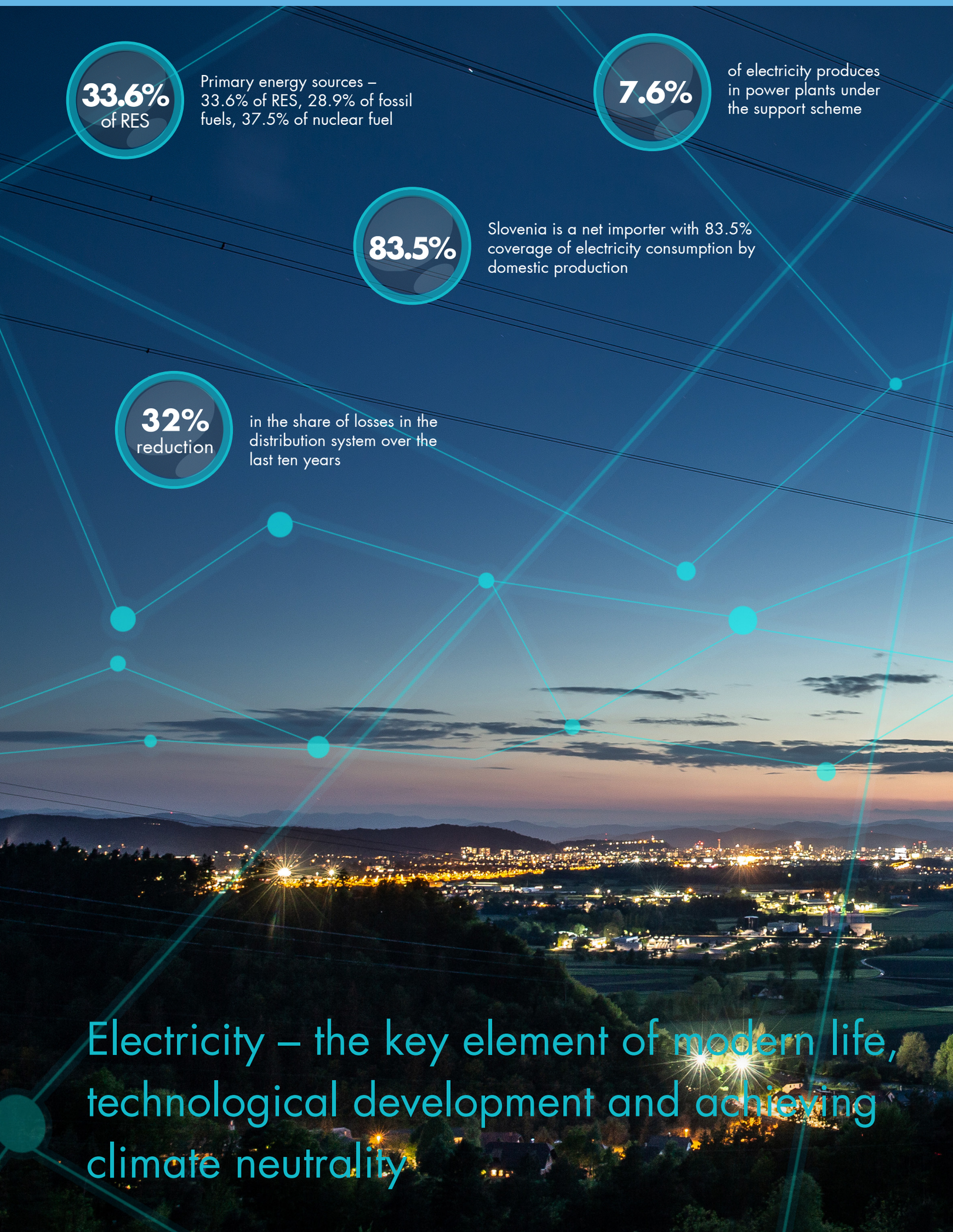
Almost half of the heat supplied was produced from coal and less than 18% from renewable sources. To a large extent, the heat was produced in the cogeneration of heat and electricity. The final prices for household customers increased by 10% as a result of the changes in energy prices.

The consequences of the pandemic that was proclaimed at the time of this report will, on a global scale, mark our economy and the state of our society. The implementation of infrastructure projects in the energy sector will have a significant impact on the recovery of the consequences and recession, but these projects need to be linked to the transition to clean energy on the basis of sustainable development.

I believe that the situation, data, indicators, and trends set out in this report will be a useful tool in making effective decisions for energy policy formulation and enforcement.

I would like to thank all the participants in the energy market for providing data and thank you to the Energy Agency's colleagues, who collect, process, and analyze these data carefully.

Director
mag. Duška Godina



33.6% of RES

Primary energy sources – 33.6% of RES, 28.9% of fossil fuels, 37.5% of nuclear fuel

7.6%

of electricity produces in power plants under the support scheme

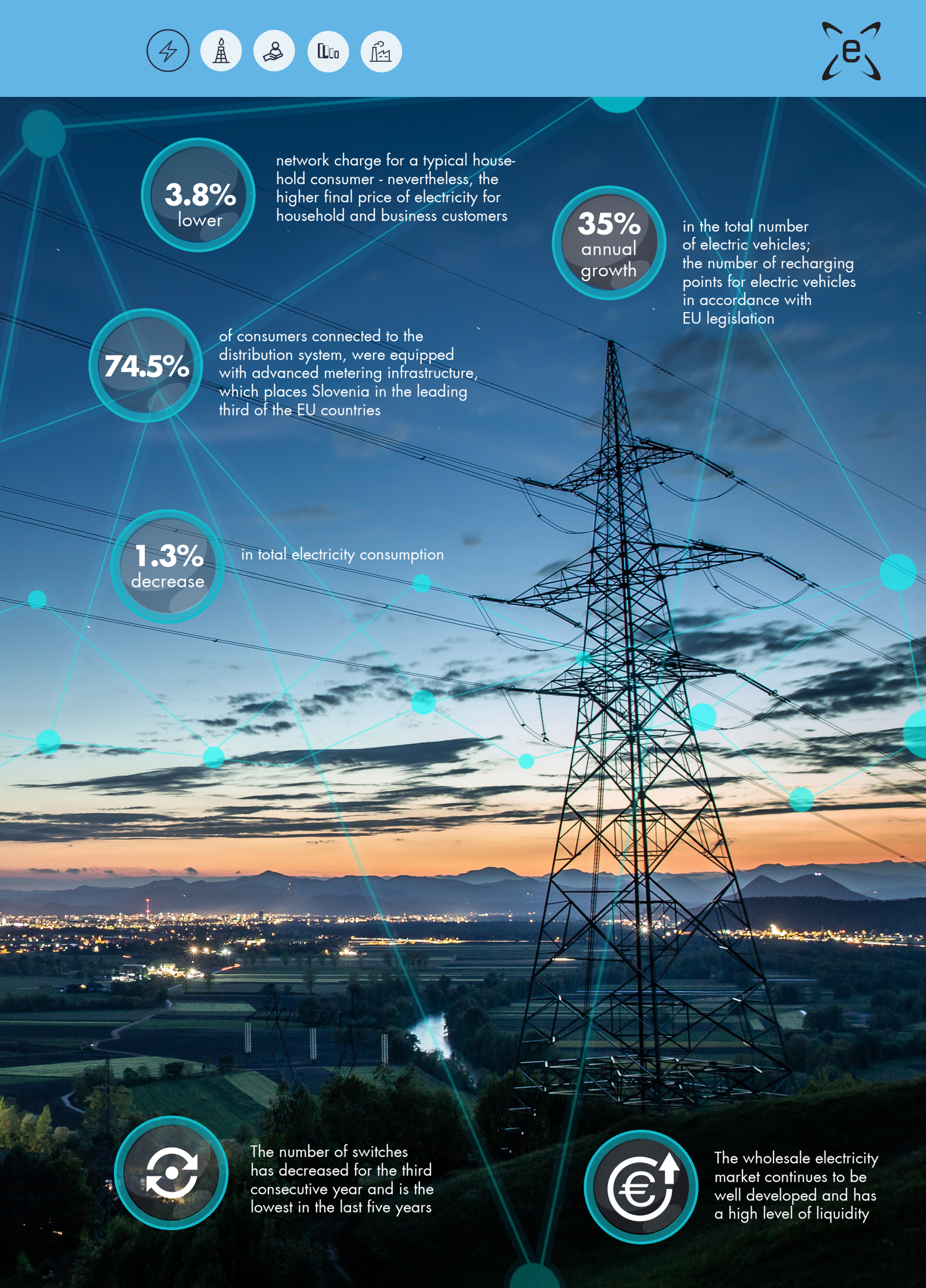
83.5%

Slovenia is a net importer with 83.5% coverage of electricity consumption by domestic production

32% reduction

in the share of losses in the distribution system over the last ten years

Electricity – the key element of modern life, technological development and achieving climate neutrality


3.8%
lower
network charge for a typical household consumer - nevertheless, the higher final price of electricity for household and business customers
35%
annual growth
in the total number of electric vehicles; the number of recharging points for electric vehicles in accordance with EU legislation
74.5%
of consumers connected to the distribution system, were equipped with advanced metering infrastructure, which places Slovenia in the leading third of the EU countries
1.3%
decrease
in total electricity consumption
The number of switches has decreased for the third consecutive year and is the lowest in the last five years
The wholesale electricity market continues to be well developed and has a high level of liquidity

ELECTRICITY

Supply and demand of electricity

Reception and transmission of electricity in the system

In 2019, 14,741 GWh of electricity was delivered from the generation units connected to the transmission or distribution system in Slovenia, which was 262 GWh less than in 2018. The delivery from facilities using RES amounted to 4955 GWh, which is 222 GWh less than the year before, while facilities using fossil fuels contributed 4260 GWh or 83 GWh less than in 2018. The Krško Nuclear Power Plant (NPP) delivered 5,966 GWh of electricity or 43 GWh more than the year before. These quantities are taken from the balance sheets of electricity producers on the basis of physical flows.

In 2019, 1,043 GWh of electricity was delivered to the distribution system from production facilities connected to the system. In internal consumers' networks, an additional 385 GWh of electricity was consumed; that is 27% of all electricity generated in facilities connected to the distribution system and in closed distribution systems.

14,741 GWh

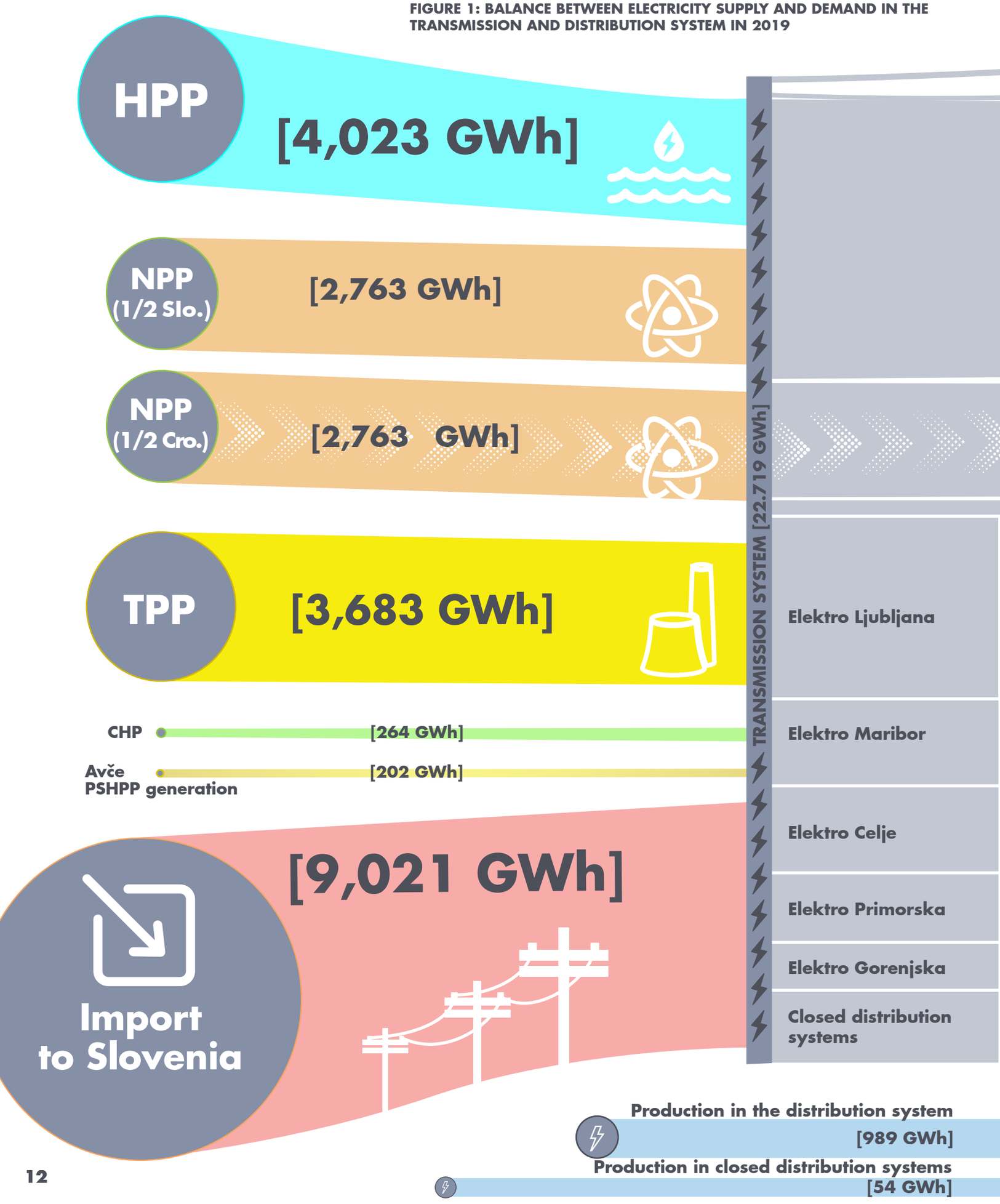
of electricity delivered, 33.6% of which was generated in production facilities using RES

TABLE 1: ELECTRICITY DELIVERED TO THE TRANSMISSION AND DISTRIBUTION SYSTEMS IN THE 2017–2019 PERIOD, IN GWh

Electricity delivered to the transmission system [GWh]	2017	2018	2019
Dravske elektrarne Maribor	2,312	2,913	2,731
Savske elektrarne Ljubljana	289	352	335
Hidroelektrarne na spodnji Savi	456	590	542
Soške elektrarne Nova Gorica	396	378	415
Avče PSHPP in the generation regime	271	188	202
Total Hydro	**3,724**	**4,421**	**4,225**
Šoštanj TPP	3,909	3,698	3,663
Brestanica TPP	9.02	7.09	21.20
Trbovlje TPP	-0.20	-1.64	-1.43
Javno podjetje Energetika Ljubljana	344	346	264
Total TPP and CHP	**4,262**	**4,049**	**3,947**
Krško Nuclear Power Plant	**5,966**	**5,483**	**5,526**
Electricity delivered to the transmission system	**13,952**	**13,953**	**13,698**
Electricity delivered to the distribution system [GWh]	**2017**	**2018**	**2019**
HPP up to and including 1 MW	169	196	196
HPP above 1 MW	154	166	154
Facilities using woody biomass	56	53	52
Wind farms	5.72	6.02	6.14
Solar power plants	250	225	239
Facilities using biogas	112	103	77
Waste-to-energy plants	7.11	5.56	4.85
Total RES	**754**	**755**	**729**
Total conventional sources	**277**	**294**	**314**
Total electricity delivered to the distribution system	**1,031**	**1,049**	**1,043**
Total electricity delivered	**14,983**	**15,002**	**14,741**

Sources: Electricity system operators, Energy Agency

FIGURE 1: BALANCE BETWEEN ELECTRICITY SUPPLY AND DEMAND IN THE TRANSMISSION AND DISTRIBUTION SYSTEM IN 2019



Avče PSHPP consumption [272 GWh]

Direct transmission system consumers [160 GWh]

[6,577 GWh]

Export from Slovenia

NPP export from Slovenia (1/2 Cro.) [2,763 GWh]

Transmission system losses [358 GWh]

[4,244 GWh]

[2,071 GWh]

[1,944 GWh]

[1,610 GWh]

[1,025 GWh]

[1,695 GWh]

DISTRIBUTION SYSTEM [13.633 GWh]

110 kV consumption [512 GWh]

1-35 kV consumption

[5,388 GWh]

Other consumption at 0.4 kV

[3,846 GWh]

Household consumption

[3,386 GWh]

Distribution system losses [478 GWh]

Closed distribution system losses [23 GWh]

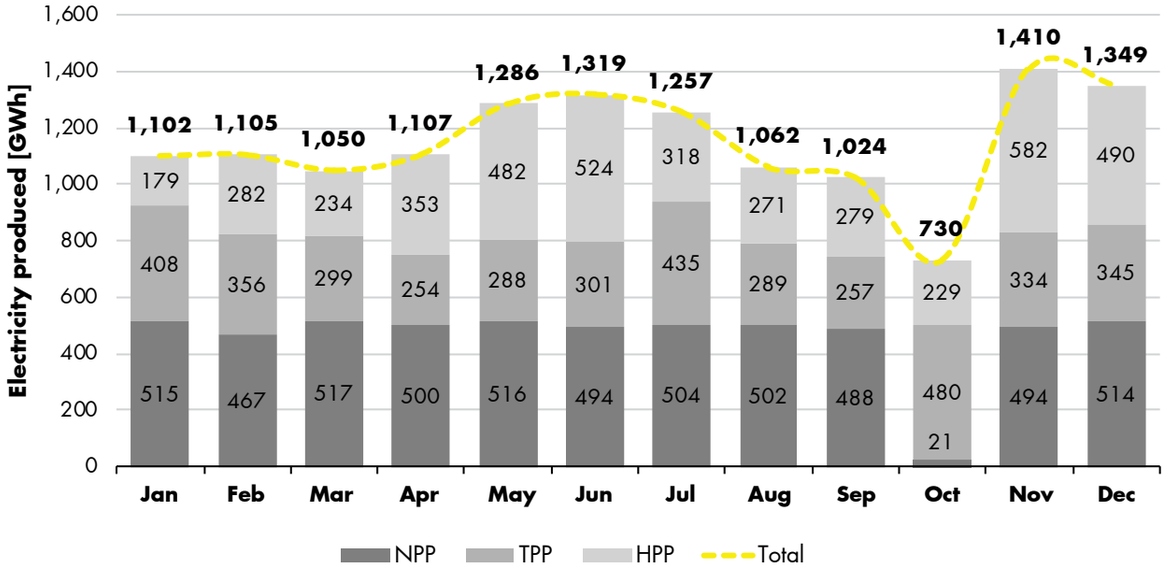
Sources: Electricity system operators, Energy Agency

By taking into account half of the production from the Krško NPP, domestic production sources contributed 11,978 GWh of electricity, and the consumption by end consumers amounted to 14,342 GWh. In 2019, 83.5% of electricity consumption in Slovenia was covered with domestic production sources.

In 2019, there was no significant connection of new production facilities or shutdown of existing ones. A total of 29.5 MW of new generation capacity was connected, and a total of 0.9 MW of existing generation capacity was shut down. Solar power plants with a total capacity of 23.7 MW represented the largest share of newly connected generation capacity. They were followed by fossil fuel cogeneration facilities (4.2 MW), landfill gas power plants (1.0 MW) and small hydropower plants (0.6 MW). Among the shut down production facilities, the majority were small hydropower plants, followed by landfill gas and solar power plants. With the exception of a new 2.6-megawatt fossil fuel cogeneration facility, which was connected to a closed distribution system, all the changes described above took place in the distribution system of five distribution companies.

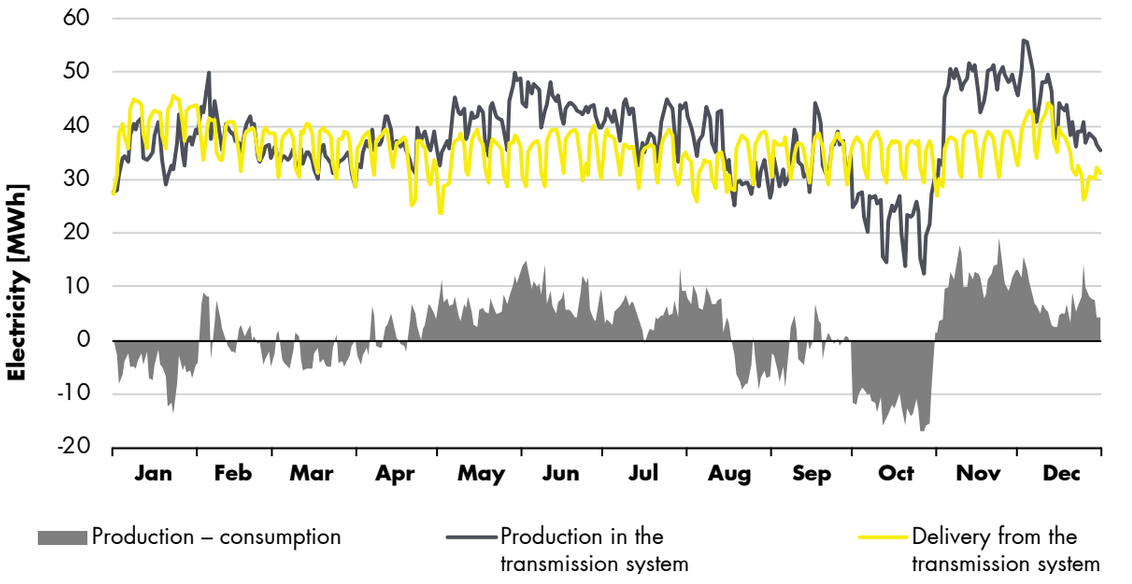
Figure 2 shows the monthly movement of electricity production in large power plants that were connected to the transmission system in 2019. The figure also shows a decline in production due to the overhaul of the Krško NPP in October, with part of the deficit from this production unit being replaced by the production of electricity from thermal power plants. Nevertheless, total production in October did not fully cover all electricity needs. This also applies to other periods in which the delivery of electricity from the transmission system was higher than the current production, which is why in these periods, the required quantities of electricity were imported into the Slovenian electricity system, as shown in Figure 3.

FIGURE 2: MONTHLY MOVEMENT OF ELECTRICITY PRODUCTION IN LARGE POWER PLANTS CONNECTED TO THE TRANSMISSION SYSTEM



Sources: ELES, Energy Agency

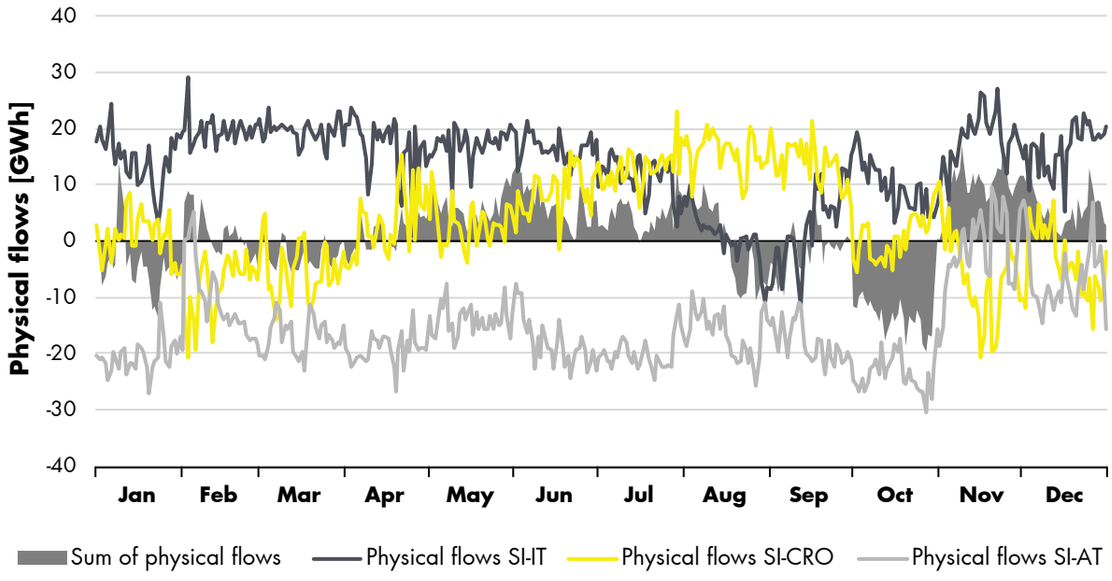
FIGURE 3: MONTHLY MOVEMENT OF ELECTRICITY PRODUCTION AND DELIVERY IN LARGE POWER PLANTS CONNECTED TO THE TRANSMISSION SYSTEM



Sources: ELES, Energy Agency

The Slovenian electricity transmission system is connected to the transmission systems of neighbouring countries on the borders with Italy, Croatia and Austria, and in the future, it will also be connected with Hungary. Based on the sum of physical flows at the borders, we can determine whether the need to balance the electricity system at a certain point in time led to the import of the deficit or the export of the surplus electricity from the transmission system. Figure 4 shows the sum of the physical electricity flows at all three borders (SI-IT, SI-CRO and SI-AT) in addition to the movement of individual physical flows.

FIGURE 4: PHYSICAL ELECTRICITY FLOWS AT THE BORDERS WITH NEIGHBOURING COUNTRIES AND THE SUM OF PHYSICAL FLOWS

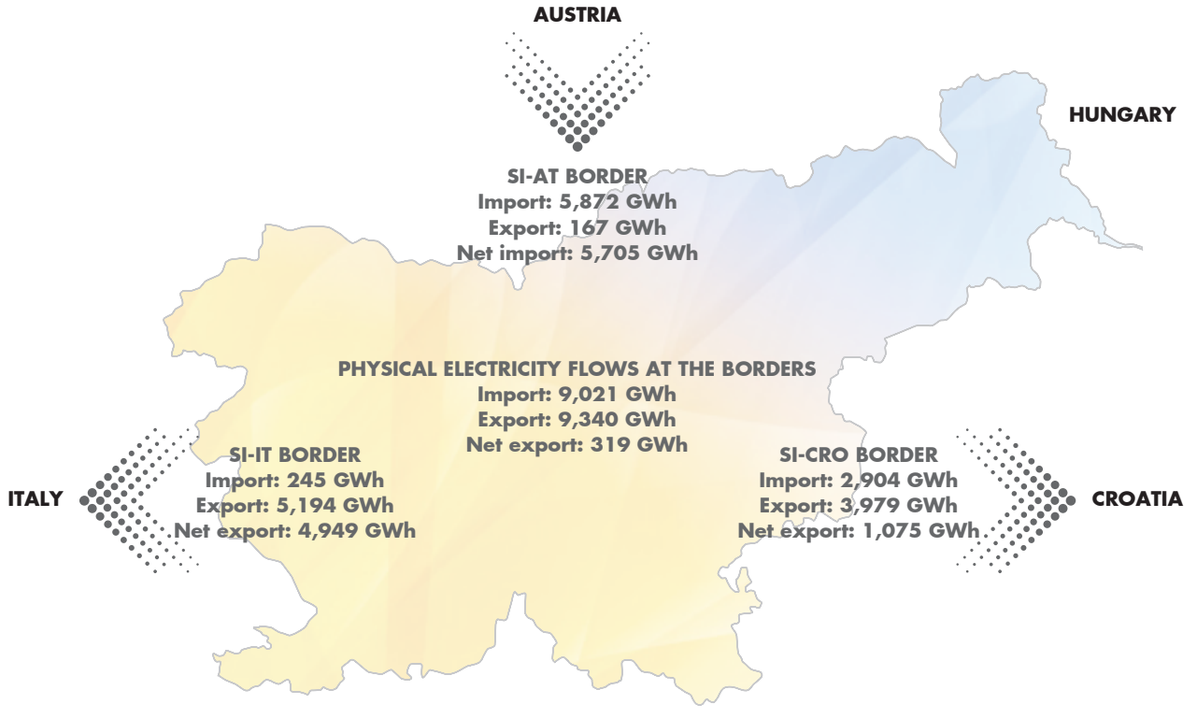


Sources: ELES, Energy Agency

To keep the electricity system balanced, it is important to exchange electricity with Austria, Italy and Croatia through international cross-border connections. Considering the separate observation of physical flows at individual borders with neighbouring countries, Slovenia was a net exporter of electricity to Croatia and Italy in 2019 (taking into account half of the electricity produced in the Krško NPP delivered to Croatia). At the Austrian border, Slovenia was a net importer of electricity. Given the total exchanges of electricity at the borders with neighbouring countries without taking into account half of the production from the Krško NPP, which is to Croatia, Slovenia was a net importer of electricity in 2019. Figure 5 shows the annual volumes of physical flows at the borders with neighbouring countries.

In 2019 Slovenia was a net electricity importer

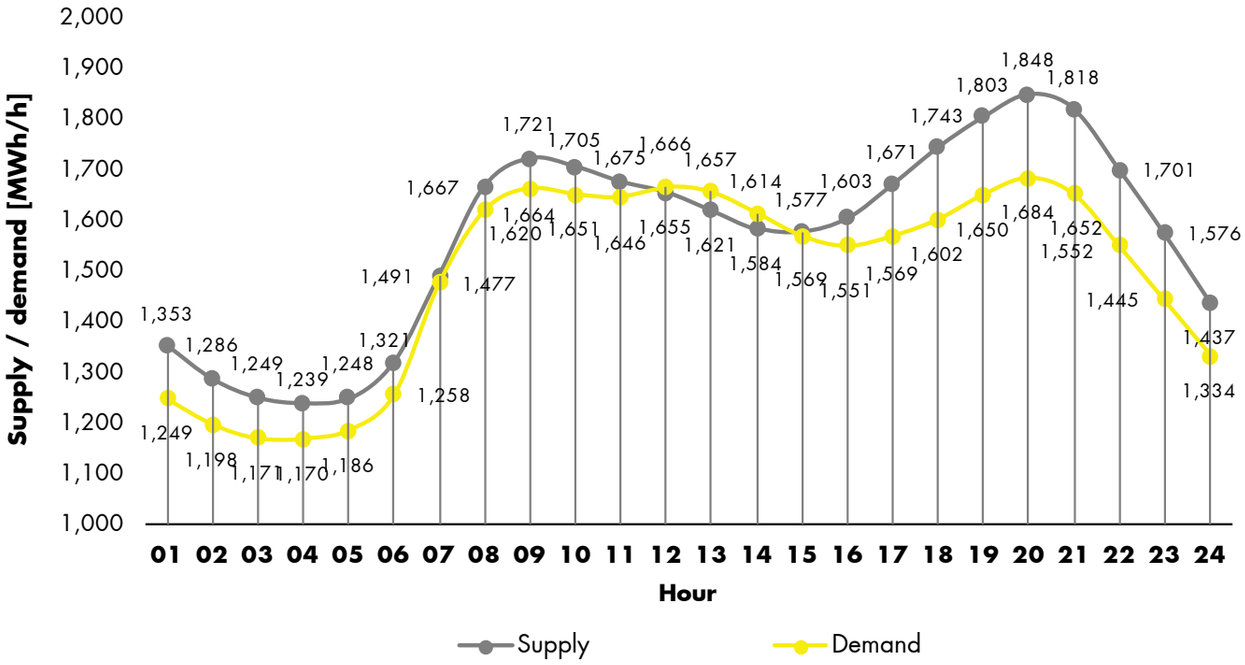
FIGURE 5: PHYSICAL ELECTRICITY FLOWS AT THE BORDERS WITH NEIGHBOURING COUNTRIES



Sources: ELES, Energy Agency

Figure 6 shows the average daily profile of electricity generation and delivery from the transmission system. The transmission system was the least congested at night (between 3 a.m. and 4 a.m.), and the highest load occurred twice, first in the morning (between 9 a.m. and 10 a.m.) and then in the evening (between 8 p.m. and 9 p.m.). Both profiles show that, on average, the delivery of electricity was higher than the production in the transmission system at noon and in the afternoon (between 12 p.m. and 3 p.m.). As a rule, this can be attributed to lower electricity prices during this time, a fact mainly used by producers in hydroelectric power plants to fill their accumulation basins.

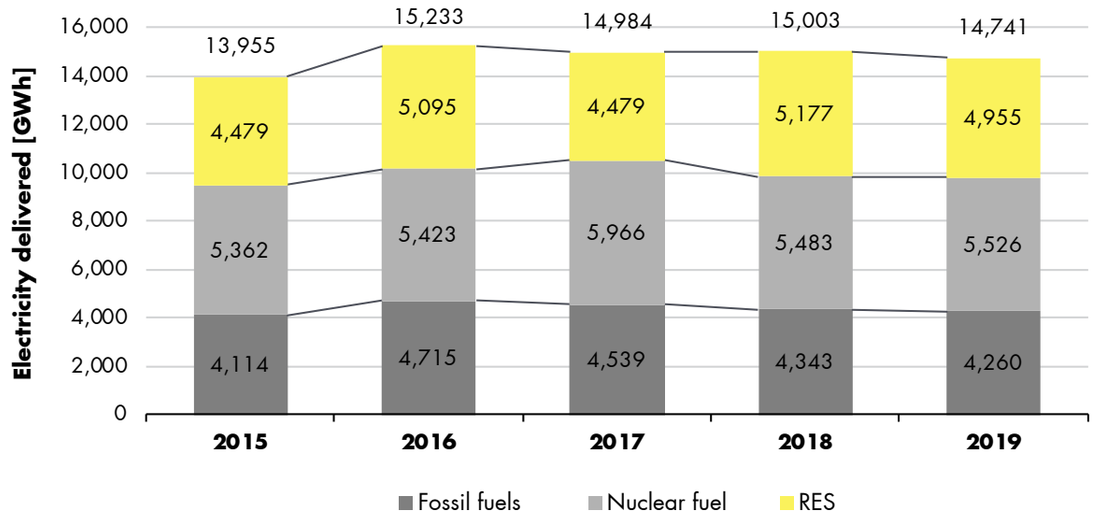
FIGURE 6: AVERAGE DAILY PROFILE OF ELECTRICITY GENERATION AND DELIVERY FROM THE TRANSMISSION SYSTEM



Sources: ELES, Energy Agency

The share of electricity generated in hydro power plants and facilities using RES varies annually, depending on hydrological and other conditions and investments in new generating facilities using RES. In 2019, this share was around 33.6% of all electricity produced in Slovenia, which is almost one percentage point less than the previous year. Fossil fuel power plants contributed the same share of total production as in 2018, and the Krško NPP produced 37.5% of all electricity generated.

FIGURE 7: ELECTRICITY DELIVERED TO THE TRANSMISSION AND DISTRIBUTION SYSTEMS IN THE 2015–2019 PERIOD



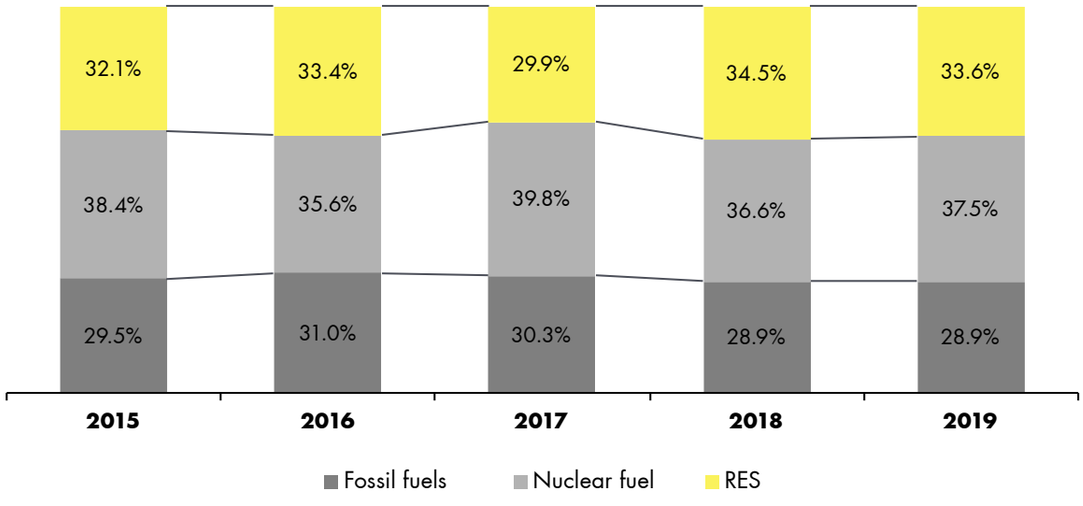
Sources: Electricity system operators, Energy Agency

TABLE 2: PRIMARY ENERGY SOURCES FOR ELECTRICITY GENERATION IN THE 2017–2019 PERIOD

Primary energy sources for electricity generation	2017		2018		2019	
	GWh	Share	GWh	Share	GWh	Share
Fossil fuels	4,539	30.3%	4,343	28.9%	4,260	28.9%
Nuclear fuel	5,966	39.8%	5,483	36.6%	5,526	37.5%
RES	4,479	29.9%	5,177	34.5%	4,955	33.6%
• **hydro**	4,048	90.4%	4,784	92.4%	4,575	92.4%
• **wind**	5.72	0.1%	6.02	0.1%	6.14	0.1%
• **solar**	250	5.6%	225	4.3%	239	4.8%
• **biomass**	175	3.9%	162	3.1%	134	2.7%
Total electricity delivered	**14.984**		**15.003**		**14.741**	

Sources: Electricity system operators, Energy Agency

FIGURE 8: SHARES OF PRIMARY ENERGY SOURCES IN THE 2015–2019 PERIOD



Sources: Electricity system operators, Energy Agency

System losses

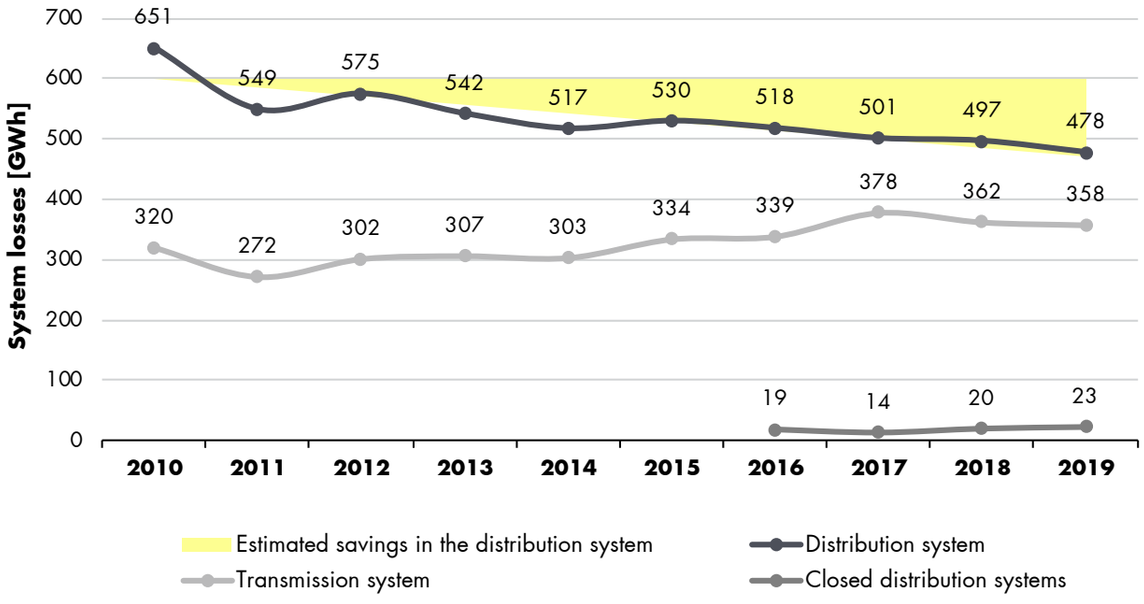
The quantities of losses in the transmission system are determined based on the differences between the quantities of electricity produced in the transmission system and the quantities of electricity at the connection points between the transmission and distribution system and the direct consumption of electricity from the transmission system. Losses in the transmission system are determined based on the differences between the quantities of electricity on the borders between the transmission and distribution system and the quantities of electricity measured at end consumers.

The data show that the amount of electricity losses in the distribution system in Slovenia has decreased significantly in recent years as a result of various measures, especially the introduction of advanced metering systems (chapter Developing an advanced metering system in Slovenia), which allow better monitoring and control over commercial and technical losses, and the growing transition to medium- and low-voltage networks. The estimated savings in electricity to cover losses due to the introduction of measures amount to 643 GWh. The changing amount of electricity losses in the transmission system is significantly influenced by the inclusion of the Avče PSHPP after 2014 and an increased share of cross-border electricity trading in exports, imports and transit. The quantities of electricity losses in transmission, distribution and closed distribution systems in the 2010–2019 period are shown in Figure 9.

643 GWh

less electricity to cover distribution system losses over the last ten years

FIGURE 9: THE QUANTITIES OF ELECTRICITY LOSSES IN TRANSMISSION, DISTRIBUTION AND CLOSED DISTRIBUTION SYSTEMS IN THE 2010–2019 PERIOD



Sources: Electricity system operators, Energy Agency

ELES and SODO are responsible for covering electricity losses for managing or reducing losses in the electricity system. As the electricity needed to cover losses must be provided in a transparent and market-efficient manner, both operators must strive to achieve the lowest possible price when purchasing such electricity. In doing so, operators choose different marketing strategies that take into account the mechanisms for forecasting the required quantities of electricity and the diversification of (long-term and short-term) purchases. In this way, the two operators can have a significant impact on the cost of electricity for covering losses, which is an eligible cost of the network charge. In order to be as successful as possible, an incentive mechanism has been set up to provide both operators with a financial incentive to achieve a lower price than the reference price set by the regulator when purchasing electricity to cover losses.

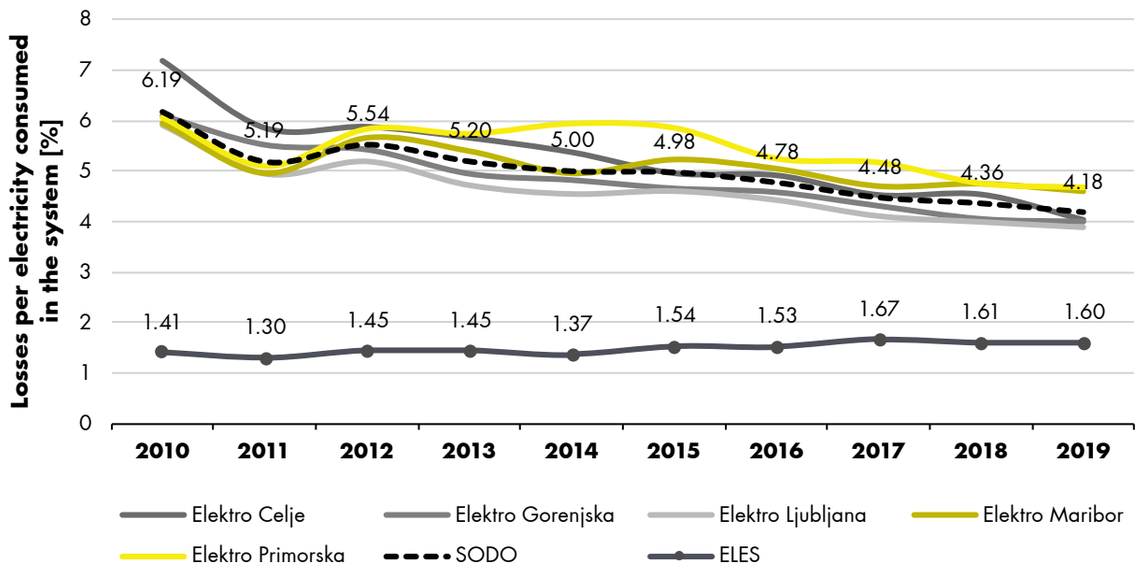
The share of losses is calculated based on the quantities consumed from the transmission or distribution system. We have been recording a decrease in the share and the amount of losses in the distribution system for many years. In the last ten years, the share of losses in the distribution system has fallen by 2 percentage points or more than 32%. In recent years, ELES has managed to reduce the share and amount of losses in the transmission system, where the amount of losses had increased due to the additional transit of electricity across the country.

Figure 10 shows the shares of losses for ELES, SODO and distribution companies in the 2010–2019 period.

32%

reduction in the share of losses in the distribution system over the last ten years

FIGURE 10: SHARES OF LOSSES FOR ELES, SODO AND DISTRIBUTION COMPANIES IN THE 2010–2019 PERIOD



Sources: Electricity system operators, Energy Agency

Electricity generation

In 2019, nine companies were operating large facilities with an installed capacity of over 10 MW in Slovenia. They are further classified according to the installed capacity of production units from the largest to the smallest:

- Šoštanj Thermal Power Plant (Šoštanj TPP)
- Krško Nuclear Power Plant (NPP),
- Dravske elektrarne Maribor (DEM),
- Soške elektrarne Nova Gorica (SENG),
- Brestanica Thermal Power Plant (Brestanica TPP)
- Hidroelektrarne na spodnji Savi (HESS),
- Savske elektrarne Ljubljana (SEL),
- Javno podjetje Energetika Ljubljana (JPEL),
- HSE – Energetska družba Trbovlje (HSE ED Trbovlje).

Production companies in Slovenia differ in their electricity generation method and primary energy sources used. DEM, SEL, HESS, and SENG generate electricity in hydropower plants (HPP), Šoštanj TPP in a coal-fired thermal power plant and in gas-fired production units, Brestanica TPP and HSE ED Trbovlje are operating on liquid and gaseous fuel, Krško NPP is a nuclear power plant, and JPEL cogenerates heat and power using coal and woody biomass. Some companies also have solar power plants, small hydropower plants and CHP in their production portfolio. In July 2019, Brestanica TPP started building a replacement gas block called PB 7 with an installed capacity of 53 MW. In April 2019, SENG completed the first overhaul of the Avče Pumped Storage Hydro Power Plant (Avče PSHPP). In October 2019, the Krško NPP underwent a regular overhaul, which comprised the replacement of nuclear fuel, preventive maintenance work and investments in technological equipment.

DEM, SENG, HSE ED Trbovlje and Šoštanj TPP operate within the Holding Slovenske elektrarne (HSE) group, which represents the first energy pillar of the Slovenian wholesale market. The second energy pillar is represented by the GEN energija group, which owns SEL, Brestanica TPP and, in accordance with the intergovernmental agreement between Slovenia and Croatia, 50% of the Krško NPP. At the same time, the GEN energija group owns 51% of HESS, while the remaining part of this company belongs to the HSE group. JPEL is wholly owned by Javni Holding Ljubljana.

TABLE 3: INSTALLED CAPACITY IN PRODUCTION FACILITIES AND AMOUNT OF ELECTRICITY GENERATED

Producer	Installed capacity [MW]	Share – installed capacity, all producers in Slovenia (%)	Generation [GWh]	Share – generation, all producers in Slovenia (%)
HSE, d. o. o.	**1,928**	**54.0%**	**7,155**	**57.2%**
Hydropower plants	938		3,433	
Thermal power plants	990		3,721	
Other (CHP, solar, wind, etc.)	0.9		1.1	
GEN-Energija, d. o. o.	**926**	**25.9%**	**3,673**	**29.4%**
Hydropower plants	277		879	
Thermal power plants	300		26	
Nuclear power plant*	348		2,766	
Other (CHP, solar, wind, etc.)	1.0		1.0	
Energetika Ljubljana	**118**	**3.3%**	**310**	**2.5%**
CHP	109		265	
Generation using woody biomass	8.9		44.7	
Other small producers in the distribution network and in closed distribution systems **	**601**	**16.8%**	**1,365**	**10.9%**
Small hydropower plants	125.8		411.7	
Solar power plants	275.9		269.8	
Wind farms	3.3		6.1	
Facilities using woody biomass	16.4		75.2	
Geothermal power plants	0.0		0.0	
Facilities using biogas	39.3		100.6	
CHP	138.7		501.3	
Other	1.9		0.0	
Total in Slovenia	**3,573**	**100%**	**12,503**	**100%**
- in the transmission system	**2,972**			

* Also taking into account the 50% share of installed capacity and production of the Krško NPP.
** Other small producers within closed distribution systems (Talum, Acroni, Ravne, Štore and Jesenice)

Sources: data of production companies

In 2019, the installed capacity did not change in the HSE, GEN energija and Energetika Ljubljana groups compared to the previous year. The production of electricity in HSE and GEN energija was also at a comparable level compared to the year before, while JPEL produced 21% less electricity in 2019.

Most of the electricity from smaller producers connected to the distribution system and closed distribution systems is produced in industrial CHP facilities, small hydropower plants and solar power plants. In 2019, smaller producers generated 1365 GWh of electricity. The data on the installed capacities of these production plants take into account the data from the production facility connection approval.

Due to a bilateral agreement between Slovenia and Croatia, half of Krško NPP's production belongs to Croatia, which reduces the NPP's share in actual Slovenian electricity production. Thus, in 2019, power plants in Slovenia produced a total of 15,277 GWh of electricity, while the actual Slovenian production of electricity was lower and amounted to 12,503 GWh. Compared to 2018, production decreased by 68 GWh due to lower production in hydropower plants.

Electricity consumption

The total electricity consumption in Slovenia amounted to 14,423 GWh or 13,564 GWh, excluding losses in the transmission and distribution systems. Compared to 2018, total consumption was decreased by 193 GWh or 1.3%.

Three direct customers are connected to the transmission system, having consumed 79 GWh of electricity in 2019. From DTS Vrtojba and Sežana 81 GWh of electricity was exported to Italy via the distribution system. Customers in closed distribution systems consumed 1732 GWh of electricity, which is 170 GWh less than in 2018. The Avče PSHPP used 272 GWh to pump water for the accumulation, which is 20 GWh more than the year before. Losses in the transmission and distribution systems amounted to 859 GWh of electricity, including losses due to imports, exports and transit of electricity flowing through the country.

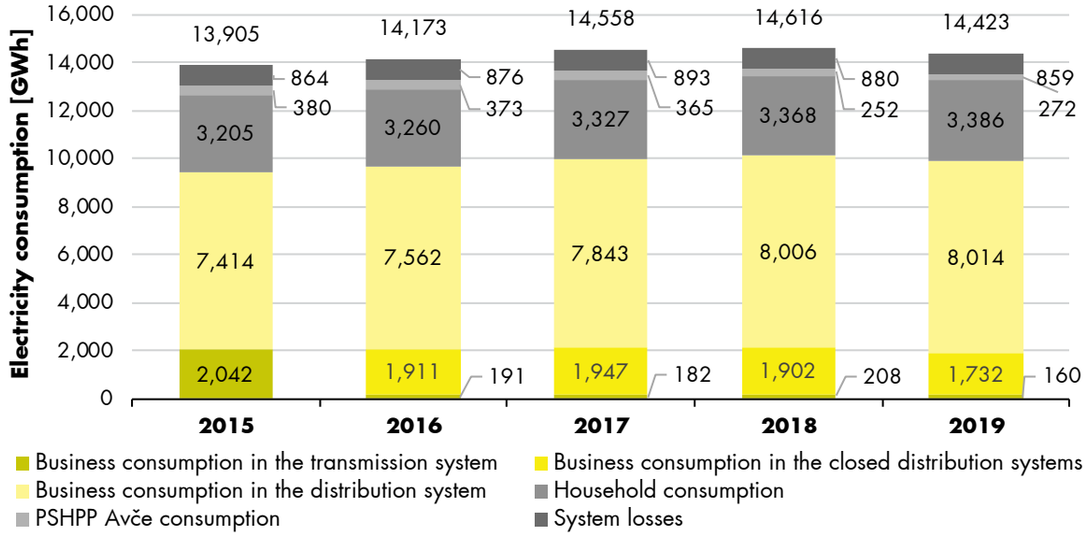
Consumption by business and household consumers in the distribution system was 0.2% higher than in 2018 and amounted to 11,400 GWh. In 2019, household consumers used 3386 GWh of electricity, which is 0.5% more than the year before. In 2019, consumption by business consumers in the distribution system amounted to 8014 GWh, which is 0.1% more than in 2018.

Due to a decline in their consumption, business consumers in the transmission system and in closed distribution systems contributed to the total lower electricity consumption of 1.3% in Slovenia.

The peak load of the transmission power system was 2198 MW, which is 30 MW less than in 2018. It was reached on 23 January 2019 in the 12th hour (between 11 a.m. and 12 p.m.).

1.3%
decrease in total electricity consumption

FIGURE 11: ELECTRICITY CONSUMPTION IN THE 2015–2019 PERIOD



Sources: Electricity system operators, Energy Agency

TABLE 4: ELECTRICITY CONSUMPTION IN THE 2017–2019 PERIOD

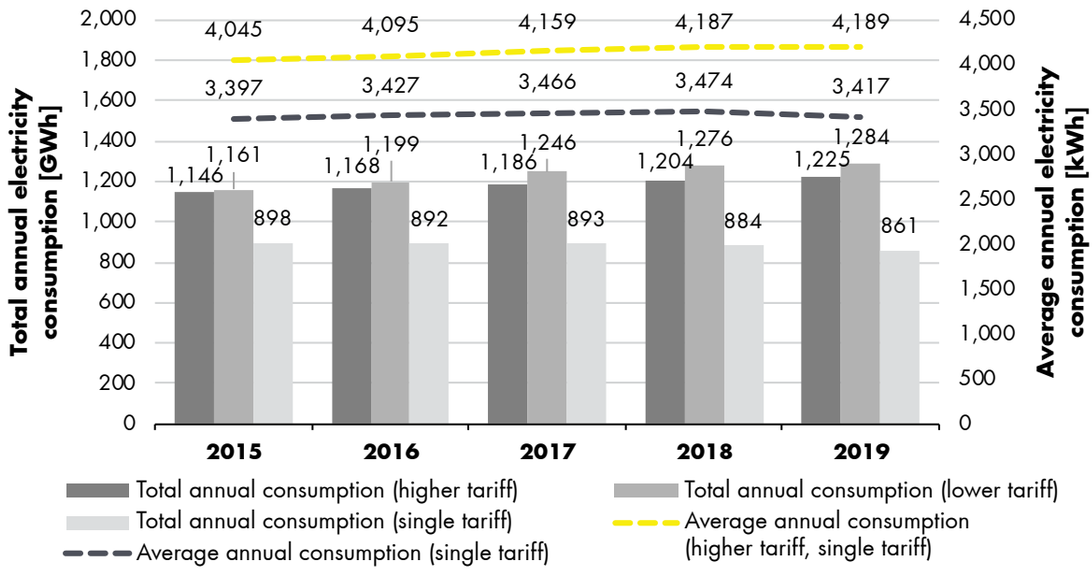
Electricity consumption [GWh]	2017	2018	2019
Business consumption in the transmission system	182	208	160
Business consumption in the distribution system	7,843	8,006	8,014
Business consumption in closed distribution systems	1,947	1,902	1,732
Total business consumption	**9,973**	**10,116**	**9,906**
Household consumption	3,327	3,368	3,386
• single-tariff metering	895	888	877
• two-tariff metering	2,433	2,480	2,509
Consumption by Avče PSHPP in the pumping regime	365	252	272
Total consumption of end customers	**13,665**	**13,736**	**13,564**
Transmission and distribution system losses	893	880	859
Total electricity consumption (including losses)	**14,558**	**14,616**	**14,423**

Sources: Electricity system operators, Energy Agency

Figure 12 shows the total and average annual electricity consumption of household consumers with single- and two-tariff metering, where the number of household consumers of each metering type is taken into account to calculate the average annual consumption.

In the observed five-year period, household consumers with two-tariff metering show a steady increase in total and average annual electricity consumption. The number of household customers with dual-tariff metering is also growing, by an average of 1.3 percentage points per year. On the other hand, after a few years of a slight growth trend, there was a decrease in the average annual consumption of household customers with single-tariff metering in 2019 compared to 2018. Their number is decreasing by an average of 1.3 percentage points per year.

FIGURE 12: TOTAL AND AVERAGE ANNUAL ELECTRICITY CONSUMPTION OF HOUSEHOLD CONSUMERS WITH SINGLE- AND TWO-TARIFF METERING IN THE 2015–2019 PERIOD



Sources: Electricity system operators, Energy Agency

Coverage of consumption by domestic production

Coverage of electricity consumption by domestic production directly depends on the amount of electricity generated in Slovenia and the consumption by end consumers. As Table 5 shows, large hydropower plants, thermal power plants and the nuclear power plant (with a 50% production share), which are connected to Slovenia's transmission system, contribute the most to domestic production. A small part of domestic production is connected to the distribution system.

The levels of domestic production in the observed periods do not directly reflect the total installed capacity of generation sources, i.e. the potential of domestic generation facilities, but are largely the consequence of generation source structure and the developments in the European electricity market. It is possible to buy cheaper electricity in international markets, interregional transmission capacities permitting. Domestic production depends on the technologies of production facilities and the related utilisation and competitiveness of domestic production. As a rule, the electricity generated in hydro power plants is price-competitive and depends mainly on hydrology in a given period.

83.5%
coverage of consumption by domestic production

TABLE 5: CONSUMPTION, PRODUCTION AND COVERAGE OF CONSUMPTION BY DOMESTIC PRODUCTION IN THE 2015–2019 PERIOD

	2015	2016	2017	2018	2019
Production in the transmission system [GWh]	**10,198**	**11,405**	**10,969**	**11,212**	**10,934**
• hydro	3,708	4,293	3,725	4,421	4,225
• thermal	3,809	4,401	4,262	4,049	3,946
• nuclear (50% share)	2,681	2,712	2,983	2,742	2,763
Production in the distribution system [GWh]	**1,075**	**1,116**	**1,032**	**1,050**	**1,044**
Total domestic production [GWh]	**11,273**	**12,521**	**12,001**	**12,262**	**11,978**
Total electricity consumption [GWh]	**13,787**	**14,056**	**14,468**	**14,501**	**14,342**
Total consumption by end consumers	13,041	13,297	13,665	13,736	13,564
• system losses	864	876	893	880	859
• exports to Italy via the distribution system (Vrtojba and Sežana DTS)	-118	-117	-90	-115	-81
Coverage of consumption by domestic production	**81.8%**	**89.1%**	**82.9%**	**84.6%**	**83.5%**

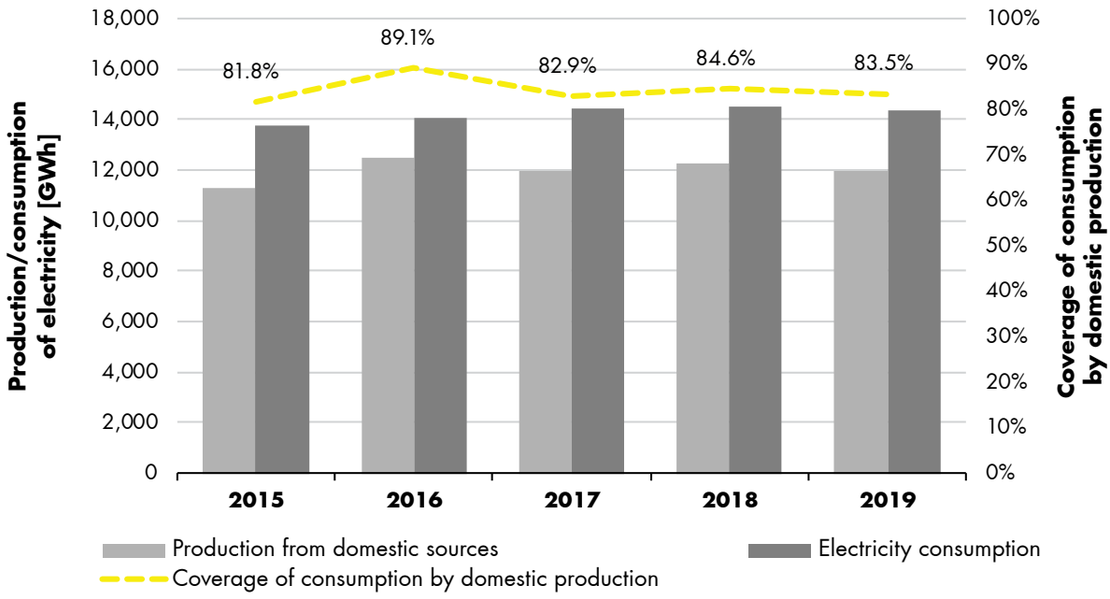
Sources: Electricity system operators, Energy Agency

Production from other renewable sources also depends mainly on weather conditions. The utilisation factor in a nuclear power plant is generally very high and time-constant, while in thermal, liquid-fuel and gas-fired power plants the level of production strongly depends on the daily consumption curve (energy demand) as well as several other market factors, such as emissions coupon prices, fuel prices, wholesale electricity prices and cross-border transmission capacity occupancy. For these generation sources, a higher utilisation factor could improve the coverage of consumption by domestic production and consequently reduce net electricity imports. However, this would not always make economic and ecological sense. Thus, manufacturers are constantly adjusting their production. Some production units operate mainly or exclusively during the hours of higher market prices, while in the remaining hours they do not operate or work at the technical minimum. The share of coverage by domestic production is also significantly affected by regular and extraordinary overhauls of production facilities in all types of production, which reduces the amount of electricity produced in Slovenia.

In the observed period (2015–2019), we found year-on-year fluctuations in the coverage of consumption by domestic production. Coverage is also directly affected by changes in electricity consumption. The dynamics and structure of total consumption are presented in more detail in the previous chapter. In addition to the consumption by end consumers in the transmission and distribution system, the total electricity consumption also includes losses in the entire electricity system. Quantities of electricity distributed to Italy via the distribution system from Vrtojba and Sežana DTS are not considered as final consumption in Slovenia.

As shown in Figure 13, coverage by domestic production was highest in 2016 (89.1%), when the production of electricity from domestic sources–especially from thermal and hydro power plants–was highest, but at the same time the total end-use is slightly lower than most of the remaining years in the observed period. In 2019, production from domestic sources and electricity consumption decreased compared to the previous year. Due to the simultaneous decline of both factors, the coverage of electricity consumption by domestic production was similar in 2019, only a good percentage point lower than the year before.

FIGURE 13: CONSUMPTION, PRODUCTION AND COVERAGE OF CONSUMPTION BY DOMESTIC PRODUCTION IN THE 2015–2019 PERIOD



Sources: Electricity system operators, Energy Agency

Consumers in the power system

0.4%
more end consumers of electricity

At the end of 2019, a total of 960,051 end electricity consumers were connected to the Slovenian power system. In comparison with 2018, their number increased by 4,815, or 0.4%.

The number of household consumers with two-tariff metering increased by 1.3%, while the number of household consumers with single-tariff metering decreased by the same percentage. The number of all household consumers increased by 0.5%.

Consumers in the distribution system also include consumers with an installed production unit (PX3 connection scheme) and consumers who are connected to a self-supply system. In 2019, 649 business and 102 household consumers with an installed production unit were also connected to the distribution system. Further, 200 business and 4,524 household consumers who are self-suppliers were connected to the distribution system. Of all consumers in the distribution system, 0.6% were simultaneously in the role of electricity consumer and producer.

The number of business consumers in the transmission system did not change in comparison with the previous year. Three business consumers were connected to the transmission system at five delivery points and four closed distribution system operators at five locations, supplying electricity to 230 business consumers. Of these, 12 business consumers were connected with an installed production unit, and nine business consumers in closed distribution systems were self-suppliers of electricity.

0.6%
of all users in the distribution system were simultaneously in the role of electricity consumer and producer

TABLE 6: NUMBER OF END ELECTRICITY CONSUMERS BY CONSUMPTION TYPE IN THE 2017–2019 PERIOD

Number of end consumers by consumption type	2017	2018	2019
Business consumers in the transmission system	3	3	3
Consumption by Avče PSHPP in the pumping regime	1	1	1
Total business consumers in the transmission system	**4**	**4**	**4**
Business consumers in the distribution system	107,463	109,117	108,943
Household consumers	842,484	846,575	850,874
• single-tariff metering	257,586	254,491	251,912
• two-tariff metering	584,898	592,084	598,962
Total end consumers in the distribution system	**949,947**	**955,692**	**959,817**
Business consumers in closed distribution systems	237	228	230
Household consumers	67	0	0
Total end consumers in closed distribution systems	**304**	**228**	**230**
Total end consumers	**950,255**	**955,924**	**960,051**

Sources: Electricity system operators, Energy Agency

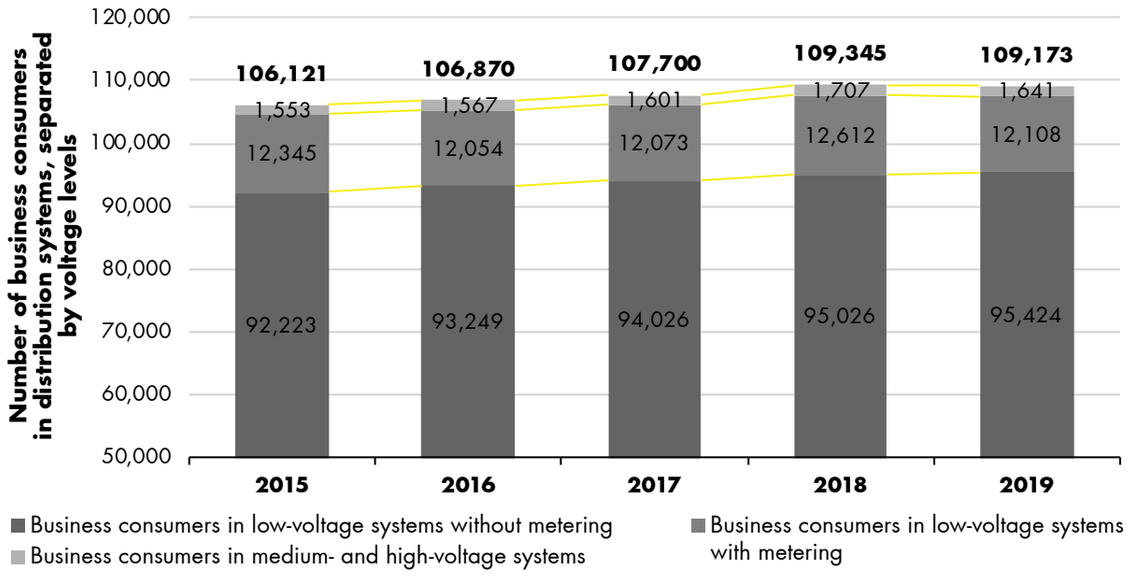
TABLE 7: NUMBER OF END ELECTRICITY CONSUMERS BY CONNECTION TYPE IN THE 2017–2019 PERIOD

End consumer connection method	End consumers in the distribution system			End consumers in closed distribution systems			Total		
	2017	2018	2019	2017	2018	2019	2017	2018	2019
Without connected production devices									
Business	106,827	108,359	108,094	216	207	209	107,043	108,566	108,303
Household	841,540	844,417	846,248	67	0	0	841,607	844,417	846,248
Total	948,367	952,776	954,342	283	207	209	948,650	952,983	954,551
Installed production unit									
Business	609	689	649	12	12	12	621	701	661
Household	77	20	102	0	0	0	77	20	102
Total	686	709	751	12	12	12	698	721	763
Self-supply									
Business	27	69	200	9	9	9	36	78	209
Household	867	2,138	4,524	0	0	0	867	2,138	4,524
Total	894	2,207	4,724	9	9	9	903	2,216	4,733
End consumers in closed distribution systems									
Business	107,463	109,117	108,943	237	228	230	107,700	109,345	109,173
Household	842,484	846,575	850,874	67	0	0	842,551	846,575	850,874
Total	949,947	955,692	959,817	304	228	230	950,251	955,920	960,047
End business consumers in the transmission system							4	4	4
Total end consumers							**950,255**	**955,924**	**960,051**

Sources: Electricity system operators, Energy Agency

Figure 14 shows the trends in the number of all business consumers in the distribution system and closed distribution systems, separated by voltage levels. The number of business customers decreased by 0.2% in 2019 after several years of growth. The largest share of business consumers, as much as 87.4%, is represented by the consumer group at the low-voltage level, whose power is not measured, but is determined by the strength of the current limiting device.

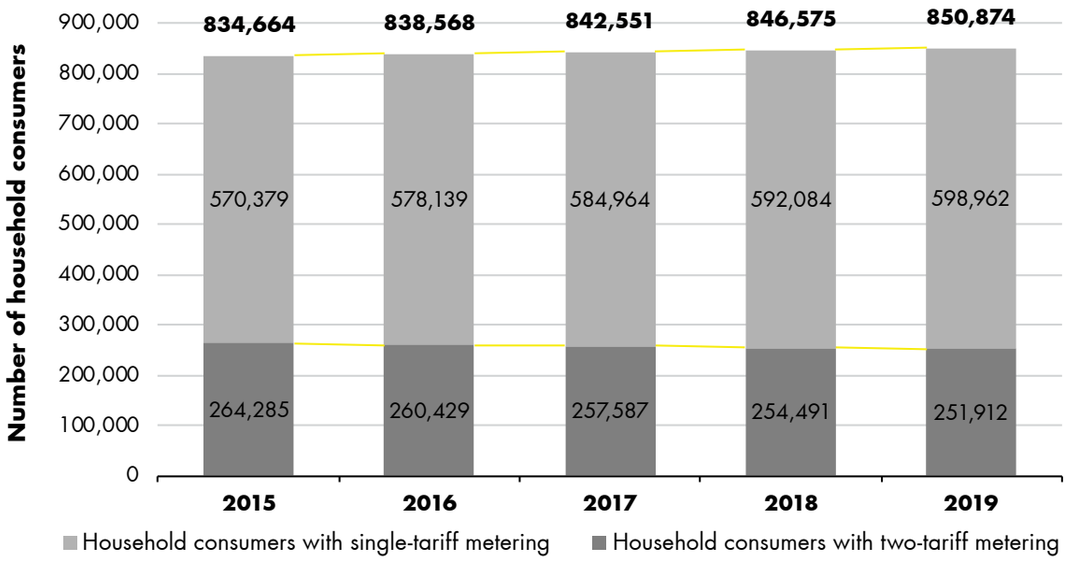
FIGURE 14: NUMBER OF BUSINESS CONSUMERS IN DISTRIBUTION SYSTEMS BY VOLTAGE LEVELS IN THE 2015–2019 PERIOD



Sources: Electricity system operators, Energy Agency

Figure 15 shows the trends in the number of household consumers in the 2015–2019 period. In this period, the total number of household consumers increased by an average of 0.5%. The number of household consumers with two-tariff metering increased by 1.3%, while the number of household consumers with single-tariff metering decreased throughout the period. Multi-year observation of the number of household customers shows a steady increase in the share of customers with two-tariff metering, which allows them to adjust their electricity consumption, i.e. consuming more during the lower tariff, thereby reducing the cost of electricity supply. Consumers with a combination of metering and control devices or advanced metering devices can thus take advantage of the lower tariff period (between 10 p.m. and 6 a.m. and during weekends and holidays), which is an additional incentive for them to save electricity and thus achieve savings in electricity costs.

FIGURE 15: THE TRENDS IN THE NUMBER OF HOUSEHOLD CONSUMERS IN THE 2015–2019 PERIOD



Sources: Electricity system operators, Energy Agency

Renewable energy sources

Share of renewables in final energy consumption

2020 was the final year of the EU climate and energy package commitments, which were implemented in 2009 and aimed to increase the share of renewable energy sources (RES) in final energy consumption by 20%, increase energy efficiency by 20% and reduce greenhouse gas emissions by 20%. Within these commitments, the binding total share of RES in final energy consumption for Slovenia is 25%. The target shares of RES for individual sectors set in the National Renewable Energy Action Plan 2010–2020 are as follows: electricity 39.3%, heating and cooling 30.8% and transport 10.5%. The increase in the share of RES in final energy consumption is influenced by changes in the use of RES and final energy consumption. In 2018, the share of RES in final energy consumption in Slovenia was 21.15%, which was 3.85% less than the target share for 2020, and the estimate for 2019 shows a 3.15% lag behind the target share; it is not possible to catch up on the delay in 2020.

The sectoral target share of RES was exceeded only in energy consumption for heating and cooling. This sector saw a 31.61% share of RES in final energy consumption in 2018, while the 2019 estimate is 31.89%. In addition to the increase in RES used for heating and cooling, the progress is mainly due to the reduction in energy used for heating and cooling, mostly in industry. In the electricity and transport sectors, Slovenia lagged behind the sectoral targets both in 2018 and in 2019, with significant progress being made in the transport sector between 2017 and 2018. According to estimates, this trend continued in 2019 with an estimated 7.09% share. The share of RES in the electricity sector has been between 31.04% and 33.94% since 2009; in 2018, it came in at 32.32%, and the estimate for 2019 shows an increase of 0.21 percentage points compared to the previous year.

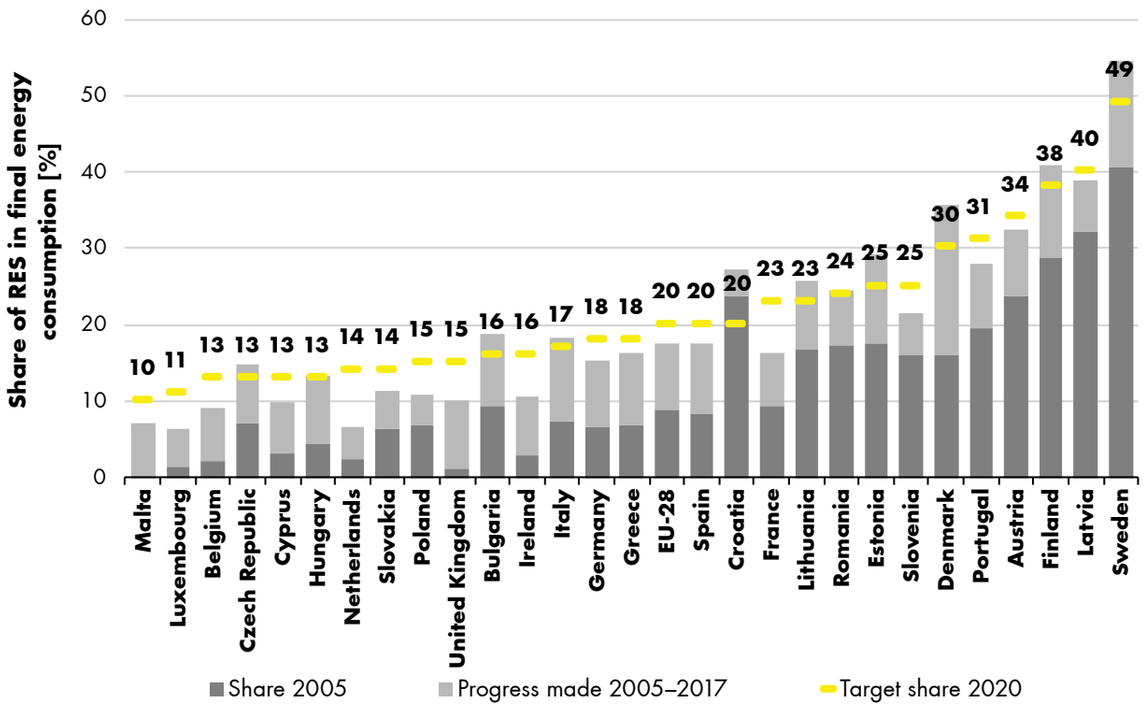
TABLE 8: RES TARGETS ACHIEVED IN THE 2005–2018 PERIOD AND 2019 ESTIMATE

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
RES share [%]																Esti-mate	Target share
RES share	**16.15**	**16.02**	**15.60**	**15.61**	**15.00**	**20.15**	**20.42**	**20.26**	**20.82**	**22.41**	**21.54**	**21.89**	**21.29**	**21.04**	**21.15**	**21.85**	**25.00**
RES heating and cooling	18.36	18.91	18.52	20.39	19.23	27.56	28.15	30.29	31.46	33.40	32.42	33.93	34.02	33.24	31.61	31.89	30.80
Renewable electricity	29.27	28.65	28.23	27.70	29.96	33.76	32.20	31.04	31.63	33.09	33.94	32.73	32.06	32.43	32.32	32.53	39.30
RES in transport	0.85	0.83	1.06	1.47	1.77	2.25	3.12	2.48	3.25	3.77	2.88	2.24	1.60	2.57	5.50	7.09	10.50

Sources: Jožef Stefan Institute, Statistical Office of the Republic of Slovenia

Slovenia's progress in achieving the target share of RES in final energy consumption is comparable to the EU average, and the negative margin places Slovenia among the countries lagging behind the average (Figure 16).

FIGURE 16: PROGRESS OF EU COUNTRIES IN ACHIEVING THE TARGET SHARE OF RES IN THE 2005–2017 PERIOD

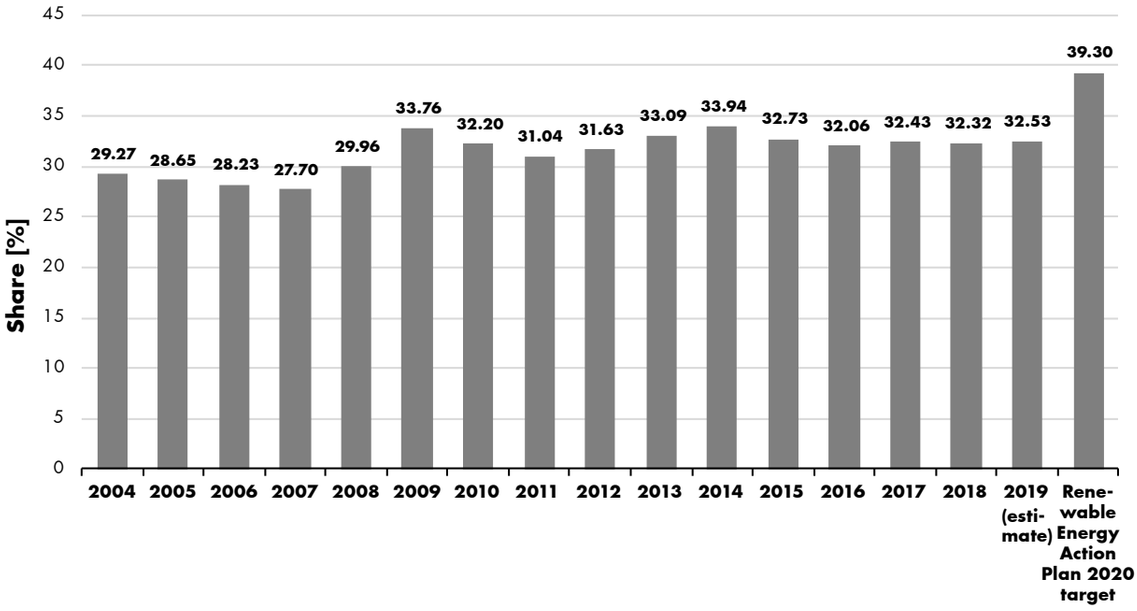


Sources: Jožef Stefan Institute, Eurostat

Share of RES in final energy consumption

In addition to measures aimed at generating final energy consumption savings, renewable electricity is crucial for achieving the target share of renewable electricity in final energy consumption in the electricity sector. Slovenia is bound by the National Renewable Energy Action Plan 2010–2020, according to which it should reach a 39.3% share of renewable electricity in final electricity consumption by 2020. Given the changes in the share of renewable electricity in previous years (Figure 17), it is not realistic to expect that this goal could be achieved.

FIGURE 17: RENEWABLE ELECTRICITY SHARE IN THE 2005–2019 PERIOD



Sources: Jožef Stefan Institute, Statistical Office of the Republic of Slovenia

Renewable electricity share grew by 3.67% in the 2005–2018 period. The greatest progress was made in the 2007–2009 period, which is largely related to the RES share calculation method. In determining the share of RES in final energy consumption, the actual annual electricity production is not taken into account; rather, renewable electricity share is determined using the methodology[1] prescribed in Directive 2009/28/EC. For example, in the case of hydropower plants, which produce the majority of renewable electricity, the methodology eliminates the influence of variable hydrology. It is important to note that in the base year for determining the share of RES, i.e. 2005, the 15-year operating hour average based on Eurostat data amounted to 4225 hours, and, by 2018, it had decreased to 3893 hours or by 7.9%. This resulted in a smaller contribution by hydropower plants to the share of RES, as the electricity produced in hydro power plants increased by 9.8% in the 2005–2018 period, while the actual nominal power of Slovenia's hydro power plants increased by 18.8%.

1 One considers the normalised production of hydropower plants, which is calculated by multiplying the actual power generated in hydro power plants (excluding PSHPP) in the current year and the operating hour average over the last 15 years.

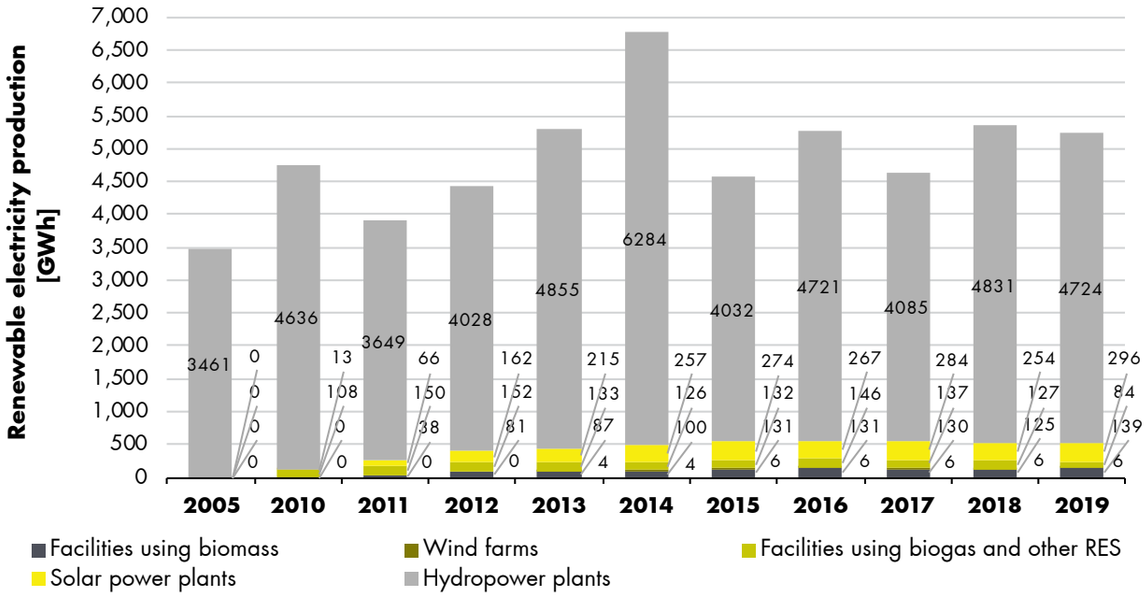
Production from RES

The actual renewable electricity production depends to a large extent on the weather, especially on the hydrological conditions (in hydropower plants) and solar irradiance (in solar power plants).

Renewable electricity production in the 2010–2019 period and in the base year used for defining the target share are shown in Figure 18.

Electricity produced in hydropower plants represents a significant part, on average more than 90% of renewable electricity generated in Slovenia. The implementation of the RES and CHP support scheme in 2009 and thus the possibility of obtaining state aid such an amount that encouraged investors to invest in electricity produced using other RES significantly helped boost solar, woody biomass and biogas as well as wind electricity production.

FIGURE 18: RENEWABLE ELECTRICITY GENERATION IN THE BASE YEAR (2005) AND IN THE 2010–2019 PERIOD



Sources: Energy Agency, Borzen, Statistical Office of the Republic of Slovenia

Measures promoting RES

EU Member States have the possibility to implement a wide range of different measures in promoting renewable electricity production, including using state aid, which, even though being, as a rule, incompatible with the internal market, is permissible under certain exceptions.

One of the leading measures promoting renewable electricity production, which has been established in Slovenia since 2009, are state aid schemes supporting the electricity produced from RES and in CHP plants in the form of guaranteed prices or operating support.

Funds for RES development are also available under investment incentives, mainly as part of cohesion policy measures, which are often combined with a support scheme for investments in RES production facilities.

One of the most important measures aimed at RES development is the increasing self-sufficiency of end consumers, within which household and small business consumers may install renewable electricity production facilities and connect them to the internal installation of buildings as provided by Slovenia's Decree on the Self-Supply of Electricity from Renewable Energy Sources.

RES and CHP support scheme

The state aid scheme promoting the electricity produced using RES and CHP is one of the most important energy policy measures in Slovenia. The RES and CHP support scheme has been used in Slovenia since 2009. Producers are granted state aid for electricity produced using RES and CHP under the support scheme and compensated the difference between the costs of electricity production and the revenues from the sale of such electricity if production costs–including normal market return on investment–exceed the price of such electricity that can be achieved on the market. Prior to the entry into force of Slovenia's Energy Act (Energetski zakon, EZ-1) all producers or investors who installed RES and CHP production units and met the statutory conditions were eligible for state aid. Since the entry into force of the EZ-1, producers or investors may exercise the right to state aid for electricity produced using RES and CHP only if their production unit projects are pre-selected in a competitive procedure of public calls to investors to apply with their RES and CHP production unit projects under a support scheme run by the Energy Agency. With this change, Slovenia harmonised its support scheme with the EU Guidelines on State aid for environmental protection and energy 2014–2020.

The operation of the support scheme is regulated by Slovenia's Decree on support for electricity generated from renewable energy sources and from high-efficiency cogeneration, which determines the organisational structure of the support scheme and the competencies and tasks of the Energy Agency and the Support Centre.

The producer or investor may obtain state aid for electricity produced from the following RES: hydro, wind, solar and geothermal energy, biomass, biogas, landfill gas and gas from treatment plants and biodegradable waste. Since the amendment introduced by the EZ-1, aid can be obtained for electricity produced in RES production facilities not exceeding 10 MW of nominal power, with the exception of wind-powered facilities, in which the limit is 50 MW. In the case of CHP, the support is intended exclusively for high-efficiency cogeneration, which allows for primary energy savings in production facilities not exceeding 20 MW of nominal power.

Support for electricity generated in RES and CHP facilities can be provided as operating support, where producers themselves sell electricity on the market, and as State aid, where the difference between the reference market price of electricity and the set production cost is paid, or as guaranteed purchase of electricity at a predetermined fixed price, which is limited to generating facilities with a nominal power not exceeding 0.5 MW. For RES installations, support can be provided for a maximum of 15 years, and for CHP for a maximum of 10 years. The support scheme includes owners or operators of production facilities who have obtained a declaration for the production facility and a decision on granting support from the Energy Agency and have concluded a support contract with the Support Centre.

Selected RES and CHP production projects as part of public calls

In 2019, the Energy Agency published two public calls for investors to apply with their RES and CHP production projects under a support scheme, one of which was completed in 2019 and another in early 2020.

The public calls for 2019 were published and implemented in accordance with the plan for implementing the support scheme in 2019, which is an integral part of the Energy Balance of the Republic of Slovenia. The plan provided an additional EUR 10 million for each public call, and included the obligation to submit a building permit for the implementation of projects where it was obligatory. The implementation of public calls involves the administrative allocation of funds to support each selected project on an annual basis based on the price of electricity offered in the project application by the applicant and the estimated annual amount of electricity produced in the production plant.

After the first public call (the fifth overall) was published in June 2019, investors applied with 32 RES and CHP production projects, 26 of which were new production plants and six were renovations of existing ones. The second public call (the sixth overall), which was published in December, received 51 applications within the application period, 39 of which were for new and 12 for refurbished production facilities. The various energy technologies represented in both public calls published in 2019 are shown in Table 9.

TABLE 9: OVERVIEW OF APPLICATIONS SUBMITTED TO 2019 PUBLIC CALLS, BY TECHNOLOGY

		Public call – June 2019		Public call – December 2019	
Technology	**Refurbished/ New**	**No. of projects**	**Installed capacity (MW)**	**No. of projects**	**Installed capacity (MW)**
Hydropower plants	**New**	3	0.21	2	0.10
Hydropower plants	**Refurbished**	1	0.15	7	1.83
Solar power plants	**New**	9	2.07	20	7.15
Facilities using woody biomass	**New**	3	2.22	1	0.15
Facilities using woody biomass	**Refurbished**			1	1.27
Fossil fuel CHP	**New**	11	15.47	16	1.28
Fossil fuel CHP	**Refurbished**	5	12.48	4	7.07
Total projects submitted		**32**	**32.60**	**51**	**18.85**

Source: Energy Agency

The selection of projects submitted under the public calls published in 2019 was carried out in a two-round competitive procedure. The distribution of funds between the groups in the first and second round of the public call was adjusted accordingly in accordance with the plan for implementing the support scheme.

Out of a total of 83 projects submitted under public calls published in 2019, 51 projects for RES and CHP production plants were selected.

TABLE 10: OVERVIEW OF PRODUCTION FACILITY PROJECTS SELECTED IN 2019 PUBLIC CALLS, BY TECHNOLOGY

		Public call – June 2019		Public call – December 2019	
Technology	**Refurbished/ New**	**No. of projects**	**Installed capacity (MW)**	**No. of projects**	**Installed capacity (MW)**
Hydropower plants	**New**	1	0.07	2	0.10
Hydropower plants	**Refurbished**	1	0.14	4	0.26
Solar power plants	**New**	3	0.15	12	3.34
Facilities using woody biomass	**New**	1	0.40	1	0.15
Facilities using woody biomass	**Refurbished**			1	1.27
Fossil fuel CHP	**New**	8	13.46	8	0.90
Fossil fuel CHP	**Refurbished**	5	12.48	4	7.07
Total projects selected		**19**	**26.70**	**32**	**13.09**
Total RES		**6**	**0.76**	**20**	**5.12**
Total CHP (using fossil fuels)		**13**	**25.94**	**12**	**7.97**

Source: Energy Agency

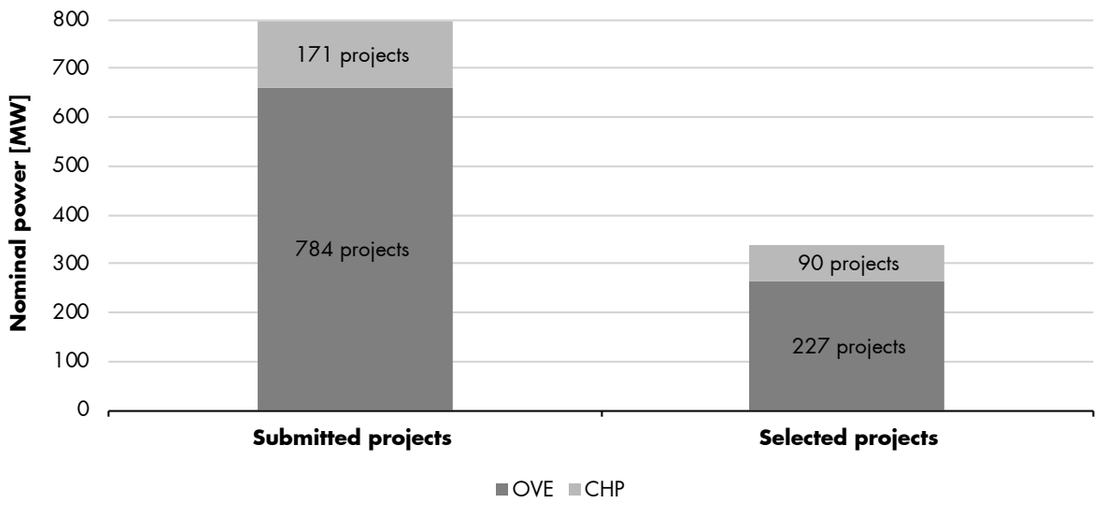
In the June public call, 19 projects with a total nominal power of 26.70 MW were selected, six of which were RES production plants with a total nominal power of 0.76 MW, and 13 were CHP production plants with a total nominal power of 25.94 MW. In the December public call, 32 projects with a total nominal power of 13.09 MW were selected, 20 of which were RES production plants with a total nominal power of 5.12 MW, and 12 were CHP production plants with a total nominal power of 7.97 MW. Due to non-compliance with the application requirements, 32 projects were rejected in the two public calls.

There was a significantly lower number of projects submitted to the last two calls compared to previous years. Therefore, there were fewer projects selected in both public calls. A large part of the available funds remained unallocated, and no project was eliminated due to non-competitiveness. The reason for fewer applications is certainly the requirement to submit a building permit for projects requiring said permit under the Building Act. The smaller volume of allocated funds was also due to the significantly higher reference market price of electricity, which amounted to 64.01 EUR/MWh in 2019, which is 51% more than in the previous year. With such a reference market price, especially when it comes to larger solar power plants, the difference between the market price and the cost of electricity production is almost zero, which means that under the same market conditions, the need for State aid is only a few euros per MWh of electricity produced.

After the implementation of the amended support scheme, the Energy Agency launched a total of six public calls for entry into the support scheme, selecting a total of 955 production facilities with a total nominal power of 796.79 MW and 317 facilities with a total nominal power of 339.03 MW. As many as 784 RES production plant applications were submitted, and 227 of those selected had a total nominal power of 263.61 MW, 214.97 MW of which were wind power plants.

Thus, most of the tendered funds remained unallocated

FIGURE 19: NUMBER AND NOMINAL POWER OF RES AND CHP PRODUCTION PROJECTS SUBMITTED AND SELECTED WITHIN ALL PUBLIC CALLS ORGANISED



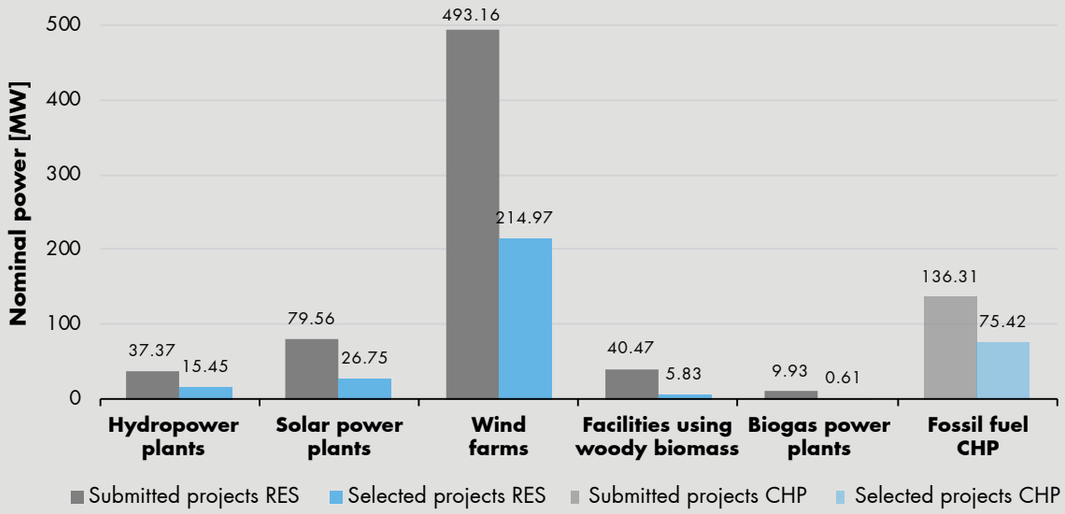
Source: Energy Agency

CASE STUDY: How much renewable electricity could be produced if all the projects selected in public calls were implemented?

The RES and CHP support scheme is one of the most important measures encouraging renewable electricity production. In the 2010–2014 period, 3,479 RES generating plants were included, 3,319 of which were solar power plants, the most in the 2010–2012 period and with a total nominal power of 344 MW. In 2014, they generated a total of 635,002 MWh of electricity. In this period, the support scheme was developing most intensely, mainly due to the favourable relationship between the support amount and market prices of technological equipment, mainly solar power plants. After the support for solar power plants has been reduced and the support scheme amended (introducing a competitive procedure for the selection of projects for production facilities), the support scheme no longer works as an effective RES-promoting measure. At the end of 2019, 3470 RES production plants with a total nominal power of 331 MW were included in the support scheme (out of those only 12 were new production plants with a total nominal power of 1.9 MW and 11 were refurbished hydropower plants with a power of 1.3 MW), which is 13 MW less than in 2014. In 2019, they generated a total of 601,074 MWh of renewable electricity. This is 5% less than in 2014, which is worrying in terms of further growth in RES.

Before the building permit became a mandatory application component, investors within the support scheme showed great interest in RES projects, which is encouraging. Thus, 227 RES production facilities with a total nominal power of 263.61 MW were selected in the six public calls organised so far, with 638 projects having a total nominal power of 457.77 MW having been rejected due to non-competitiveness or incomplete applications. Among the projects selected, wind power plants predominate with 214.97 MW, followed by solar power plants with 26.75 MW and small hydropower plants with a total additional installed nominal power of 15.45 MW (Figure 20). Important for the growth in RES is the fact that the implementation of selected projects would increase the power produced in renewable electricity production plants in the support scheme by 80% or 594.61 MW as early as 2023.

FIGURE 20: RES PROJECTS SUBMITTED AND SELECTED IN PUBLIC CALLS BY TECHNOLOGY AND THEIR NOMINAL POWER



Source: Energy Agency

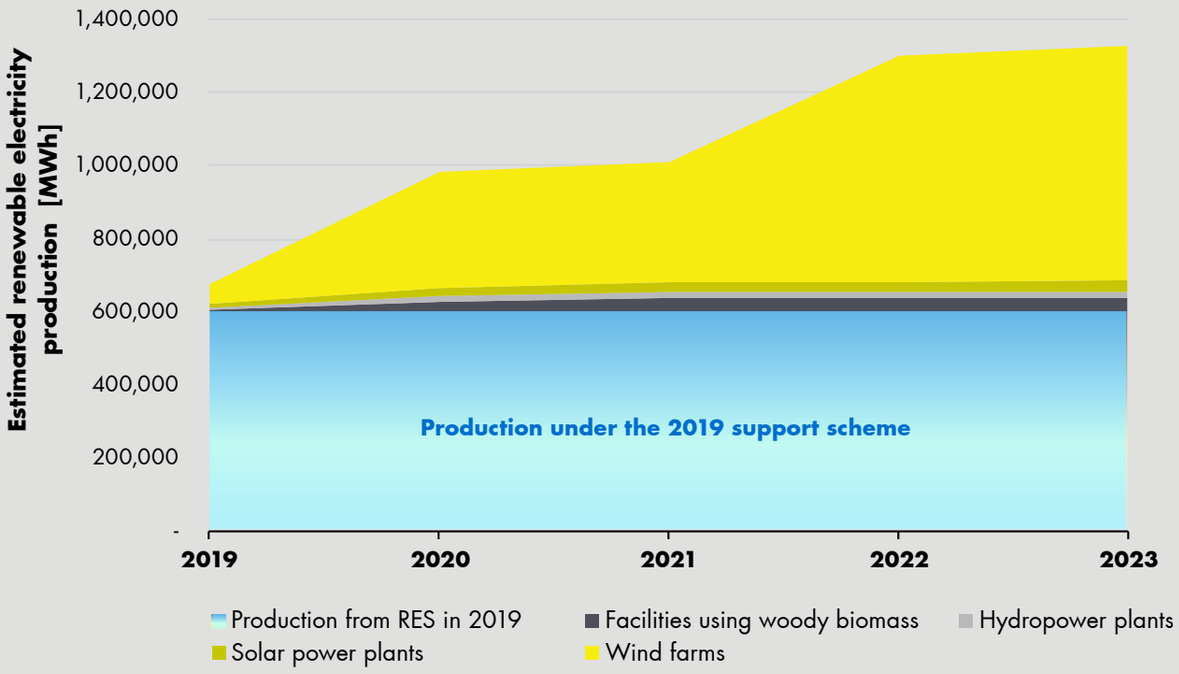
If the projects selected were implemented as announced in the applications[2], the following could happen according to the estimates/forecasts stated by investors in their project documentation:

- by the end of 2019, an additional 77,158 MWh or 13% more renewable electricity could be produced compared to the actual production in that year;
- in 2020, an additional 379,847 MWh would be produced, i.e. 63% more than in 2019;
- in 2023, the production of renewable electricity in the support scheme would increase by 121% compared to 2019, and an additional 728,602 MWh of electricity would be produced, as much as 644,725 MWh of which being wind energy.

Thus, in 2023, the production of renewable electricity could exceed 1.3 TWh.[3]

[2] The announced implementation may differ from the statutory deadline for project implementation and for obtaining a declaration for the production plant.
[3] In the total value the actual renewable electricity produced in 2019 is taken into account.

FIGURE 21: ESTIMATED RENEWABLE ELECTRICITY PRODUCED ACCORDING TO THE PLANNED IMPLEMENTATION DYNAMICS OF PROJECTS SELECTED IN PUBLIC CALLS



Sources: Energy Agency, Borzen

Renewable electricity produced under the support scheme accounted for 4.8% of all electricity produced in Slovenia in 2019. With the implementation of the projects selected, this share would increase to approximately 10% in 2019 if the total amount of electricity produced remained unchanged.

The estimated support would be less than EUR 30 per MWh when applying for the highest permissible electricity prices offered for wind farms and market conditions in 2019. This is less than 15% of the average support distributed per MWh of electricity produced in solar power plants under the support scheme before its amendment. It is roughly estimated that in 2019, under the given market conditions, less than EUR 20 million of support would be allocated for 644,725 MWh of electricity produced in wind power plants.

The completion of selected projects would significantly increase the share of renewable electricity produced from RES. But is it feasible to implement them by a deadline that still allows investors to enter the support scheme? It is a fact that the implementation depends on factors related in particular to spatial planning and the siting of these wind farms, and that the procedures related to the siting of energy facilities are time-consuming.

As part of the public presentation of materials for the amended Renewable Energy Action Plan 2010–2020, which was not implemented, a study was prepared in 2015, which identified 14 areas in Slovenia with sufficient wind potential for the installation of wind farms. Towards the end of 2019, the Ministry of the Environment and Spatial Planning started preparing state spatial plans for eight wind farms with valid energy permits with a total rated power of 155 MW, which are sites of national importance (the criterion is nominal power of at least 10 MW). Also at the municipal level, procedures were underway for some selected projects involving smaller wind farms to amend spatial acts, which would allow the siting of these wind farms.

Experience from the siting of energy facilities, or rather the time required from their conceptual design to implementation, indicates that the completion of selected projects within a period that still allows investors to be eligible for support is questionable. The deadline by which most wind farms need to be finished to still qualify for support expires in 2023. The two ministries responsible for the environment and energy must work together to try and include these projects in spatial acts and guarantee their timely implementation. This would significantly increase the share of renewable electricity.

Checking the status of project implementation

The Decree on support grants the Energy Agency the responsibility to monitor the implementation of projects selected in public calls, with the aim of determining the probability of their actual implementation. In 2019, the Energy Agency checked the implementation phase of the projects for which the announced implementation deadlines (in line with investors' statements made in the application) expired in 2019 or will expire in 2020. The first statutory deadlines for project implementation are not until June 2020. About 67% of selected projects were included in the verification. Most wind farm projects were not checked, as the implementation deadline for most of them is not until 2023.

Based on the documentation and information that investors submitted, one can conclude that 42% of projects, especially solar hydro and CHP plants, will be implemented within the statutory deadline as long as the implementation continues according to the timeline.

Production facilities included in the RES and CHP support scheme, their total nominal power and the amount of electricity produced

At the end of 2019, 3858 production facilities were part of the RES and CHP support scheme. Of all the generating plants under the scheme, solar power plants still predominate. There are 3304 of them, most of which were installed in the 2010–2012 period. At the end of 2012, demand for such investments declined as support for electricity produced at such power plants adapted to market conditions, as required by EU State aid rules, and thus dropped sharply. As many as 388 production plants under the support scheme are CHP plants. In 2019, producers obtained support for 16 production facilities selected in a competitive public call procedure.

3858 production plants under the support scheme

The dynamics of including production facilities in the support scheme in the 2010–2019 period is shown in Table 11, which also shows that from 2016 onwards, the number of production facilities under the support scheme has been declining. For some CHP and hydro power plants, the support eligibility period has expired. Some larger biogas plants were also excluded from the support scheme, mostly because of non-operation, which is mainly due to business difficulties faced by electricity producers. However, a few owners of smaller solar power plants decided to switch to self-supply and withdrew from the support scheme.

TABLE 11: NUMBER OF PRODUCTION FACILITIES UNDER THE SUPPORT SCHEME AND THEIR INCLUSION DYNAMICS IN THE 2010–2019 PERIOD

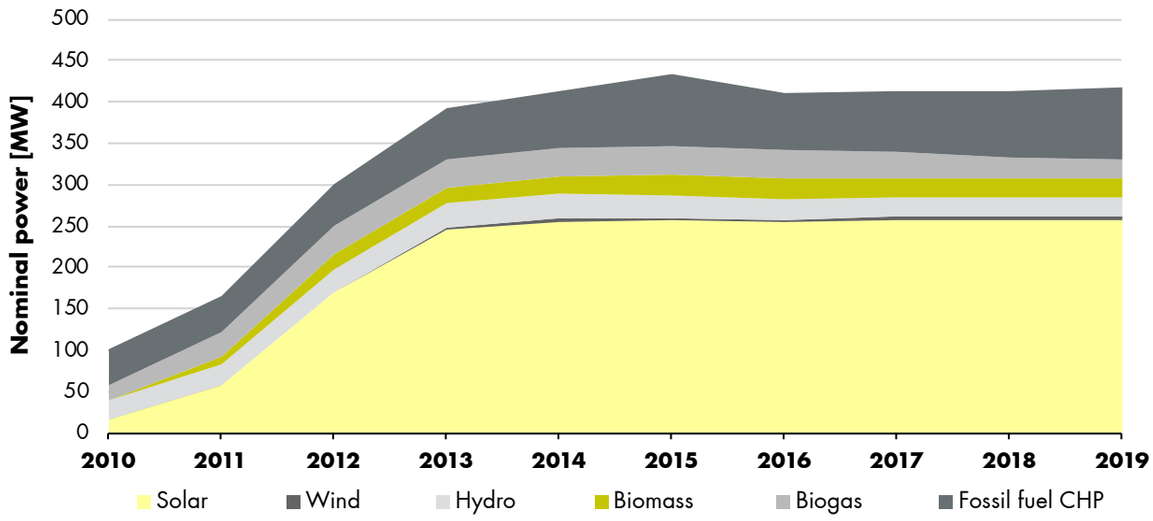
Source	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Solar	381	975	2,406	3,218	3,319	3,339	3,323	3,312	3,301	3,304
Wind	3	4	3	5	4	9	7	7	6	4
Hydro	105	109	108	106	106	106	98	91	93	92
Biomass	0	3	5	10	19	43	44	43	44	46
Biogas	13	26	31	31	31	33	32	31	27	24
Fossil fuel CHP	26	46	89	184	270	390	384	380	388	388
Total	**528**	**1,163**	**2,642**	**3,554**	**3,749**	**3,920**	**3,888**	**3,864**	**3,859**	**3,858**

Sources: Energy Agency, Borzen

Total nominal power of production facilities under the support scheme amounted to 417 MW at the end of 2019. Solar power plants predominate with 258 MW, accounting for 64.5% of the nominal power of all production facilities under the support scheme. In terms of number and nominal power, solar power plants are followed by fossil fuel CHP plants, whose total nominal power amounted to 85.74 MW at the end of 2019. This was just under 7 MW more than in 2018, which is 21.44% of the total nominal power of all production facilities under the scheme in 2019.

417 MW
is the total nominal power of production facilities under the support scheme with solar power

FIGURE 22: TOTAL NOMINAL POWER OF PRODUCTION FACILITIES UNDER THE SUPPORT SCHEME IN THE 2010–2019 PERIOD



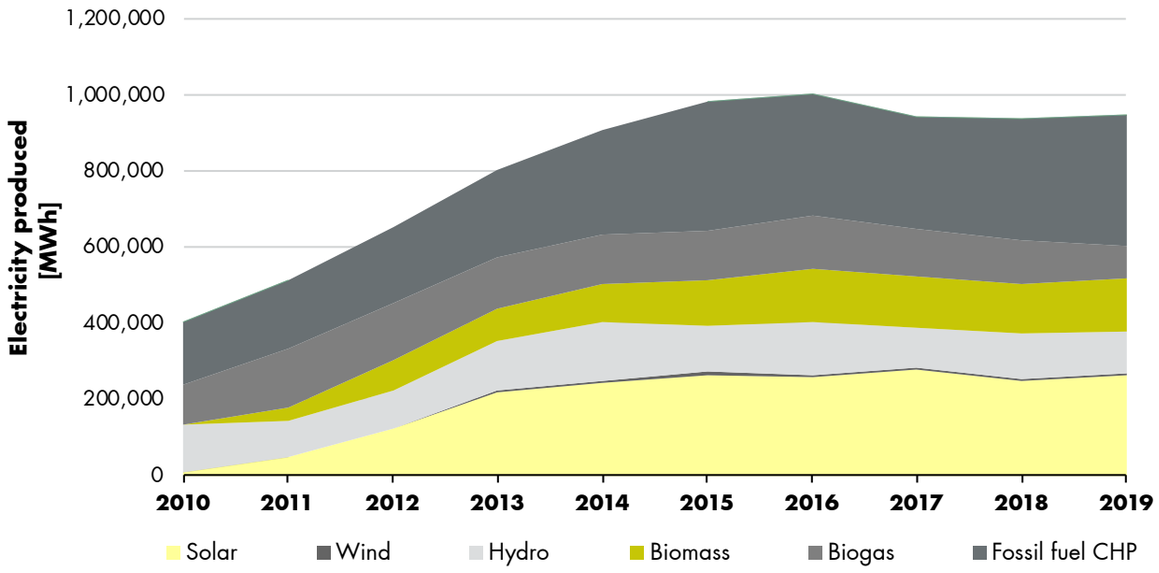
Sources: Energy Agency, Borzen

7.6%
of the electricity produced in Slovenia comes from power plants under the support scheme

Facilities under the support scheme produced a total of 947,481 MWh of electricity in 2019, 601,074 MWh of which was renewable and 346,407 MWh was CHP. In recent years, electricity production has doubled compared to 2010, when the support scheme was launched. After 2016, however, production growth came to a halt. Looking at the amount of electricity produced, fossil fuel CHP plants stood out in 2019, which increased their contribution to the amount of electricity produced by more than 8% compared to the previous year. Solar power plants produced 261,393 MWh of electricity, which is 4.5% more than the year before. Electricity production in hydropower plants was just under 7% lower than in the previous year, which is due to lower rainfall, especially in early 2019, when hydrology was below average compared to the same period in 2018. Compared to the year before, there was a more than 24% decline in electricity produced from biogas.

Figure 23 shows trends in the quantities of electricity produced in production facilities under the support scheme in the 2010–2019 period.

FIGURE 23: ELECTRICITY PRODUCED IN THE 2010–2019 PERIOD, FOR WHICH SUPPORT WAS PAID OUT



Sources: Energy Agency, Borzen

The share of electricity produced in power plants under the support scheme accounts for 7.6% of all electricity produced in Slovenia this year. The share of electricity for which producers receive support is not increasing, but is rather stagnating. In the five-year period shown in Table 12, year-on-year changes are recorded in only tenths of a percent. In the observed period, the share of installed power of power plants included in the support scheme remains almost the same. For the second year in a row, it amounted to 11.5%, with only minor changes in the five-year period. The annual increase in the installed power of power plants under the support scheme amounted to 4.7 MW.

TABLE 12: SHARE OF INSTALLED POWER AND ELECTRICITY PRODUCED UNDER THE SUPPORT SCHEME

Year	Installed power under the support scheme (MW)	Total installed capacity in Slovenia (MW)	Share of installed power under the support scheme	Electricity produced under the support scheme (GWh)	Total electricity produced in Slovenia (GWh)	The share of electricity produced under the support scheme (GWh)
2015	432.8	3,542.2	12.2%	980.8	11,740.9	**8.4%**
2016	412.0	3,536.6	11.7%	1,003.5	13,029.5	**7.7%**
2017	412.3	3,490.7	11.8%	944.9	12,456.7	**7.6%**
2018	412.4	3,584.0	11.5%	937.9	12,578.8	**7.5%**
2019	417.1	3,617.7	11.5%	947.5	12,511.1	**7.6%**

Sources: Sources: Borzen, Energy Agency

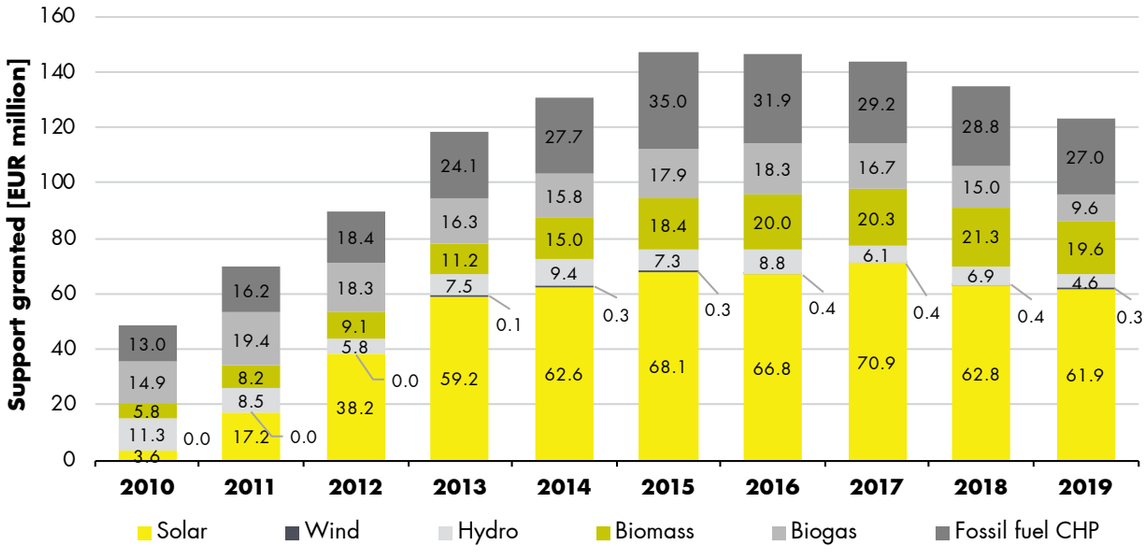
Aid granted – support scheme costs

In 2019, EUR 123.01 million was paid to electricity producers eligible for RES and CHP support. This was EUR 12.11 million less than in the previous year. In 2019, more than 78% of the total aid granted (EUR 96.02 million) was intended to support the production of renewable electricity, with support for solar power plants still predominating. Of the total amount of aid paid out in 2019, more than 97% was intended for production facilities included in the support scheme before the entry into force of the EZ-1, and EUR 3.6 million was paid for electricity produced in RES and CHP plants that have been included in the support scheme through the selection of projects in public calls. In total, from the launch of the support scheme in 2010 to 2019, a good billion euros in subsidies was paid to electricity producers for a total of 8,095,651 MWh of electricity produced under the support scheme.

With the obviously lower production of electricity in biogas plants, the lower value of subsidies granted was mainly due to the higher reference market price of electricity, which affects the value of operating support payments. The support is calculated as the difference between the reference costs of electricity production or the cost value of electricity production in an individual production plant and the reference market price of electricity[4]. The latter amounted to 64.01 EUR/MWh in 2019, which was 51% more than in 2018 and as much as 73% more than in 2016.

97%
of all funds spent on production facilities under the support scheme before the entry into force of the EZ-1

FIGURE 24: SUPPORT GRANTED IN THE 2010–2019 PERIOD

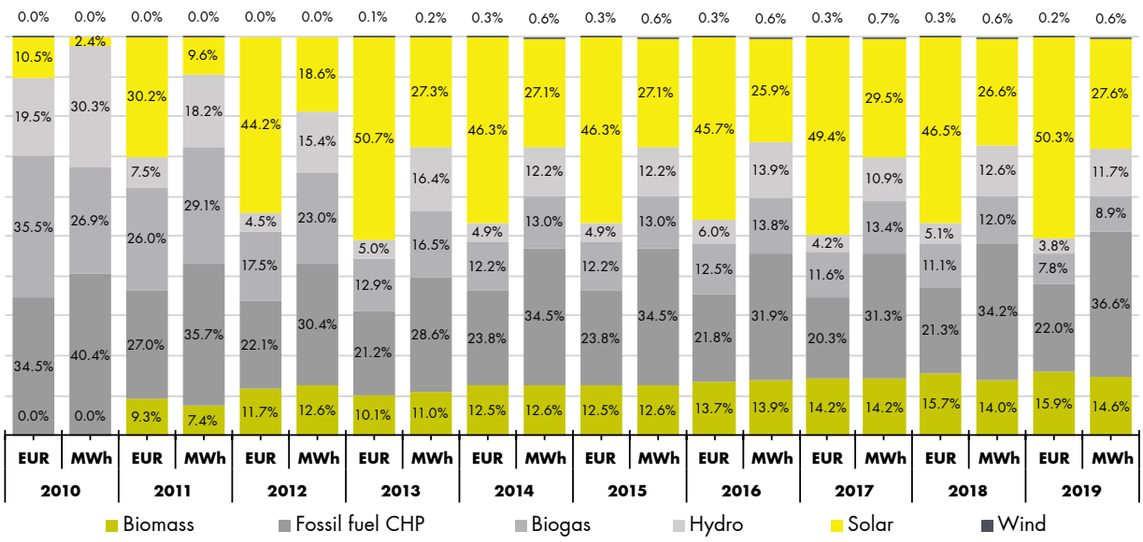


Source: Borzen

[4] The reference market price of electricity is set based on the Decree on the rules for drafting forecasts of the position on the electricity market of units generating electricity from renewable energy sources and high-efficiency cogeneration.

Figure 25 shows the ratio between the share of support payments and the share of electricity produced by each source. The ratio was most favourable for the production of electricity in hydro power plants and fossil-fuel-powered CHP plants, meaning that on average a lower amount of support is granted for the production of such electricity compared to the rest of the electricity produced under the support scheme. The least favourable ratio is the one between the support paid out and the electricity produced in solar power plants and some smaller woody biomass production facilities. The only exception is solar power plants that were included in the support scheme as part of public call selection procedures, where the offered electricity price–on which the support amount depends–is significantly lower, as shown in Figure 25.

FIGURE 25: RATIO BETWEEN THE SUPPORT PAID OUT AND THE ELECTRICITY PRODUCED, BY ENERGY SOURCE, IN THE 2010–2019 PERIOD



Sources: Energy Agency, Borzen

As the support scheme was amended and competitive procedures introduced, the values of support for individual technologies also decreased, mostly for electricity produced in solar power plants, as well as in woody biomass power plants and CHP plants (Figure 26). The values have been adjusted to market conditions, as required by the EU State aid rules. The competitive selection process further encourages investors to submit cost-effective and competitive projects, which further reduces the amount of support in each subsequent public call.

As a result, electricity from production facilities implemented as part of projects selected in public calls requires, on average, significantly less funding per MWh of electricity produced than for electricity from production facilities that were included in the support scheme before the scheme was amended. Thus, the average value of support granted[5] per MWh of electricity produced in generation facilities selected in 2019 public calls was 34.49 EUR/MWh, while the average value of support granted for electricity produced in generation facilities included in the support scheme before it was amended was 141.62 EUR/MWh.

Significant decrease in support amount – the average amount of support paid out in 2019 for production facilities before the introduction of public calls was

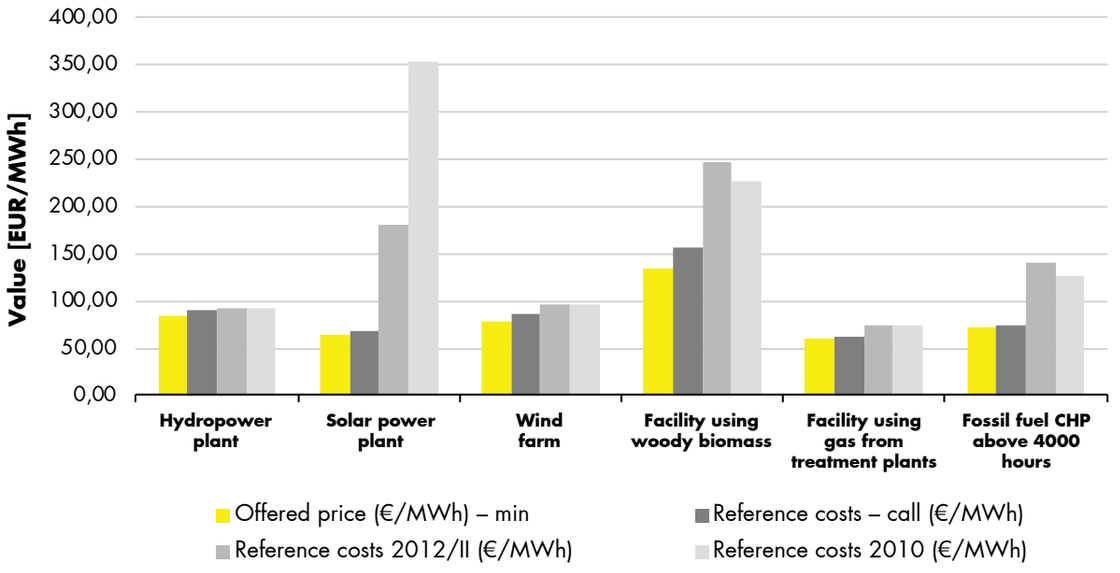
141.62 EUR/MWh,

while the amount for production facilities selected in public calls was only

34.49 EUR/MWh

[5] The support amount is the difference between the reference costs or the price of electricity offered at the public call and the reference market price of electricity.

FIGURE 26: COMPARISON OF THE LOWEST BIDDING PRICE OF ELECTRICITY IN THE SELECTED PROJECTS (CERTAIN TECHNOLOGIES), AND REFERENCE ELECTRICITY PRODUCTION COSTS FOR THE SAME TECHNOLOGIES BEFORE AND AFTER RES AND CHP SUPPORT SCHEME AMENDMENT



Source: Energy Agency

Funding for the support scheme is provided by a public levy, i.e. by providing support for the production of renewable electricity and for high-efficiency cogeneration. This levy is paid by law by all end consumers of electricity and solid, liquid and gaseous fossil fuels and final-use district heating. In 2016, the contribution per unit of electricity was reduced for end consumers of energy-intensive economic activities, but other than that the amount contributions for individual energy sources has not changed since 2014.

4,686
self-supply devices

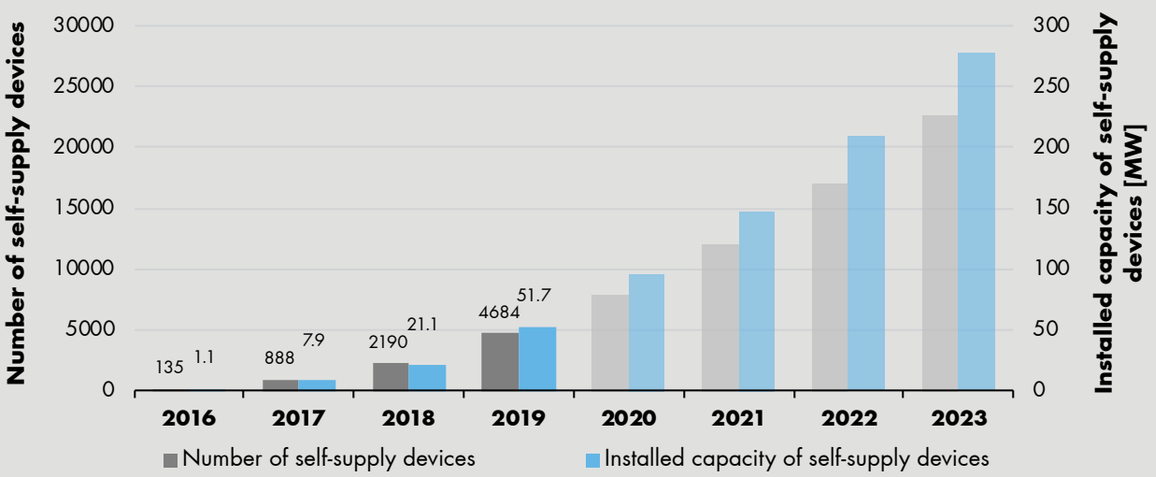
Renewable electricity self-supply

After the Decree on the self-supply of electricity from renewable energy sources was adopted at the end of 2015, the first self-supply devices were installed in 2016. That year, only 135 self-supply devices with a total installed capacity of 1.1 MW were connected to the distribution network, and in 2019, 2,494 devices with a total connection capacity of almost 31 MW were newly connected. In 2019, as many as 4,686 self-supply devices with a total installed capacity of 51.7 MW and an average installed capacity of 11.1 kW were in operation. As the number of self-supplying customers grows, so does the average power of self-supply devices. In 2016, the average power of a newly connected self-supply device was 8.1 kW, and in 2019 it grew to 12.3 kW. The increase in the power of self-supply devices can be linked to the increasing use of electricity for heating buildings with heat pumps, and the emerging interest in using self-supply measures to charge electric vehicles at home.

CASE STUDY: Assessment of self-supply trends and scenarios

Based on data from the last four years, the Energy Agency made an estimate of the increase in the number (using a second-degree polynomial) and total power of self-supply devices until 2023 (taking into account the average power of devices connected in 2019). Under such dynamics, almost 23,000 customers are expected to be self-sufficient in electricity with the total power of self-supply devices amounting to almost 278 MW by the end of 2023.

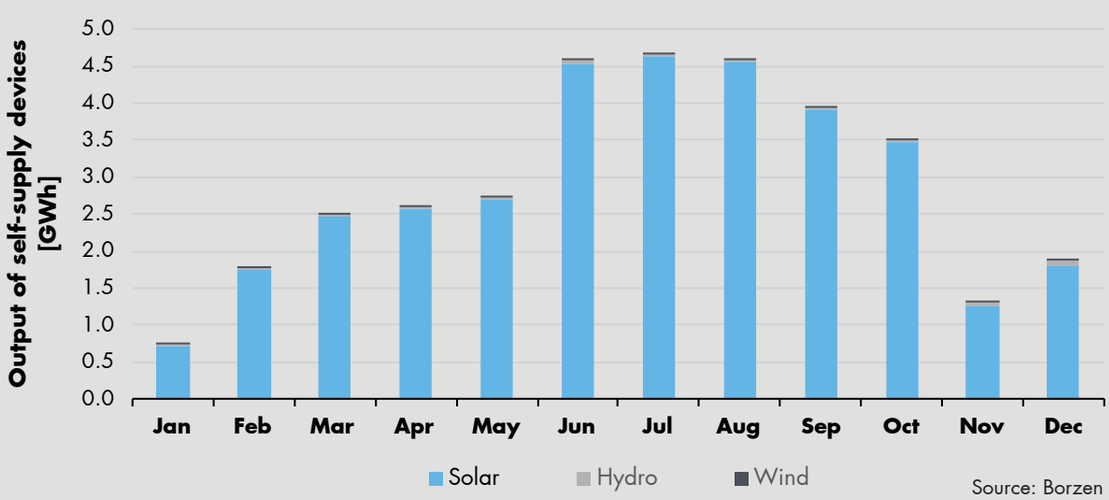
FIGURE 27: NUMBER AND INSTALLED CAPACITY OF SELF-SUPPLY DEVICES IN THE 2016–2019 PERIOD AND FORECAST UNTIL 2023



Sources: Energy Agency, SODO, electricity distribution companies, Borzen

Due to the measuring method and the annual netting electricity produced and consumed, the annual production of electricity in self-supply devices connected behind the end consumer delivery point can only be estimated. This estimate depends on the type of production facility, the installed capacity and the reference monthly operating hours. As much as 99.5% of all self-supply devices are solar power plants, which is why the estimated electricity production depends heavily on the time of year and geographical and weather factors. In 2016, the estimated amount of electricity produced in self-supply devices was only 0.6 GWh, and in 2019 it was already 34.75 GWh.

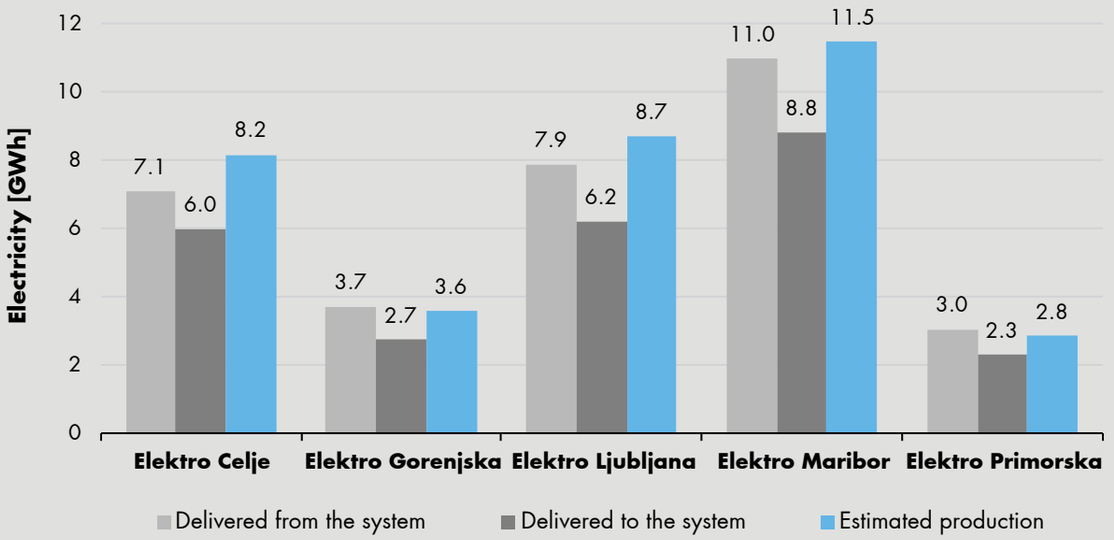
FIGURE 28: ESTIMATED OUTPUT OF SELF-SUPPLY DEVICES IN 2019 BY MONTH AND TECHNOLOGY



Source: Borzen

Analysis of the delivery and transmission of electricity at self-supplying consumers' metering points shows that there are significant electricity exchanges between consumers' metering points and the network. This can be explained by the mismatch between the electricity produced and consumed by self-supplying consumers. The billing method according to the annual netting principle does not encourage consumers to balance electricity consumption and production at their metering points as much as possible over time or to take other measures, e.g. install energy storage devices to minimise the exchange/flow of electricity to and from the distribution network. In addition to ensuring a high level of consumer self-sufficiency, these measures would also put minimal pressure on the costs of distribution network reinforcements and expansions that are occurring due to distributed production.

FIGURE 29: DELIVERY AND TRANSMISSION AND ESTIMATED PRODUCTION OF ELECTRICITY AT SELF-SUPPLYING CONSUMERS' METERING POINTS



Sources: Electricity distribution companies, Borzen

Self-supplying consumers are charged practically nothing for the electricity delivered, although, due to their operating regime, they significantly rely on the network for electricity intended for final consumption. The reason for this is that the current calculation is made based on the difference between electricity supply and demand in the accounting period of the calendar year–if the self-supply devices are sized correctly, electricity supply and demand are approximately balanced out or netted. As the number of self-supplying consumers grows, this results in an increasing deficit in network charges, which are the main source for covering the construction, operation and maintenance costs pertaining to electricity networks. The network charge deficit will have to be covered by other consumers, who will thus be put in an unequal position compared to self-supplying consumers. Given the projected increase in the number of self-supplying consumers (23,000 by 2023) and considering the network charges collected in 2019, the network deficit in 2023 may amount to approximately EUR 8.9 million, or about 2.4% of the total transmission and distribution network charge if the network tariff rates and consumption remain the same. If there were 100,000 self-supplying consumers, the deficit would amount to EUR 39.5 million or almost 11% of the total network charge. These estimates are based on the assumption of ideal netting, which means that customers with self-supply devices consume the same amount of electricity as produced in their self-supply devices during the billing period of a calendar year, and therefore, are not charged for electricity consumed.

The broader benefits of incorporating self-supply devices and the costs that these devices cause to the system will need to be analysed in more detail. In this way, it will be possible to create the necessary user categories and set the corresponding tariff items.

Subsidising RES development within the cohesion policy

In March 2019, the Ministry of Infrastructure published a public call for co-financing the purchase and installation of solar power facilities for the 2019–2022 period within the Operational Programme for the Implementation of the EU Cohesion Policy in the 2014–2020 period (Sustainable consumption and production of energy and smart grids priority axis, Promoting the production and distribution of energy derived from renewable sources priority investment and the specific objective of increasing the share of RES in end-use energy consumption). The entire EUR 10 million available in the call comes from the Cohesion Fund. The tendered funds are intended as grants co-financing the purchase and installation of solar power facilities in the amount of 20% of eligible investment costs, but not more than EUR 200 per kW of installed nominal power.

The submission deadline is 25 September 2020, or earlier if the available funds are used up earlier. Between the publication and the end of the call, five interim submission deadlines were set, three of which were in 2019 and the fourth at the end of February 2020, while the last submission deadline is 25 September 2020.

Following the 2019 interim submission deadlines, 24 projects were approved distributing a total of EUR 1.22 million in EU grants. The total nominal power of solar power plants in approved projects is 7.13 MW. Approved projects must be implemented by 31 October 2022 at the latest.

Thus, EUR 8.78 million remained available for the remaining submission deadlines–of this, EUR 0.89 million in grants was reserved for 27 projects submitted within the fourth application deadline, which was 28 February 2020.

Regulation of network activities

Unbundling of activities

Electricity transmission and distribution companies must keep separate accounting records of transmission and distribution activities, as if these activities were carried out by separate companies.

The service of general economic interest provided by the transmission system operator (hereinafter: TSO) is performed as a legal entity which, in addition to the transmission activity, also performs other non-electricity-related activities. In its annual report, ELES shows separate accounting records for the two activities, as well as the criteria for the allocation of assets and liabilities, costs, expenses and revenues used.

The service of general economic interest provided the distribution system operator (hereinafter: DSO) is performed as a separate legal entity and is the only activity performed by this entity. For regulation purposes, SODO does not keep separate accounts.

Following the consent of the Government of the Republic of Slovenia, SODO transferred the services of general economic interest provided by the DSO to the distribution companies. Distribution companies engage in other non-energy related activities, which is why they provide separate accounting records and separate financial statements. In their annual reports, distribution companies provide separate accounting records for said activities, as well as the criteria for the allocation of assets and liabilities, costs, expenses and revenues used.

Technical services

Ancillary services

Ancillary services are the services provided by a system operator to safeguard normal network operation. These services comprise the following:

- frequency control (older term: primary regulation);
- automatic frequency restoration process (aFRP; older term: secondary regulation);
- manual frequency restoration process (mFRP; older term: tertiary regulation);
- voltage and reactive power regulation;
- the provision of a black start (system restart).

The TSO purchases all system services except frequency control from providers in the market. In 2019, the participation in frequency control was mandatory for all production facilities connected to the transmission system and was free of charge. The provision of the remaining ancillary services was financed from the transmission network charge.

Ancillary services are divided into frequency services, which include frequency control, aFRP and mFRP, and non-frequency services, which include voltage and reactive power regulation and the provision of a black start. Frequency ancillary services belong to balancing services in the electricity system in addition to purchasing on the balancing market. The required scope of frequency services can be evaluated using the volume of reserve in MW, while for non-frequency ancillary services appropriate geographical distribution of providers throughout the transmission system is required. Frequency control reserve is denoted by FCR, automatic frequency restoration reserve by aFRR, and manual frequency restoration reserve by mFRR. For 2019, ELES has planned the following scope of frequency ancillary services:

- FCR: between ±14 and ±18 MW;
- aFRR: +60 MW, –60 MW;
- mFRR: +250 MW, –71 MW;

The projected volume of frequency system services for frequency control and aFRR was the same in 2019 as in previous years, but the required mFRR decreased significantly, as the TSO complied with the provisions of the reserve sharing agreement in the SCB control unit (Slovenia, Croatia, Bosnia and Herzegovina). At the block level, ELES must provide frequency control reserve at the level of the potential outage of the largest production and consumption unit. In the SCB block, these are outages of the Krško NPP and the Avče PSHPP in the pumping regime. The participating TSOs of the three countries shall contribute their share of the reserve, which is calculated based on the regulatory block operating agreement.

In the field of frequency ancillary services, the provisions of Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing were fully implemented in 2019. This Regulation introduces not only new designations for these services but also additional requirements. Among the most important is the demand for the elimination of symmetrical products. Until 2018, ELES purchased a symmetrical aFRR product from its bidders, and in 2019, it had to carry out separate procedures for leasing reserves in both positive and negative directions. Due to the requirement of the Regulation to shorten the lease of frequency ancillary services, in 2019 ELES continued the practice (beginning the year before) of leasing a part of mFRR at monthly auctions.

ELES selected ancillary service providers for 2019 at the end of 2018. In a negotiation process, ELES selected the providers of aFRP ancillary services, voltage and reactive power regulation, and the provision of a black start. They selected the positive mFRP bidders through auctions, the details of which are shown in Table 13.

TABLE 13: PRODUCTS FOR THE POSITIVE TERTIARY RESERVE

	Five-year product	2019 product	Monthly product
Lease period	2019–2023	2019	Month
Quantity (MW)	178	72	20
Reserve source	Slovenia	Slovenia	Slovenia
Activation time	≤12.5 min	≤15 min	≤15 min
Time to announce activation changes	≤12.5 min	≤15 min	≤15 min
Number of activations	Unlimited	Unlimited	Unlimited
Period of unavailability after activation	0 min	0 min	0 min
Duration of one activation	Unlimited	≤4 h	≤4 h

Source: ELES

In addition to bidders with conventional power plants, bidders with demand adjustment and distributed production participated in the auctions for annual and monthly products. As part of the annual product, such providers participate with a total of 27 MW. Each month, 20 MW were offered at monthly auctions. Only at the first auction for January 2020, were all quantities not distributed, because the bidding prices were too high. For this month, ELES therefore leased only 5 MW at the monthly auction, which means that Slovenia lacked 15 MW of positive mFRR.

At the end of 2018, the TSO also conducted an auction for negative mFRP providers. Bidders with demand adjustment and distributed production participated in the auction too. In 2019, these providers provided a total of 15 MW mFRR out of a total of 71 MW.

Table 14 shows the total costs of individual ancillary services for 2019. Only the costs financed from the transmission system network charge are shown. These are the costs of all non-frequency ancillary services and the costs of leasing reserves for frequency ancillary services. Energy activation costs for frequency ancillary services are financed from the imbalance settlement, the costs of which are covered by the balance responsible parties.

TABLE 14: COSTS OF PROVIDING ANCILLARY SERVICES FINANCED FROM THE NETWORK CHARGE

Ancillary service	Cost in 2019 without VAT (EUR)
Positive aFRP	4,756,154
Negative aFRP	4,741,832
Positive mFRP	11,967,950
Negative mFRP	3,677,851
Voltage and reactive power regulation	6,294,854
Provision of a black start (system restart)	1,794,054
Total	**33,232,695**

Source: ELES

In 2019, ELES activated 70.3 GWh of positive and 88.3 GWh of negative energy in performing aFRP. This is significantly less than the year before, when it activated 82.3 GWh of positive and 118.1 GWh of negative energy. It should be added that in 2019 it exported 98.4 GWh to eliminate positive deviations and imported 40.6 GWh to eliminate negative deviations as part of the IGCC ELES project. In performing mFRP, ELES activated 2,394 MWh of positive energy, which is 3,822 MWh or 62% less than the year before. Compared to 2018, the number of mFRR activations decreased significantly (from 27 to 8 events). Most of the energy, 77%, was activated at domestic bidders, and the remaining 23% was contributed by providers from the other two regulation areas of the SCB regulation block. There was only one instance of negative mFRR activation, namely in August, when 51.5 MWh of negative balancing energy was activated.

In 2019, Slovenia prepared intensively to implement the provisions of the EU Regulation 2019/2195. Thus, in February, the Energy Agency issued a consent to the Rules and conditions for providers of balancing services on the ELES balancing market, based on which the provision of all frequency ancillary services will take place on market bases via a national-level platform from 2020 onwards. For this purpose, the TSO developed and, working with market participants, tested a platform in 2019. By 2022, the platform is expected to join the pan-European platform for the exchange of aFRR (PICASSO) and mFRR (MARI). In 2019, the TSO also worked hard on testing balancing service providers. Starting in 2020 it will be necessary to pass the test to become part of the national platform.

The balancing and imbalance settlement

In Slovenia, ELES–the TSO–is responsible for balancing electricity system deviations from the predicted values. To correct minor system imbalances, it uses the aFRP reserve, and to correct major imbalances, it uses the mFRP reserve or buy or sell energy on the balancing market.

The costs related to balancing are covered by the balance responsible parties using imbalance settlement.

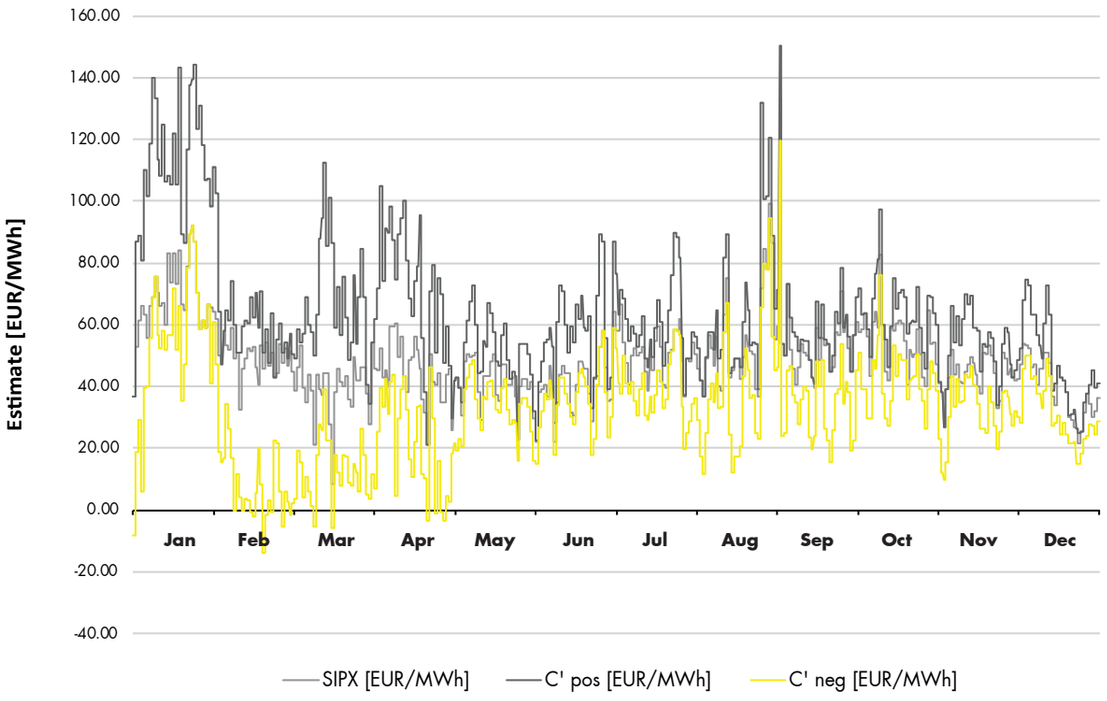
Imbalance settlement rules harmonised with European legislation

In 2019, the new Rules on the operation of the electricity market came into force, introducing important changes into field of imbalance settlement. These changes were largely due to the enforcement of Regulation (EU) 2017/2195. This Regulation stipulates that for a balance responsible party's imbalance, a negative sign indicates a balance responsible party's shortage, and a positive sign a balance responsible party's surplus, which is the opposite of how imbalances were treated in previous years. Because of these provisions, the names of imbalance price indexes changed, namely from C_{+} to C_{neg} and from C_{-} to C_{pos}. The new rules also brought about terminological harmonisation with Regulation (EU) 2017/2195 and a change in the method of performing imbalance settlement in two steps, the second step or the second imbalance settlement being performed only when necessary, for example due to errors or new facts or data.

Average balancing energy prices remained at a similar level as in 2018

Figure 30 shows the trends in the derived imbalance prices of C'_{pos} and C'_{neg} and the price index on the Slovenian electricity exchange (SIPX) in 2019.

FIGURE 30: AVERAGE DAILY VALUES OF BASIC IMBALANCE PRICES C'$_{pos}$ AND C'$_{neg}$ AND SIPX INDEX



Source: Borzen

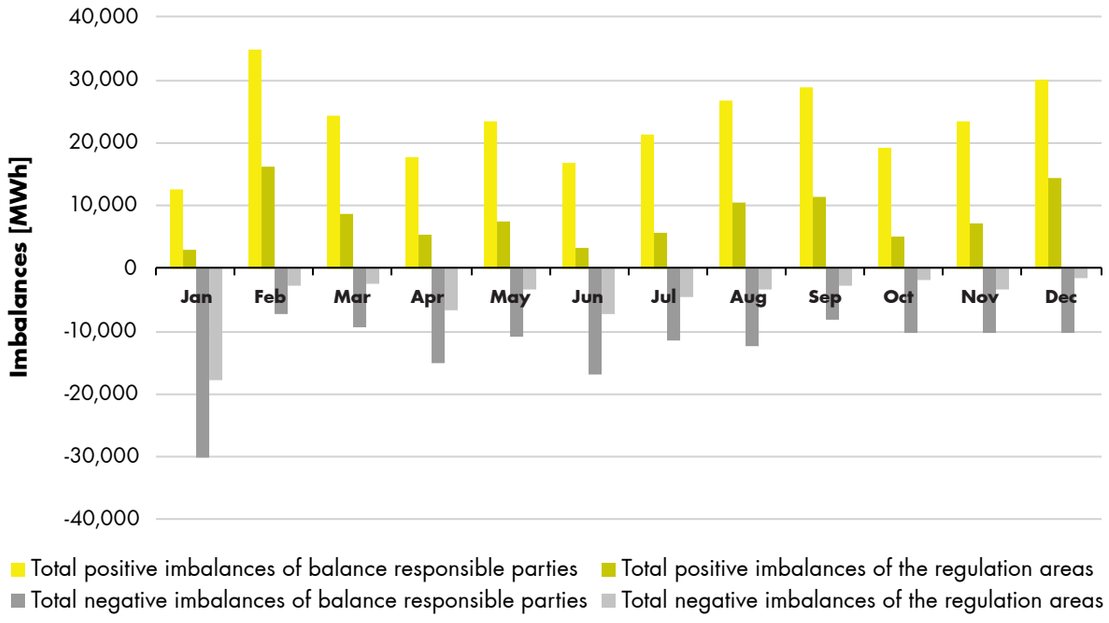
The Slovenian power exchange index (SIPX) is used to calculate the basic prices of C_{pos} in C_{neg} imbalances, and as a result also to calculate the derived prices of C'_{pos} and C'_{neg} imbalances. In 2019, the average value of SIPX amounted to 48.74 EUR/MWh, which is 2.42 EUR/MWh less than in the previous year. SIPX reached its maximum value (200.00 EUR/MWh) on 2 September in the 13th hour, and the lowest (–42.93 EUR/MWh) on 24 December in the 7th hour.

In 2019, the average derived price for negative imbalances (C'_{neg}) was 63.76 EUR/MWh, while the price for positive imbalances (C'_{pos}) was 32.51 EUR/MWh. In this period, the highest price of C'_{neg} was 279.61 EUR/MWh, and the highest price of C'_{pos} was 200.02 EUR/MWh. In the same period, the lowest price of C'_{neg} was –10.79 EUR/MWh, and the lowest price of C'_{pos} was –175.45 EUR/MWh. The price of C'_{neg} was highest on 18 January in the 17th hour, and C'_{pos} on 2 September in the 13th hour. The price of C'_{neg} was lowest on 10 March in the 1st hour, and C'_{pos} on 24 August in the 24th hour.

The chart of price movements in 2019, shown in Figure 30, indicates higher prices at the beginning of the year, followed by stabilisation and decline in the final month. The movement of imbalance prices follows the market situation, while the prices also reflect the peaks in the system balancing costs, as the basic imbalance price is calculated as the ratio between costs and the amount of balancing. For the first four months, the chart also shows a more pronounced gap between the derived prices for positive and negative imbalances, which was the result of high balancing costs. Nevertheless, at least the average balancing prices in 2019 were similar to 2018.

Figure 31 shows the total positive and negative imbalances of all balance responsible parties in Slovenia in 2019, as well as the total imbalances of the Slovenian regulatory area.

FIGURE 31: TOTAL IMBALANCES IN THE SLOVENIAN ELECTRICITY SYSTEM



Sources: Borzen, ELES

The highest positive imbalances of balance groups were recorded in February and the highest negative in January. The total positive annual imbalances of the regulation area amounted to 98,471 MWh, and negative to 57,541 MWh. At the same time, the total positive annual imbalances of all balance responsible parties amounted to 278,713 MWh, and negative to 152,982 MWh. Compared to previous years, in 2019 the positive imbalances both at the level of the regulatory area and at the level of all balance responsible parties increased, while the negative deviations decreased at both levels. The trends in imbalances over the last five years are shown in Table 15, and it should be noted that all imbalances are treated in accordance with the new Rules on the operation of the electricity market. This means that the imbalances that were positive in the reports up to and including 2018 are shown as negative in the table, and vice versa.

TABLE 15: TRENDS IN TOTAL IMBALANCES OF BALANCE RESPONSIBLE PARTIES AND THE REGULATORY AREA IN SLOVENIA IN THE 2015–2019 PERIOD

	2015	2016	2017	2018	2019
Total positive imbalances of balance responsible parties (MWh)	387,450	371,020	326,166	251,711	278,713
Total positive imbalances of the regulation area (MWh)	346,660	378,773	344,064	87,206	98,471
Total negative imbalances of balance responsible parties (MWh)	300,292	239,765	263,038	168,692	152,982
Total positive imbalances of the regulation area (MWh)	258,325	247,527	280,935	83,750	57,541

Sources: Borzen, ELES

As in all previous years, both the system and the balance responsible parties deviated more in the positive than in the negative direction. The main reason is probably the imbalance settlement used in Slovenia, which is based on two prices. There is generally a significant difference between the two. This fact encourages traders to provide themselves with energy surpluses, thus reducing their risks on the market. A large share of positive imbalances, which grew further in 2019, can also be partially contributed to an increasing share of unpredictable generation from RES. With regard to the data in Table 15, it should be noted that system imbalances are generally smaller than balance responsible parties' imbalances, which is attributed to the fact that the latter partially cancel each other out due to different directions of imbalances.

Quality of supply

At the system level, the regulation of quality of supply strives to improve or maintain the achieved level at optimised costs. When considering the quality of supply, various activities are under way, such as monitoring, reporting, analysis, and assessment of the data pertaining to the following observed dimensions: continuity of supply, commercial quality, and voltage quality. In addition, the Energy Agency performs quality of supply regulation by publicly publishing data and analysis included in the report on the quality of supply[6].

In 2019, an assessment of the data on the continuity of supply reported by two distribution companies for the 2018 financial year was performed by the Energy Agency. The assessment identified inconsistencies with reporting rules laid down in the Legal Act on the rules for monitoring the quality of electricity supply. Both distribution companies that were subject to audit performed revisions of the data on the continuity of supply and remedied inconsistencies with the reporting rules. With the audit process, the Energy Agency also assessed the continuity of supply monitoring effectiveness.

Continuity of supply

The data on the continuity of supply are collected, reported, and analysed using a uniform methodology, which ensures mutual comparability of data on the quality of supply among distribution companies and also international comparability of achieved parameters of continuity of supply on the EU level.

Interruptions caused by electricity system operators or distribution companies are classified as internal events, while interruptions caused by third parties are classified as external events. Unexpected or unanticipated events that are not the result of the fault of the TSO or DSO, or third parties, can be classified as force majeure.

In total, electricity supply interruption lasted for **188 minutes**, which is the shortest in the last five years

Based on the data on SAIDI and SAIFI indicators, calculated at the level of individual distribution companies, the Energy Agency calculated the aggregate value of these indicators considering the number of all consumers in Slovenia. By monitoring SAIDI and SAIFI indicators in the observed period, the Agency discovered certain year-on-year fluctuations of the quality of supply. In 2019, electricity supply was interrupted on average more than 3.5 times in a total duration of 188 minutes. In addition, there are year-on-year fluctuations in the quality of supply, which is a direct responsibility of the DSO.

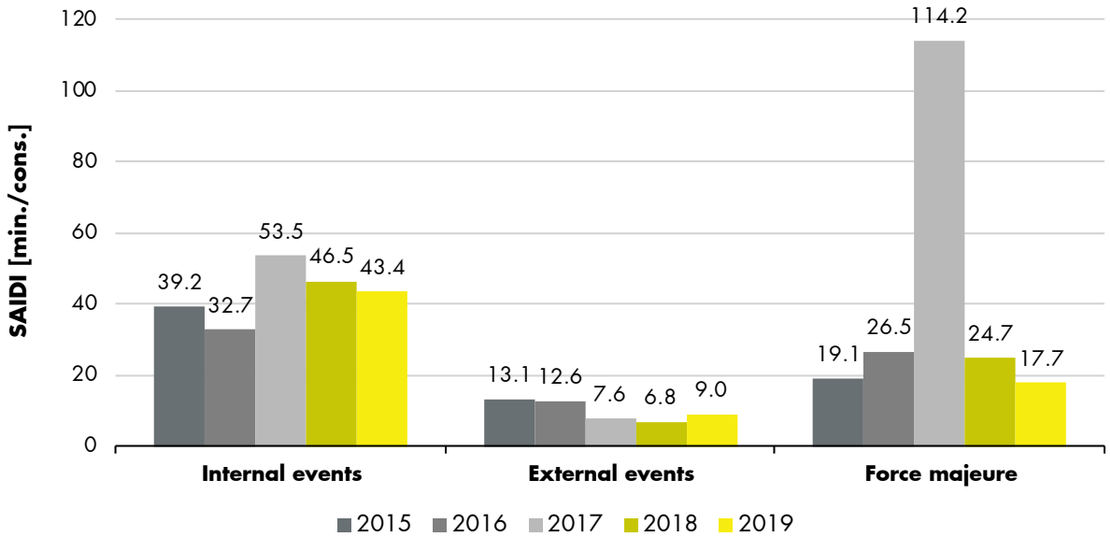
Electricity supply was interrupted on average 2.5 times per year

The Energy Agency also monitors the MAIFI short-term interruptions parameter, which is calculated similarly to the SAIFI parameter. The MAIFI parameter indicates short-term interruptions, which are shorter than three minutes and are not classified by causes. In 2019, the MAIFI value improved once again and reached an average value of 5.6 short-term interruptions per system user.

Figures 32 and 33 show the SAIDI in SAIFI indicators for unplanned long-term interruptions, classified by causes of interruption (internal and external events, and force majeure) for the 2015–2019 period, while Figure 34 shows the MAIFI indicator for the same observed period. All indicators are calculated at the national level.

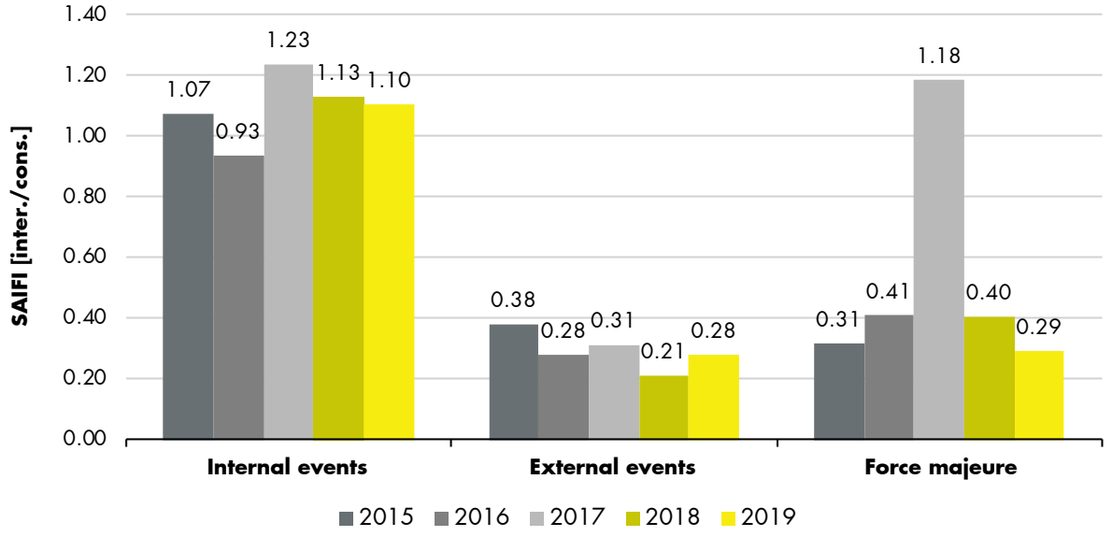
[6] Annual reports on the quality of electricity supply are published on the Energy Agency's website.

FIGURE 32: SAIDI FOR UNPLANNED LONG-TERM INTERRUPTIONS, CLASSIFIED BY CAUSES IN THE 2015–2019 PERIOD



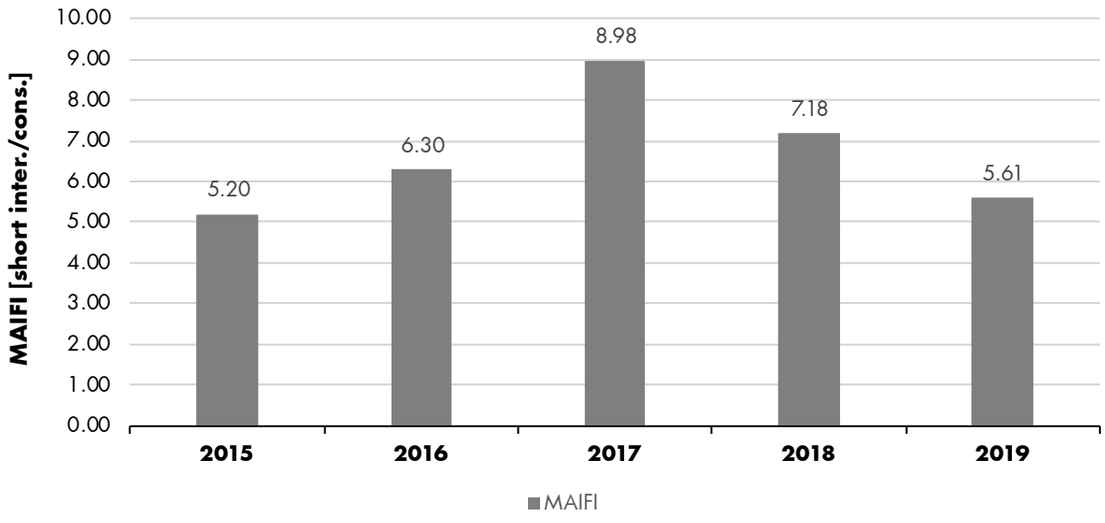
Source: Energy Agency

FIGURE 33: SAIFI FOR UNPLANNED LONG-TERM INTERRUPTIONS, CLASSIFIED BY CAUSES IN THE 2015–2019 PERIOD



Source: Energy Agency

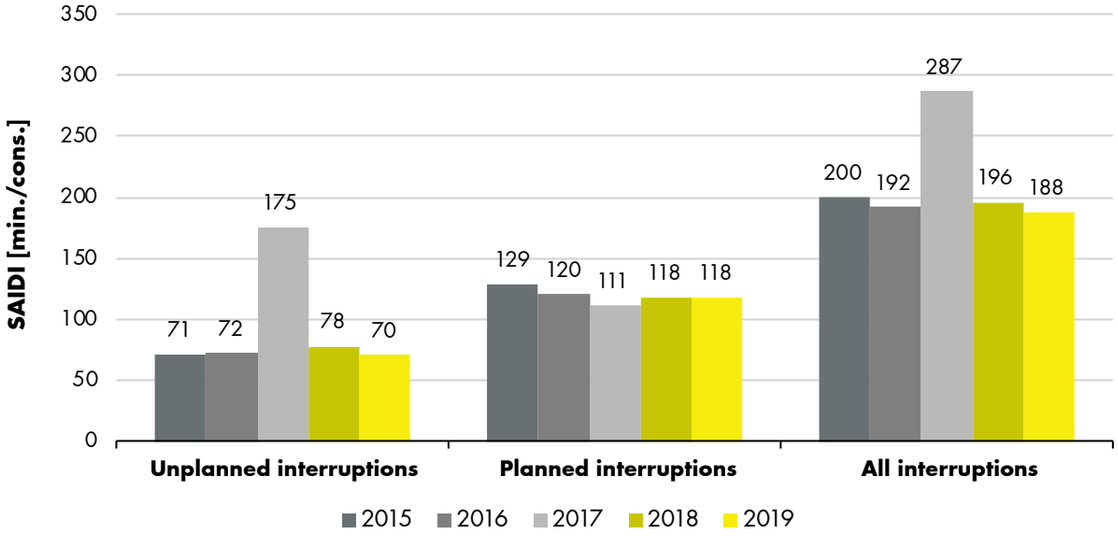
FIGURE 34: THE MAIFI INDICATOR IN THE 2015–2019 PERIOD



Source: Energy Agency

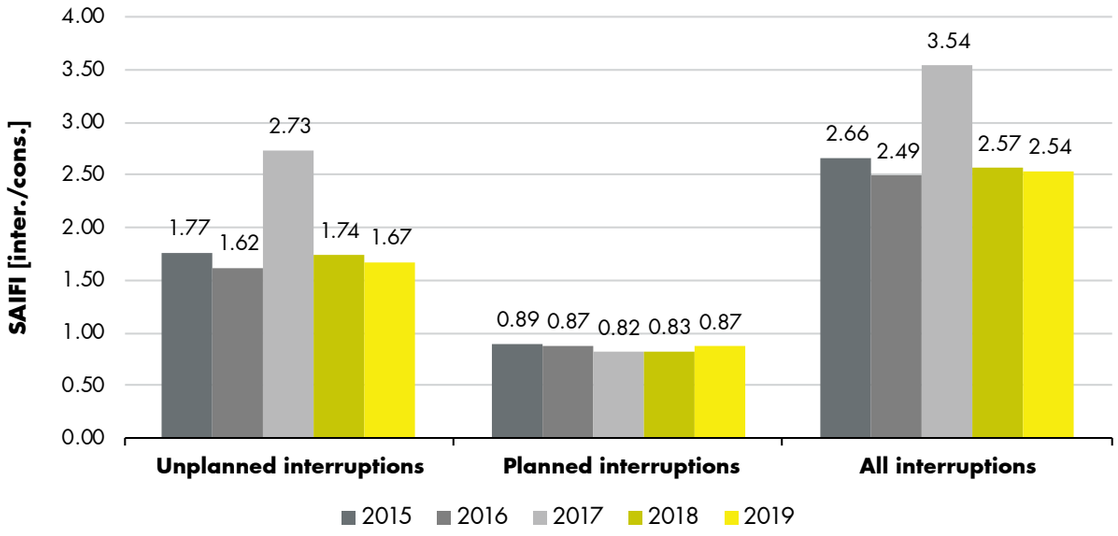
Figures 35 and 36 show the aggregate value for the SAIDI and SAIFI indicators for unplanned, planned, and all interruptions in Slovenia in the 2015–2019 period.

FIGURE 35: SAIDI FOR ALL LONG-TERM INTERRUPTIONS, CLASSIFIED BY CAUSES IN THE 2015–2019 PERIOD



Source: Energy Agency

FIGURE 36: SAIFI FOR ALL LONG-TERM INTERRUPTIONS, CLASSIFIED BY CAUSES IN THE 2015–2019 PERIOD



Source: Energy Agency

In 2019, the Energy Agency also continued to monitor the data on supply continuity in CDSs. This year, CDSs did not receive any complaints from consumers with regard to continuity of supply, while they did record electricity supply interruptions, as shown in Table 16.

TABLE 16: OVERVIEW OF THE NUMBER OF INTERRUPTIONS IN CDS, CLASSIFIED BY CAUSES

Number of electricity supply interruptions in 2019	Petrol Ravne CDS	Petrol Štore CDS	Jesenice CDS	Sij Acroni CDS	Talum CDS
Unplanned interruptions	21	3	0	19	0
• of which internal events	17	0	0	19	0
• of which external events	4	3	0	0	0
• of which force majeure	0	0	0	0	0
Planned interruptions	0	1	0	1	0
Short-term interruptions	0	1	0	3	0

Source: CDS data

Commercial quality

The required level of commercial quality is determined by system and guaranteed standards for commercial quality.

A breach of commercial-quality guaranteed standards defined by the Energy Agency may bring financial consequences for the individual service provider, i.e., payment of compensation to the consumer concerned.

On the basis of system standards, a consumer can expect a certain quality level, since these standards indicate the average level of service quality or the share of all customers provided with a required service quality. In 2019, we recorded one consumer compensation payment due to breach of guaranteed standards. Given the three-year trend of the value of commercial quality indicators, we observe a steady level of commercial quality.

The level of commercial quality has been maintained

Despite the fact that the new regulatory framework for the 2019–2021 period includes a slightly stricter minimal standard for two of the commercial quality indicators, there were only minor inconsistencies of maximum values discovered compared to previous years.

Table 17 shows the ranges (minimum and maximum values) of commercial quality indicators in the 2017–2019 period.

TABLE 17: RANGE OF THE COMMERCIAL QUALITY INDICATORS IN THE 2017–2019 PERIOD

Commercial quality indicator	2018		2018		2019	
	Min.	Max.	Min.	Max.	Min.	Max.
Connection-related services						
Average time required for issuing the approval for connection [days]	8.2	19.5	9.8	23.8	13.5	23.5
Average time required for issuing cost estimation or a proforma invoice for simple works [days]	2.4	3.5	2.0	6.2	2.6	6.0
Average time required for issuing the contract for the connection on the LV system [days]	1.0	5.9	1.0	11.9	1.0	8.5
Average time required for activating the connection to the system [days]	2.1	5.9	2.1	7.6	1.8	8.1
Customer service						
Average response time to consumers written questions, complaints, or enquiries [days]	1.6	5.0	0.5	5.0	1.1	5.7
Average hold time in the call centre [s]	15.0	126.7	15.0	116.7	15.0	109.7
Call centre performance indicator [%]	79.3	93.8	83.3	92.5	84.0	93.7
Technical services						
Average time until the restoration of supply following a failure of current limiting device (06:00–22:00) [h]	1.0	1.9	1.0	1.9	0.9	2.1
Average time until the restoration of supply following a failure of current limiting device (22:00–06:00) [h]	0.9	2.1	1.3	3.3	1.0	2.2
Average time for answering voltage quality complaints [days]	13.7	21.1	11.2	25.8	12.8	29.6
Average time required for resolving voltage quality inconsistencies [months]	0.3	24.0	0.3	54.0	2.9	31.0
Metering and billing						
Average time required for remedy of meter failure [days]	2.6	10.0	2.9	9.2	2.7	8.0
Average time for restoration of power supply following disconnection due to non-payment [h]	0.2	9.4	0.2	8.5	0.1	8.7

Source: Energy Agency

In addition, the commercial quality aspect also includes the activity of collecting data on complaints following a unified procedure. In the observed three-year period, system users mostly complained to the DSOs for exceeding the maximum time to resolve voltage quality deviations and also because of missing the deadline to issue approval for connection.

The highest number of complaints was recorded in 2018, while in 2019 their number decreased, while the share of justifiable complaints rose. The data on the share of justifiable complaints indicates consumers' awareness of the rights that their DSO must ensure when providing services.

Data on commercial quality complaints for the 2017–2019 period are summarised in Table 18.

TABLE 18: NUMBER AND SHARES OF JUSTIFIED COMPLAINTS RELATING TO COMMERCIAL QUALITY IN THE 2017–2019 PERIOD

Reason for a complaint	Number of all complaints			Number of justified complaints			Share of justified complaints		
	2017	2018	2019	2017	2018	2019	2017	2018	2019
Connection activations									
Exceeding the time for activating the connection to the system	0	1	0	0	0	0	-	0%	-
Exceeding the time for restoration of power supply following failure of a current limiter	1	0	0	0	0	0	0%	-	-
Quality of supply									
Exceeding the maximum time to resolve voltage quality deviations	5	20	6	0	3	6	0%	15%	100%
Exceeding the deadline for responding to a complaint regarding voltage quality	4	0	0	0	0	0	0%	-	-
Exceeding the maximum permitted duration and the number of unplanned long-term interruptions (applies only to end consumers on the MV system)	1	0	0	1	0	0	100%	-	-
Metering									
Delay in elimination of metering device failure	1	0	2	1	0	2	100%	-	100%
Metering, billing, and recovery of costs									
Delay in time for response to written questions, complaints, and other consumers' claims	1	2	3	1	2	3	100%	100%	100%
Connection-related services									
Delay in issuing the contract for connecting to the LV system	1	0	0	1	0	0	100%	-	-
Delay in issuing connection approval	2	5	7	0	0	0	0%	0%	0%
Customer service									
Untimely information about planned interruptions	3	0	0	3	0	0	100%	-	-
Total	**19**	**28**	**18**	**7**	**5**	**11**	**37%**	**18%**	**61%**

Source: Energy Agency

In 2019, CDSs continued to monitor the commercial quality. Given a greater system rigidity and a relatively low number of consumers, CDSs did not receive any consumer complaints relating to commercial quality.

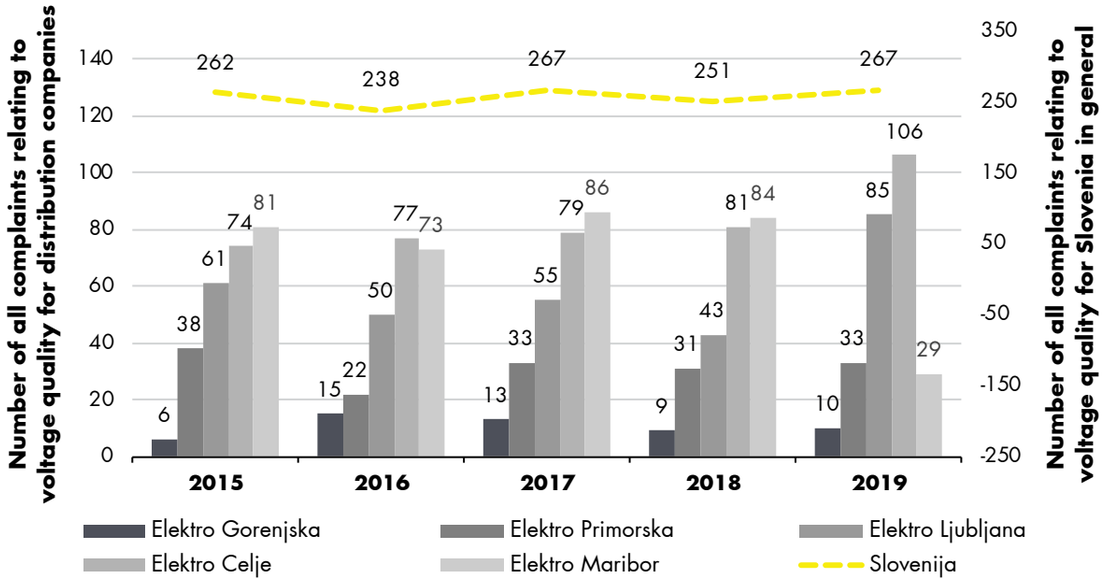
A **10%** increase in the number of justified complaints relating to voltage quality

Voltage quality

The two system operators and the distribution companies are required to perform regular monitoring at the border of the transmission and distribution networks, and at delivery points for larger users. In addition, occasional monitoring is carried out according to a predefined plan. In addressing a consumer's complaint, a monitoring of the voltage quality is performed in the duration of at least one week. A monitoring of the voltage quality is also carried out as part of the procedure of issuing the connection approval, namely before the connection of a new consumer.

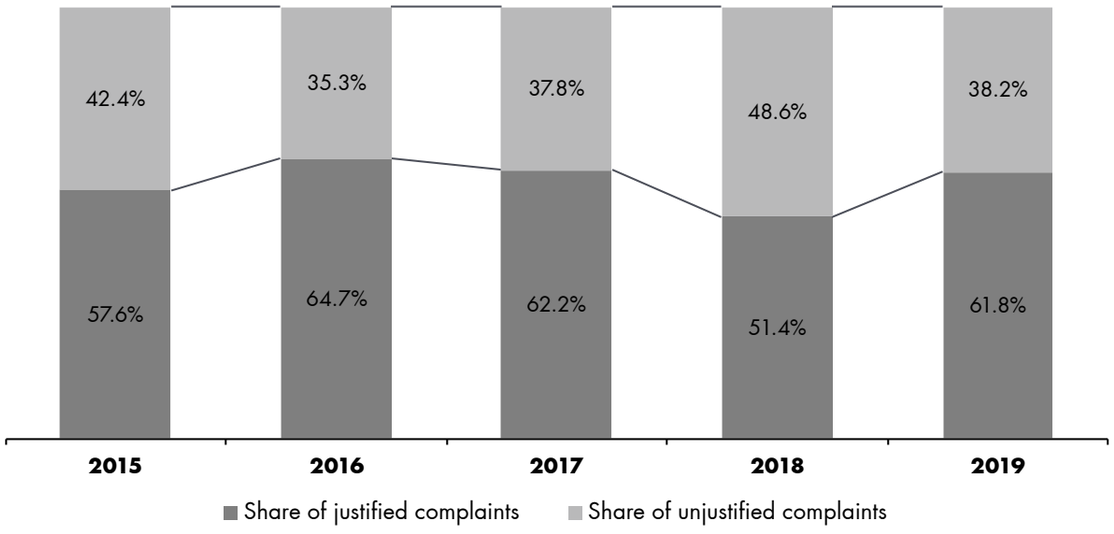
Figure 37 shows the trend of complaints related to voltage quality for individual distribution companies and the entire territory of Slovenia. As seen from Figure 38, based on the relevant data, 2019 has seen an increase in the total number of consumer complaints, with an increase of over 10% in the number of justified complaints.

FIGURE 37: NUMBER OF ALL COMPLAINTS RELATING TO VOLTAGE QUALITY FOR DISTRIBUTION COMPANIES AND SLOVENIA IN GENERAL IN THE 2015–2019 PERIOD



Source: Energy Agency

FIGURE 38: SHARE OF JUSTIFIED AND UNJUSTIFIED COMPLAINTS RELATED TO VOLTAGE QUALITY IN THE 2015–2019 PERIOD



Source: Energy Agency

ELES carried out continuous monitoring of the voltage quality in the high-voltage network at 197 connection points between the distribution system, producers, and direct consumers. Similar to previous years, the most violations were discovered due to the occurrence of flicker. Deviations from the standard were recorded at 143 connection points. In addition, 2019 saw a breach of the standard regulating supply voltage at five connection points.

In 2019, voltage quality monitoring according to the standard was also conducted by CDSs. At Talum CDS, the system for continuous monitoring was implemented in December 2016. If needed, they have available data captured by ELES at these connection points; however, in case of consumer demands, they use a portable network analyser.

In 2019, Sij Acroni CDS and Jesenice CDS have seen an improvement in the quality of supply compared to the previous year. During one week, the limit values of the standard were exceeded due to flicker, which CDS operators cannot influence. Flicker-attributable deviations from the standard were also identified at Ravne CDS and Štore CDS. Other than that, CDSs have not received any complaint related to voltage quality monitoring.

Multi-year development of electricity network

Every other year, the two electricity system operators are required to prepare a 10-year development plan for the electricity transmission and distribution system and obtain an approval from the ministry responsible for energy. The plans must be developed so as to follow the prescribed methodology. In addition, they must be harmonised with each other in terms of development and they must consider the national energy strategy.

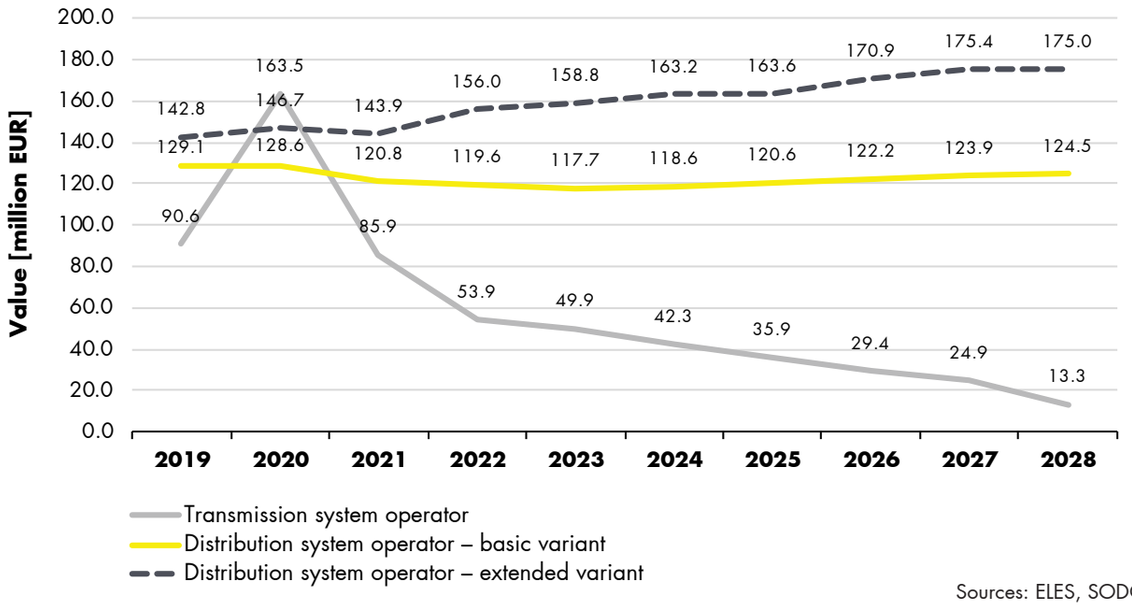
The network planning activity included in the TSO development plan starts with an analysis of the situation in the transmission system. The development plan must include an analysis of consumption coverage with existing production sources and the sufficiency of said sources. Moreover, the analysis must include an assessment of the transmission capacity to determine the time dynamics and financial evaluations of planned investments.

A DSO's development plan must include an analysis of the period addressed by the previous development plan and an analysis of the forecast electricity consumption and electric power. Furthermore, a plan of investments must be drawn up, which is financially evaluated and directed at the power system for the entire territory of the country.

The development plans for the 2019–2028 period, prepared by the two system operators, include power system investments in the amount of EUR 590 million for the transmission system, and EUR 1,226 million for the distribution system in its basic form, while anticipated investment in its extended form amounts to EUR 1,596 million.

EUR 1,816 million of planned investments in 10 years, of which EUR 1,226 million in the distribution system and EUR 590 million in the transmission system

FIGURE 39: ASSESSMENT OF INVESTMENTS FROM DEVELOPMENT PLANS PREPARED BY ELECTRICITY SYSTEM OPERATORS FOR THE 2019–2028 PERIOD



Sources: ELES, SODO

Investments in the transmission system of the Republic of Slovenia planned by the TSOs for the next decade are based on research studies addressing the needs for renovation, construction, or strengthening of certain sections of the transmission system, so as to provide sufficient transmission capacity and voltage. In particular, these research studies considered long-term growth projections for the consumption of electricity from the transmission system, the planned construction of new production units, distribution network expansion, and planned and foreseen changes in the European transmission system.

Construction of the Cirkovce–Pince transmission line should be completed by the end of 2021

In the coming years, the biggest investment of the TSO will be the construction of the 400kV Cirkovce–Pince transmission line and the 400/110kV Cirkovce DTS. The investment should be completed by the end of 2021 and will increase the amount of imported electricity from neighbouring countries, provide more competition on the system services market, and improve the reliability of power supply in Slovenia in the event of shortfalls of major production facilities. The project was included in the list of projects of common interest (PCI), which is drafted every two years based on the European Regulation on guidelines for trans-European energy infrastructure. The list also includes SINCRO.GRID, a smart grid project that includes system operators from Slovenia and Croatia (ELES, HOPS, SODO in HEP-ODS) who tackled the challenges with overvoltage in transmission systems and established operation terms to enable greater production volumes from RES, an increase in transmission capacity of transmission lines (DTR) and capacity of system service. The project is in its implementation phase and is expected to be completed in 2021. Another important project is also the construction of the new 220/110kV Ravne DTS and the new 2 x 220kV Zagrad–Ravne transmission line, which is very important for the broader Koroška region, due to issues with voltage quality or flicker issues.

In their distribution system development plan for the period until 2028, DSOs consider objectives connected to the guidelines and objectives of the national and European energy and environmental policy. The fundamental development guidelines of DSOs include investments in network operation systems, which include a meshed medium-voltage network, automatisation and management, the method of neutral point connection and network cabling, and as well improving the quality of supply by deploying the smart grid and smart metering concepts. The biggest share of investments in terms of their value, are investments in the

construction of a new medium-voltage network and the reconstruction of a medium-voltage network, where new constructions include predominately underground medium-voltage networks and cable transformer stations. These are followed by investment in the construction and reconstructions of high-voltage facilities and systems, and low-voltage systems and secondary equipment. In addition to the basic variant, the development plan includes the extended version, which takes into account the additional increase of network capacity based on an increase of the consumption and network loads as a consequence of the planned connection of a large number of diffused sources, charging stations for electric vehicles, and heat pumps.

The extended variant for the distribution system includes no less than 30% more investments

Supervision over implementation of development plans from electricity system operators

In 2019, the TSO allocated EUR 73 million to investments, which is only 80.6% of investment funds determined in the development plan, or 47.7% of funds stated in the regulatory framework. Out of this amount, EUR 56.8 million was allocated to new investments, EUR 6.2 million to reconstructions, and EUR 10 million to other business investments. The largest share, 50.8%, was allocated to network investments, followed by smart grid investments (31.6%), and other business investments (13.7%). The construction of the 400/110kV Cirkovce DTS stands out from among the largest investments. This investment is a prerequisite for the implementation of the long-planned investment in the new cross-border 400kV Cirkovce–Pince transmission line. With regard to this investment, procurement procedures and project documentation production were further delayed due to complications with demonstrating environmental compliance. In addition, significant deviations were recorded with some other larger projects included in the development plan.

The SINCRO.GRID project recorded a significantly lower realisation in the field of installation of compensation devices and storage units, mainly due to complications with public procurement and changes in payment terms. Investments in the NEDO international project and in the 400/110kV Divača DTS also recorded deviations from the investment plan as a consequence of the changes in the project performance dynamics.

In 2019, the DSO and the owners of the distribution network spent EUR 137 million on investments in the power system infrastructure, which is 111.1% of funds planned for in the regulatory framework, and 106.2% funds planned for in the development plan. Out of this amount, EUR 68 million was allocated to new investments, EUR 46.8 million to reconstructions, and EUR 22.2 million to other business investments. Considering the voltage level, the majority of investments, i.e. 34.1%, were made in the medium-voltage network, 18.6% in the high-voltage network, and 17.3% in the low-voltage network. The remaining amount consists of investments in secondary equipment (13.7%) and other business investments (13.3%). Considering the type, the investments to prevail were those in underground low-voltage lines (both new constructions and reconstructions) or in replacing overhead lines with underground lines to ensure a more robust network and operating reliability in extreme weather conditions. These are followed by investments in HV/MV DTSs, and investments in the development of an advanced metering system. The share of underground lines in medium- and low-voltage distribution networks is growing by around a little over 1% per year. At the end of 2019, this share amounted to over 50%. The replacement of overhead lines with underground lines is included in the DSO's development guidelines. However, the replacement usually only takes place when existing overhead lines are at the end of their life cycle, and with frequent electricity supply interruptions due to environmental impacts.

Based on the Government's Decree on the division of the 110 kV network into the distribution and transmission systems, the power system infrastructure of the transmission system only includes DTSs and DSs which are 100% owned by the TSO.

A 50% share of underground lines in the distribution network

TABLE 19: TRANSMISSION AND DISTRIBUTION ELECTRICITY INFRASTRUCTURE IN SLOVENIA AT THE END OF 2019

Transmission system	
Lines 400 kV	669 km
Lines 220 kV	328 km
Lines 110 kV	1,926 km
DTS HV/HV	8
DS 110 kV	1
Distribution system	
Lines 110 kV	898 km
Lines 35 kV, 20 kV, 10 kV	18,114 km
Lines 0.4 kV	45,985 km
DTS 110 kV/MV	93
DTS MV/MV	8
DS MV	84
Ts MV/LV	18,211

Sources: ELES, SODO, EDP

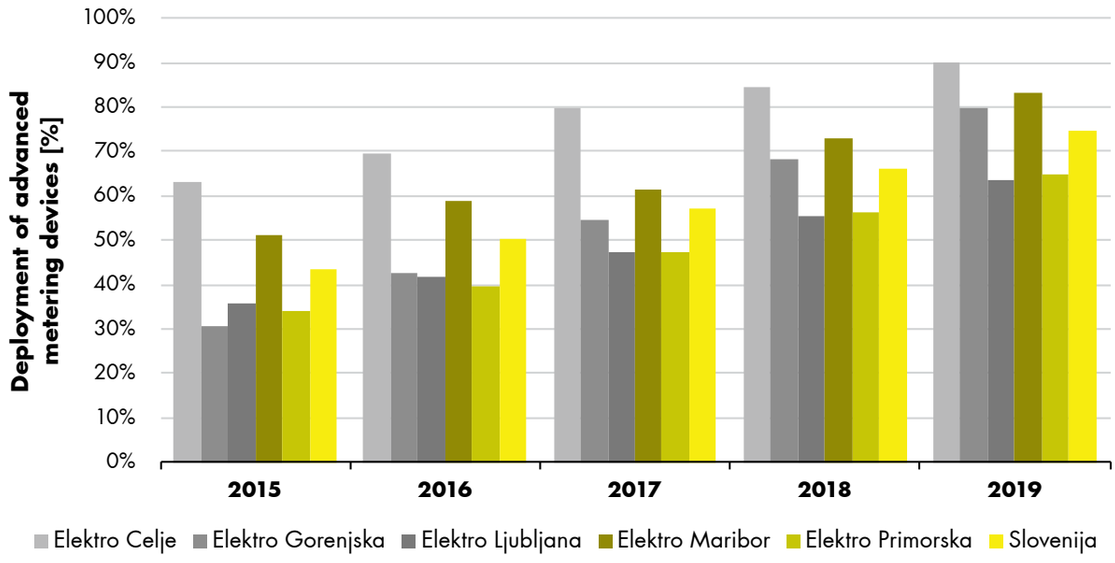
Development of advanced metering system in Slovenia

Slovenia is experiencing intensive installation activities of advanced metering devices. At the end of 2019, no less than 74.5% of consumers connected to the distribution system were equipped with advanced metering devices, and 70% of them were connected to remote meter reading. However, 35% of installed advanced metering devices still do not comply with the Commission's recommendations regarding minimum functional requirements for advanced metering devices. Despite this, Slovenia is among the leading European countries in terms of installed advanced metering devices. If this trend continues, Slovenia is expected to reach the objective set by the European Directive according to which by 2020 at least 80% of consumers should be equipped with advanced metering infrastructure, while in some geographic areas this objective has already been exceeded.

Regardless of the progress in the introduction of advanced metering devices, the advanced metering system did not provide for all necessary data services required by the development of the electricity market. Standardised data services that must be provided by the DSO as part of the public service company to ensure efficient operation and market development have not been formally defined or adequately enabled in 2019 either (chapter Measures for promoting competition). At the end of 2019, progress was recorded in the field of providing data services for end consumers and their representatives.

74.5% of consumers connected to the distribution system, were equipped with advanced metering infrastructure, which places Slovenia in the leading third of the EU countries

FIGURE 40: TREND OF DEPLOYMENT OF ADVANCED METERING DEVICES IN THE 2015–2019 PERIOD



Sources: EDCs

Development and regulation of smart grids and introduction of new technologies

Investments in smart grids

In 2019, the two system operators and distribution companies (independently or within international partnerships) continued with the implementation of smart grids, new technologies, and new approaches. In the 2019–2021 regulatory period, the Energy Agency updated the incentives dedicated to investments in smart grids with upgraded methodology. The aim was to enable a more intensive implementation of new technologies in the power system. The main changes included incentives to provide a more wholesome approach and the implementation of incentives based on the project success-rate.

When and if the system operator demonstrates that they have considered the entire power system (i.e. the transmission and distribution system) in the planning and implementation phase of the solution, the existing 2% incentive is increased by an additional 3% of the carrying amount of the asset on 31 December, which is valid for a period of three years from the day of the activation.

If, based on project performance indicators, the system operator demonstrates that they have successfully addressed issues in at least one of the priority areas (efficiency of integration of diffused production from RES, reduction of local peak loads or increase of transmission performance), they are awarded a one-time incentive in the amount of 5% of the cost of the asset.

Updated incentive scheme for smart grid investments

In 2019, the Energy Agency did not receive any applications for new projects, while the execution of the two major investment projects (NEDO[7] in SINCRO.GRID[8]) of common European interest continued. Both projects are included in the Report on the Energy Sector in Slovenia for 2018.

On its website, the Energy Agency publishes basic information on qualified projects which are promoted as part of the Agency's regulation methodology. In addition, the Agency supervises all qualified projects.

Projects included in the research and innovations scheme

In the 2019–2021 regulatory period, the system operator had an opportunity to implement projects from the new research and innovations scheme. The purpose of these was to support research activity and/or demon-stration of innovative approaches in the field of smart grids and new energy services, innovative technological concepts, implementing practices, and business models which would benefit consumers.

[7] https://www.eles.si/en/nedo-project
[8] https://www.eles.si/en/sincro-grid-project/background

Such projects qualify for implementation based on standardised project applications. Special provisions apply for projects that include the use of pilot mechanisms. This includes three different implementation incentives that can be combined as desired and are intended to remove regulatory barriers for the implementation of innova-tive measures that cannot be implemented due to the existing regulatory framework:

- The DSO may charge a dynamic critical peak tariff (PCPT) for network charges as part of pilot consumption adjustment. Increased–positive PCPT is intended to reduce consumption by end consumers during critical peak events. Reduced–negative PCPT is intended to increase consumption by end consumers during critical net production from RES or during nighttime.
- The TSO may determine the compensation amount for participation of active consumers in system ser-vices, provided that such consumer directly or indirectly (via a generator) provides system services as part of consumption adjustment programmes. The compensation amount is determined based on the evaluation of realised flexibility of individual active consumers.
- The DSO may determine the compensation amount for active consumers in the form of a reduced network charge for self-supply within a community. Such compensation is determined based on the concept of local production netting and the consumption of electricity of consumers within a community of end consumers with at least one production device from RES.

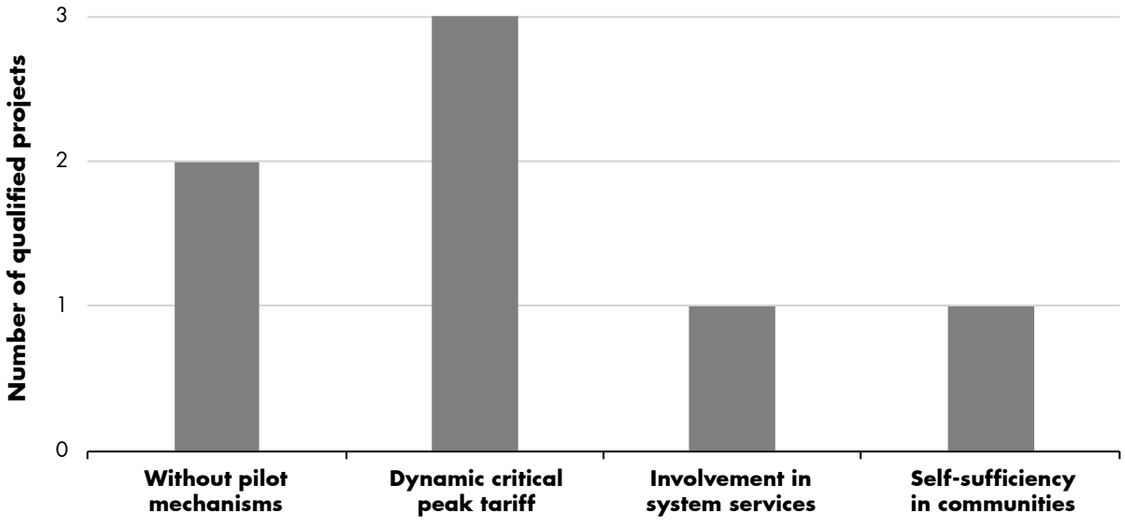
5 qualified projects in 2019

The new Energy Agency cost eligibility scheme for research and innovation

By the end of 2019, the Energy Agency received 14 project applications, five of which were later quali-fied. Two projects failed to include pilot mechanisms, while three of them use various combinations of such mechanisms (Figure 41). Areas addressed by the projects include:

- improved remote control, automatisation and optimisation of distribution network operation;
- introduction of new approaches, technologies, equipment, and implementation practices to address the operating conditions in the distribution network in order to improve voltage profiles, reduce losses and improve the quality of supply;
- encouraging active consumption with the purpose to reduce the need to invest in network infrastructure, ensure system services and development of new business models oriented towards individuals and communities;
- increased share of RES included in the distribution network with greater self-sufficiency of self-supplied communities, raising awareness of consumers based on their consumption and production profile, forecasting representative consumption profiles and local production;
- qualitative evaluation of user response to various incentives, evaluation of consumer satisfaction with a tested mechanism of economic efficiency and relevance of the tested mechanism, and evaluation of consumer expectations.

FIGURE 41: OVERVIEW OF USED PILOT MECHANISMS IN QUALIFIED PROJECTS FOR COST ELIGIBILITY OF RESEARCH ACTIVITIES AND INNOVATIONS BY THE END OF 2019



Source: Energy Agency

Cyber security of the power system

Part of the Energy Agency's responsibilities is to monitor investments in cyber security, including activities performed by public service companies in the area of cyber security and data protection, and the pertaining development activities. The Energy Agency continued with raising awareness among stakeholders and monitoring their activities in the field of information security. In addition, the Energy Agency provided stakeholders with information via the Slovenian Energy Security Forum (SEVF).

National legislation

With regard to the protection of critical infrastructure and essential service operators for the energy sector, three implementing regulations were adopted to the Critical Infrastructure Act (ZKI) and the Information Security Act (ZInfV):

- Instructions on the risk assessment for the operation of the critical infrastructure of the Republic of Slovenia, which provide the basis for risk assessment performance for the operation of the critical infrastructure of the Republic of Slovenia, the procedure for the performance of risk assessment for the operation of critical infrastructure and the obligation of updating such assessments;
- Decree determining essential services and the detailed methodology for determining essential service operators that defines those services from the Decree on the Standard Classification of Activities which are considered essential for ZInfV implementation purposes, and the methodology for the determination of essential service operators, including the evaluation of cross-sectoral and sectoral factors;
- Rules on security documentation and security measures of operators of essential services that define in detail the content and structure of security documentation, the methodology for the preparation of the analysis and risk management, and determination of key, control, and supervision information systems and network sections and the pertaining data, and the minimum volume and content of security measures undertaken by operators of essential services.

EU legislation

The Clean Energy for All Europeans regulatory package, which was adopted last year, includes eight legislative acts, five[9] of which directly or clearly address various themes of cyber security in the energy sector.

[9] Directive (EU) 2018/844, 2018/2002, 2019/944, 2019/943 and 2019/941

With this, legislative acts that did not explicitly address cyber security are changed or repealed. This is not the reason for the repeal of these acts; however, cyber security is included due to its topicality. Said regulatory package is a milestone in the way that the European Commission addresses cyber security and includes it in legislative acts addressing the energy sector. General acts (such as, for example, the General Data Protection Regulation that does not contain any special rules for individual sectors and instead leaves the application of this principles to the stakeholders) were replaced with implementing regulations, to which the European Commission will transfer the definitions for the performance of general technical aspects. The inclusion of cyber security in a number of legislative documents brings additional challenges, since the responsibilities of various stakeholders are not clearly defined, and it is hard to understand who is to take action. The entire analysis is available in a special report[10] of the cyber security working group at CEER (CS TF), which was also prepared in the collaboration with the Energy Agency. One of the main objectives of the report was to identify the main addressees of the implementation and the cyber security areas in the Clean Energy for All Europeans package.

Cyber security

Expert discussions continued as part of the SEVF, where public service providers from the energy sector, national authorities, and European and other institutions (SI-CERT, Information Security Administration, ACER, CEER, Institute for Corporative Security Studies) addressed information/cyber security and data security. The Energy Agency provided SEVF participants with information on current activities of the European Commission in the field of cyber security in the EU energy sector. In addition, they informed the participants on the work of the SGTF EG2[11] group in the field of cyber security and personal data processing, and on the activities on the CEER working group for cyber security (CEER CS WS). The Energy Agency regularly notifies stakeholders on important security risks, published by national or European response centres for cyber security (SI-CERT, US-CERT in CERT-EU), and sectoral response centres for process informatics ICS-CERT[12] and MS-ISAC[13]. Moreover, the Energy Agency provides stakeholders with notifications from the cyber security group of the Hungarian regulator body E-ISAC[14].

Public service companies implemented measures in the field of business and process informatics. A short-list of the most important measures/activities, segmented by domains and areas, is shown in Table 20).

[10] CEER CS WS Report - Cybersecurity in the Clean Energy for All Europeans Package (Ref: C20-CS-58-03) – https://www.ceer.eu/documents/104400/-/-/d70764d8-9cab-9f4a-848b-6c3a4e1bd6b0
[11] https://ec.europa.eu/energy/topics/markets-and-consumers/smart-grids-and-meters/smart-grids-task-force_en
[12] Industrial Control Systems Cyber Security Agency (USA) – https://www.us-cert.gov/ics
[13] Multi-state information Sharing and Analysis Centre – https://www.cisecurity.org/ms-isac/
[14] Information Sharing and Analysis Centre for Energy Sector (HU) – https://www.e-isac.hu/

TABLE 20: ACTIVITIES OF PUBLIC SERVICE COMPANIES IN THE FIELD OF INFORMATION/CYBER SECURITY AND PERSONAL DATA SECURITY

Domain[15]	Area[16]	Trans-mission system operator	Distribution system operator	EL-MB	EL-CE	EL-LJ	EL-GO	EL-PR
IT	Information security policies	✓	✓	✓		✓	✓	
OT		✓			✓			
IT	Information security organisation	✓	✓	✓		✓	✓	
OT		✓			✓			
IT	Human resources		✓	✓	✓	✓	✓	✓
OT		✓			✓	✓		
IT	Management of goods		✓	✓	✓		✓	✓
OT						✓		
IT	Access supervision		✓	✓	✓	✓	✓	✓
OT		✓						✓
IT	Cryptography							
OT					✓			
IT	Physical security	✓		✓			✓	
OT				✓				
IT	Operations security	✓	✓	✓	✓		✓	✓
OT		✓		✓	✓	✓	✓	✓
IT	Communication security	✓			✓		✓	✓
OT						✓		✓
IT	System acquisition, development, and maintenance	✓	✓	✓	✓	✓	✓	✓
OT		✓		✓	✓	✓	✓	✓
IT	Relations with suppliers							
OT								
IT	Incident management	✓		✓	✓	✓	✓	✓
OT		✓		✓	✓	✓		✓
IT	Continuous operations management	✓	✓	✓	✓		✓	
OT		✓					✓	
IT	Compliance				✓	✓	✓	
OT		✓				✓		✓
IT	Risk management	✓	✓			✓	✓	
OT		✓			✓	✓		

Sources: system operators, electric distribution companies, Energy Agency

[15] IT (business informatics)/OT (process informatics)
[16] ISO/IEC 27002/27019

Data protection

The Clean Energy for All Europeans regulatory package addresses new rules and technologies, which must enable competition, flexibility and the non-discriminatory nature of the electricity market. The main focus of the new legislation are active system users and new stakeholders on the electricity market. The novelties are often due to technological progress and, of course, expected development of the sector in the following years. The two system operators, market operator, suppliers, the Energy Agency and other stakeholders of the electricity market require various detailed measurement data on network operation, which also include production data, and measurement and billing data for the consumption of all end consumers. To implement tasks required by legislation, market stakeholders require data that reflect adequate time resolution. To that end, in 2019, a suitable national legislative basis was provided (EZ-1 Amending Act), which specifically addresses the processing of system users' personal data.

The Energy Agency was included in the working group for data privacy, which is part of the IPET Section, where they drafted the content on the legality of processing detailed metering data in the power system. The group also included an electric market operator, a system operator, and distribution companies. Group members determined data controllers and data processors, harmonised the necessary volume of data and the purpose of data use and processing, and data storage periods. By adopting the EZ-1 Amending Act, the content was supplemented in the part governing the legality of capturing, collecting and using personal data in advanced metering systems in lines with the General Data Protection Regulation.

Activities of public service companies

ELES

With regard to personal data processing, ELES has implemented the SIEM[17] targeted module for managing information and event security, which is used to manage databases containing personal data. The system will enable the centralised collection and management of databases records, records on processing activities, changes tracking and access to personal data, records of identified breaches, capturing, storage and processing of log files and other types of personal data relating to cancellation and change of personal data, supervision over possible inconsistencies between authorisations and accesses to personal data, etc.

SODO

In collaboration with distribution companies, SODO continued its activities aimed at providing an adequate arrangement of relations in the field of processing personal data pertaining to system users, and ensuring data protection and exercising individuals' rights. They have signed an agreement on joint management of personal data, based on which they provided for the harmonisation of persons authorised for personal data protection. In addition, rules and policies in the field of personal data protection and data processing privacy were updated. The updated documents are available on the company's website.

Distribution companies

Distribution companies applied organisational and technical measures in the field of personal data protection. Persons authorised for personal data protection are included in the processes of evaluating data process impacts, drawing up process impact assessments, and other processes addressing records of data processing and databases containing personal data. These activities focused on business applications used to process the personal data of users and employees, updating records on processing activities, updating agreements with personal data processing entities, managing relations arising from the joint management of personal data with other personal data processing entities, compiling a register of data sources, and performance of internal company processes in accordance with the General Data Protection Regulation. Impact assessments were performed for smart metering devices included in advanced metering systems.

[17] Security Information and Event Management

Network charge for electricity transmission and distribution

Determining the amount of network charge

The Energy Agency regulates electricity system operators' activities based on the regulated network charge method. With this method and by considering the surplus of the network charge from previous years, the Energy Agency determines the network charge and other revenues to ensure system operators' coverage of all eligible costs in the regulatory period and the deficit of the network charge from previous years.

This way, the Energy Agency encourages cost-effectiveness of service providers, and guarantees permanent and stable business operation of electricity system operators as well as a stable and predictable environment for investors, owners and system users.

Before the regulatory period commences, the Energy Agency, observing relevant criteria, defines planned eligible costs and sources for their coverage.

The new 2019–2021 regulatory period

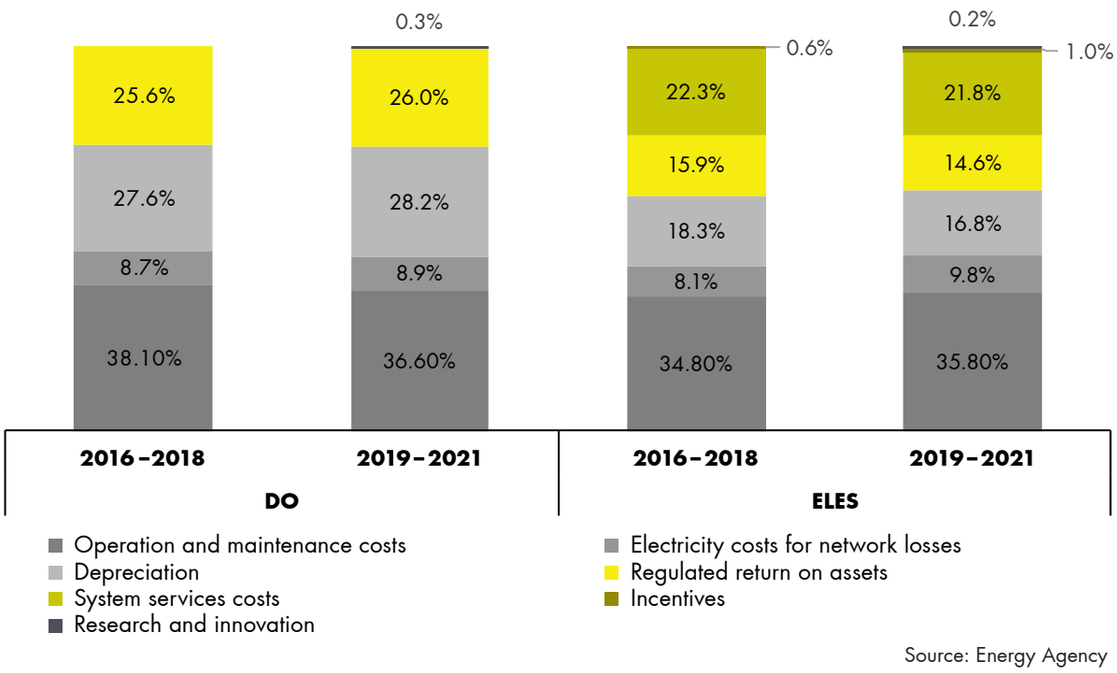
At the end of the regulatory period year, deviations from the regulatory framework are identified as the difference between recognised eligible costs incurred to the system operator and recognised eligible sources to cover the eligible costs. Deviations from the regulatory framework are reflected in network charge surplus or deficit.

On 1 January 2019, a three-year regulatory period commenced, which will end on 31 December 2021. In 2018, the Energy Agency issued the Legal Act on the methodology for determining the regulatory framework and network charges for the electricity distribution system. Based on this, the Energy Agency defined a regulatory framework for the 2019–2021 regulatory period for two system operators. To this end, in 2018, the Energy Agency issued two decisions in which it determined network charge tariffs.

For the 2019–2021 regulatory period, the Energy Agency determined eligible costs for the TSO (ELES) at EUR 518.96 million, which is 5.71% more compared to the previous regulatory period, while eligible costs for the distribution system operator (DO) were set at EUR 846.12 million, which is 0.72% more compared to the previous regulatory period.

A comparison of eligible costs structures on Figure 42 shows that the structure of planned costs deemed eligible in the 2019–2021 regulatory period has not changed significantly compared to the 2016–2018 regulatory period.

FIGURE 42: STRUCTURE OF PLANNED ELIGIBLE COSTS FOR THE TSO'S AND DSO'S ACTIVITIES



Source: Energy Agency

In 2019, the distribution system network charges amounted to EUR 262.7 million, which is 98.9% of planned network charges for this system. On the other hand, the transmission system network charges amounted to EUR 94.2 million, which is 99.2% of planned network charges for this system.

In 2019, eligible costs of the transmission and distribution operator activities were also covered with other revenues from the network charge surplus from the previous period.

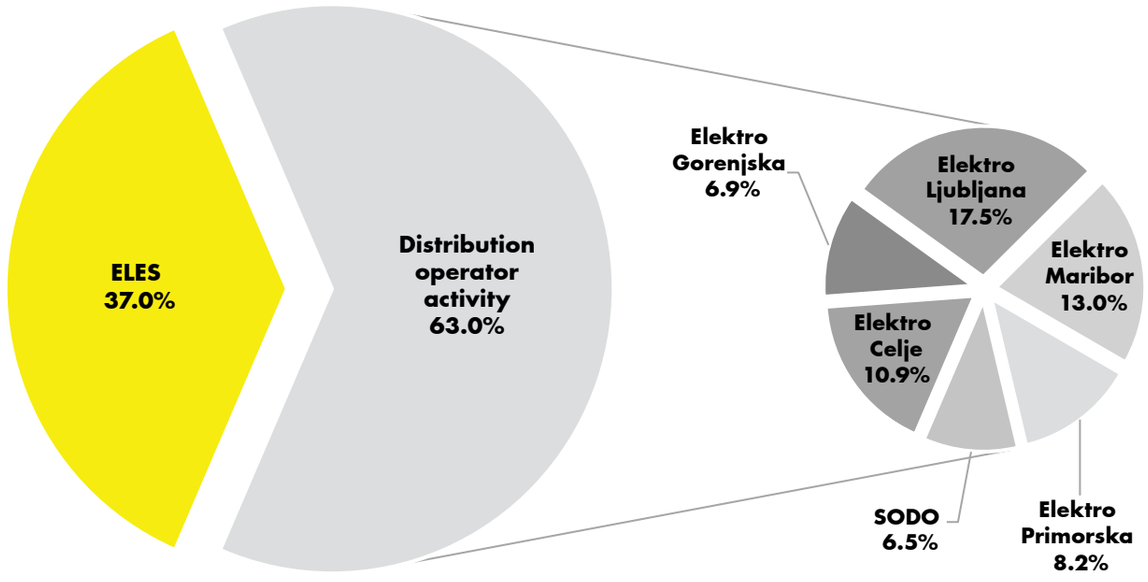
EUR 262.7 million in network charges for the distribution system and EUR 94.2 million in network charges for the transmission system in 2019

Based on criteria for determining eligible costs and sources for the coverage, in 2019, the Energy Agency identified recognised eligible costs and recognised sources for 2018, which was the last year of the 2016–2018 regulatory period.

Below are the key findings for transmission and distribution operator activities arising from exercising the regulatory framework in the 2016–2018 regulatory period[18].

During the entire 2016–2018 regulatory period, which is concluded, both activities together recorded eligible costs in the amount of EUR 1,365 million, EUR 504.7 million of which was incurred by the transmission operator and EUR 860.3 million by the distribution operator. Figure 43 shows the structure of recognised eligible costs (meaning costs deemed eligible with regulation) incurred by individual stakeholders.

FIGURE 43: STRUCTURE OF RECOGNISED ELIGIBLE COSTS OF THE TRANSMISSION AND DISTRIBUTION OPERATOR ACTIVITIES IN THE 2016–2018 REGULATORY PERIOD



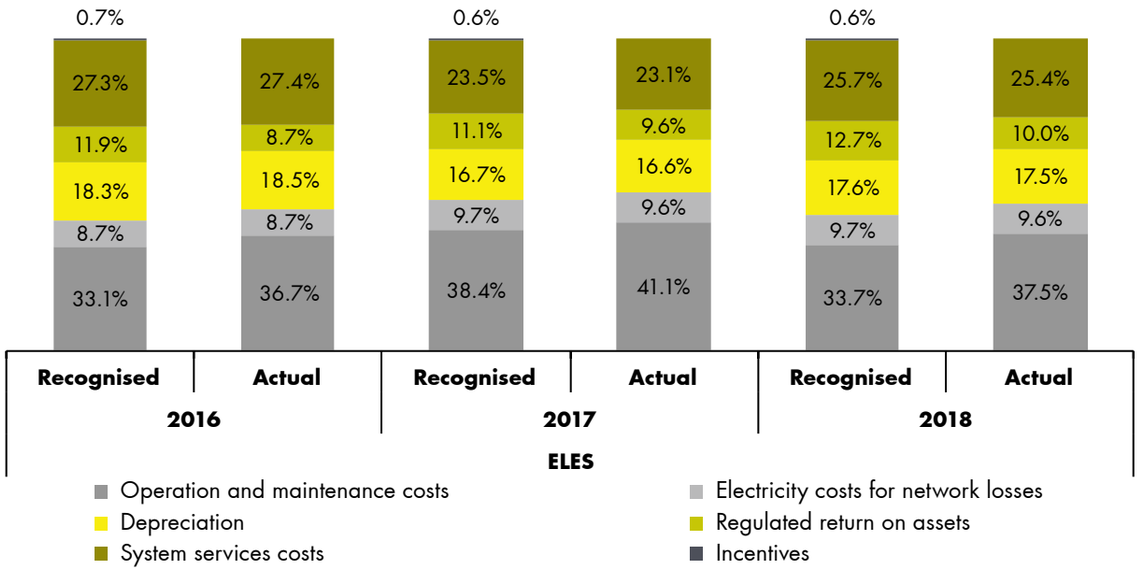
Source: Energy Agency

[18] The key findings arising from exercising the regulatory framework are drawn from data which were reported in annual reports for the year in question and from concluded procedures of establishing deviations for 2016, 2017, and 2018 (still in progress for the latter).

A comparison of the structure of eligible and realised costs of the transmission operator activities (Figure 44) shows that individual years of the 2016–2018 regulatory period saw significant differences in operation and maintenance costs and regulated returns on assets.

In addition, the comparison shows that in 2017, the structure of recognised and actual eligible costs changed in comparison with 2016 and 2018. The costs of operation and maintenance rose, and were higher in 2017 compared to 2016 and 2018 due to higher costs of electricity for system compensations. These costs were higher due to stressed market conditions on the energy markets of continental Europe, due to low January temperatures and higher consumption, unplanned nuclear power plant shutdowns in France, and poor hydrology conditions in south-east Europe. Therefore, prices on the balancing market often exceeded 200 EUR/MWh[19]. In 2017, electricity costs for network losses were higher compared to 2016, namely by 25.9%, which also affected the change in the structure of eligible costs in 2017.

FIGURE 44: STRUCTURE OF ELIGIBLE COSTS OF THE TRANSMISSION OPERATOR ACTIVITIES IN THE 2016–2018 REGULATORY PERIOD

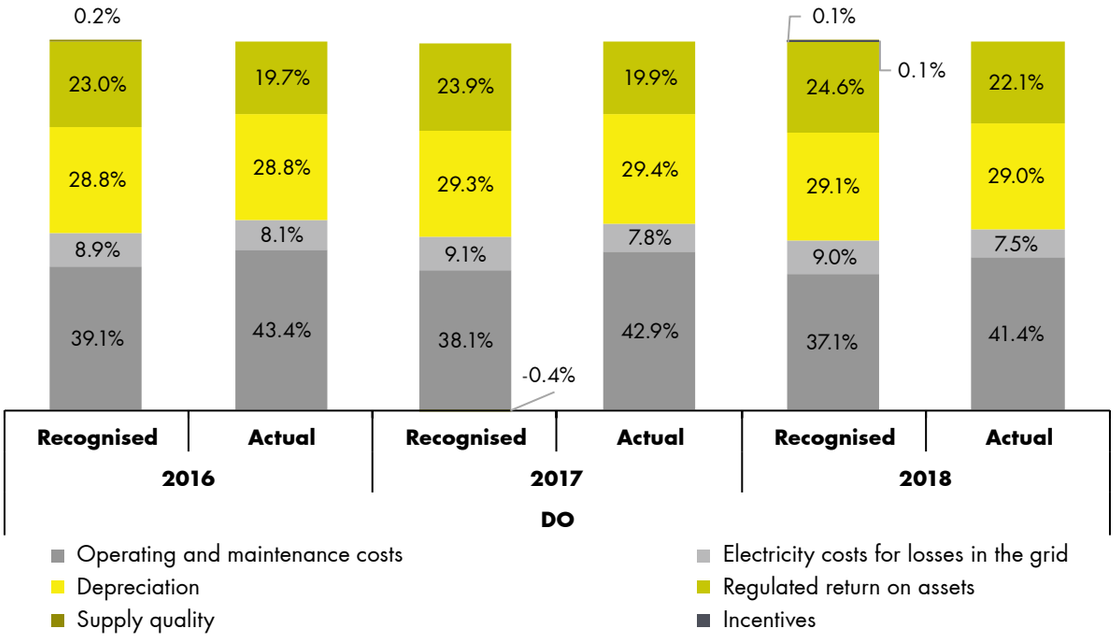


Source: Energy Agency

Figure 45 shows the structure of recognised and actual eligible costs for the DSO's activity. The costs are calculated as the sum of eligible costs of distribution companies and SODO. A comparison of the structures of recognised and actual eligible costs per every year of the 2016–2018 regulatory period shows that companies attained a lower return than that recognised by regulation. Moreover, the comparison of the structures of recognised and actual eligible costs during the 2016–2018 regulatory period demonstrates that there are no significant differences between the years under review.

[19] Source: ELES annual report for 2017

FIGURE 45: STRUCTURE OF ELIGIBLE COSTS OF THE DSO'S ACTIVITIES IN THE 2016–2018 REGULATORY PERIOD

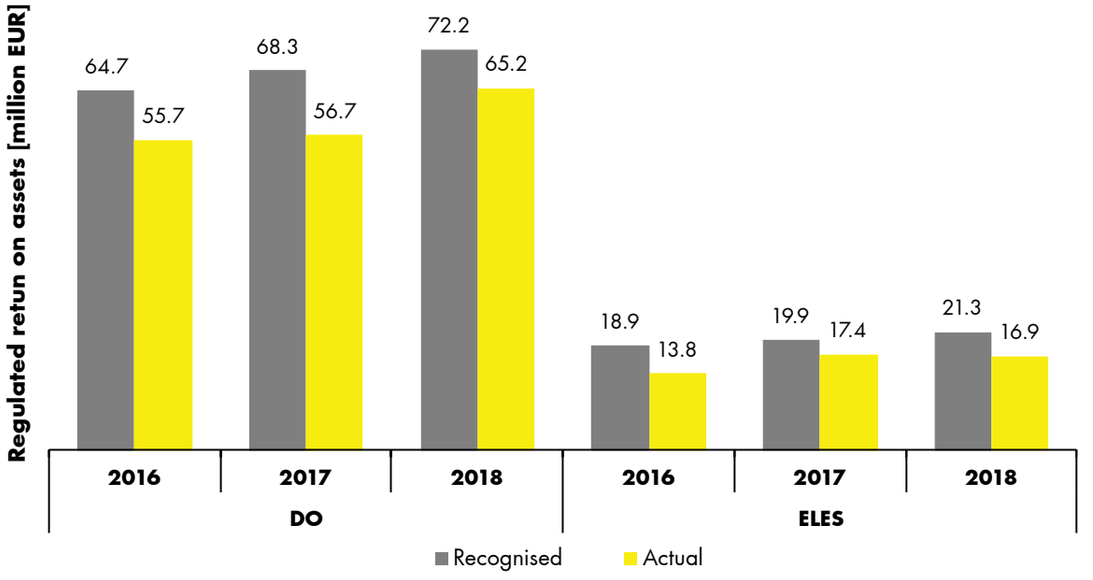


Source: Energy Agency

The actual regulated return on assets is affected by the cost-effectiveness of operating and maintenance costs and, moreover, by incentives, changes in resources for covering eligible costs, and the recording of network charge surpluses and deficits from previous years and from the current year in the account books. This applies to the activity of both the TSO and DSO.

The difference between recognised regulated return and actual return per year of the 2016–2018 regulatory period is shown in Figure 46. A total of EUR 265.3 million of regulated return on assets was recognised for the activities of the TSO and DSO in the 2016–2018 regulatory period. Considering the recognised regulated return, the actual return, including incentives and quality of supply, was 85.1%.

FIGURE 46: REGULATED RETURN ON ASSETS IN THE 2016–2018 REGULATORY PERIOD



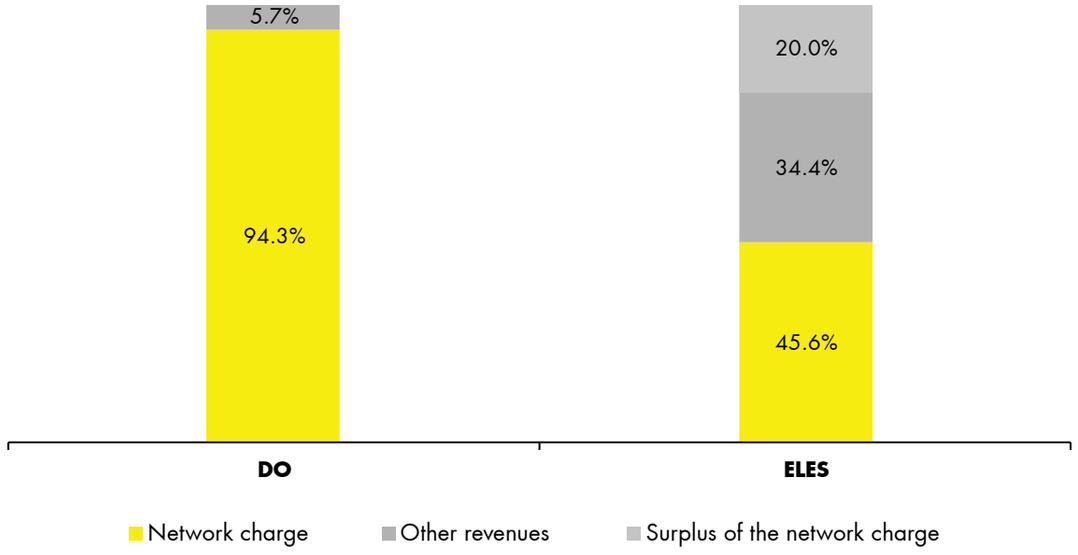
Source: Energy Agency

The recognised sources for covering the eligible costs of the TSO's activity in the 2016–2018 regulatory period are the network charge, other revenues and the surplus of the network charge recorded in the 2012–2014 period. Figure 47 shows the structure of recognised sources for covering the eligible costs of the TSO's activity. The network charge covered only 45.6% of recognised eligible costs in the 2016–2018 regulatory period.

Other revenues and the surplus of the network charge in the 2012–2014 period covered more than half of the eligible costs in the 2016–2018 regulatory period. To a large extent, the amount of other revenues and the surplus of the network charge in the 2012–2014 period depended on the amount of revenues from congestion management, which are intended to reduce the network charge. Therefore, other revenues in the 2016–2018 regulatory period included EUR 74.8 million of congestion management revenues, which is 56.2% of all congestion management revenues in that period.

Furthermore, Figure 47 shows that the structure of the sources for covering the eligible costs of the DSO's activity is different; in fact, other revenues covered only 5.7% of recognised eligible costs. Most of the costs are covered with the network charge.

FIGURE 47: STRUCTURE OF RECOGNISED SOURCES FOR COVERING ELIGIBLE COSTS IN THE 2016–2018 REGULATORY PERIOD



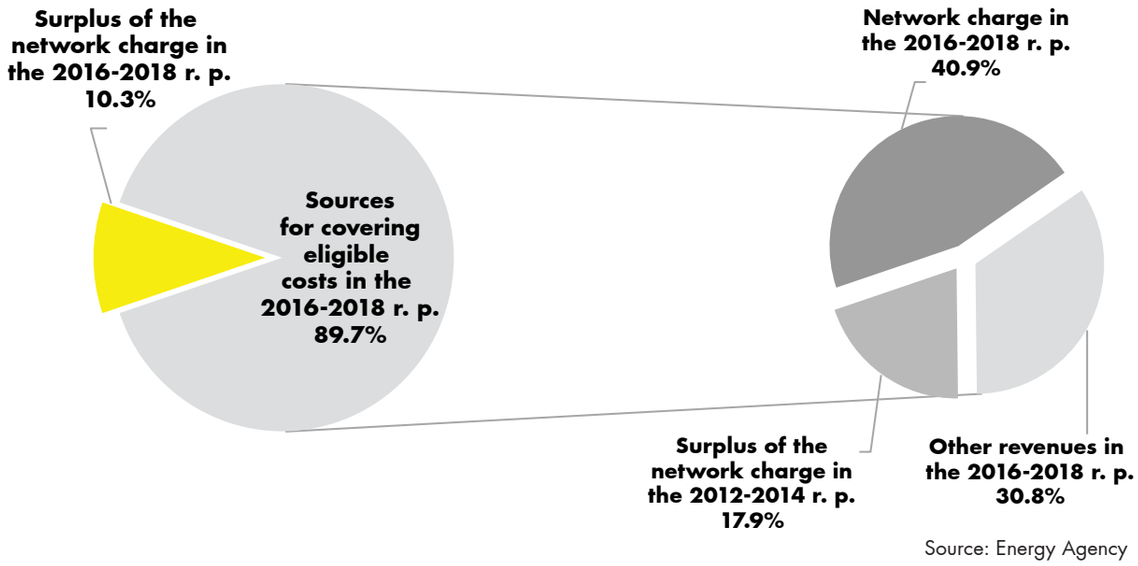
Source: Energy Agency

During the process of identifying deviations from the regulatory framework for the 2016–2018 regulatory period, it was established that the recognised sources for covering eligible costs were higher than the recognised eligible costs of the 2016–2018 regulatory period in both activities.

The recognised sources for covering the eligible costs for the activities of the TSO and DSO in the 2016–2018 regulatory period totalled EUR 1,458 million, EUR 562.9 million of which for the TSO's activity and EUR 895.1 million for the DSO's activity. The eligible costs of the TSO's activity amounted to EUR 504.7 million, while those of the DSO's activity were EUR 860.3 million.

The recognised sources for covering the eligible costs of the TSO's activity exceeded the recognised eligible costs by EUR 58.2 million in the 2016–2018 period. That difference represents the surplus of the network charge which will be used to cover the eligible costs in the next regulatory periods. Figure 48 shows that the surplus of the network charge in the 2016–2018 regulatory period amounts to 10.3% of all recognised sources of that activity. The remaining 89.7% of sources were used to cover the eligible costs of the 2016–2018 regulatory period.

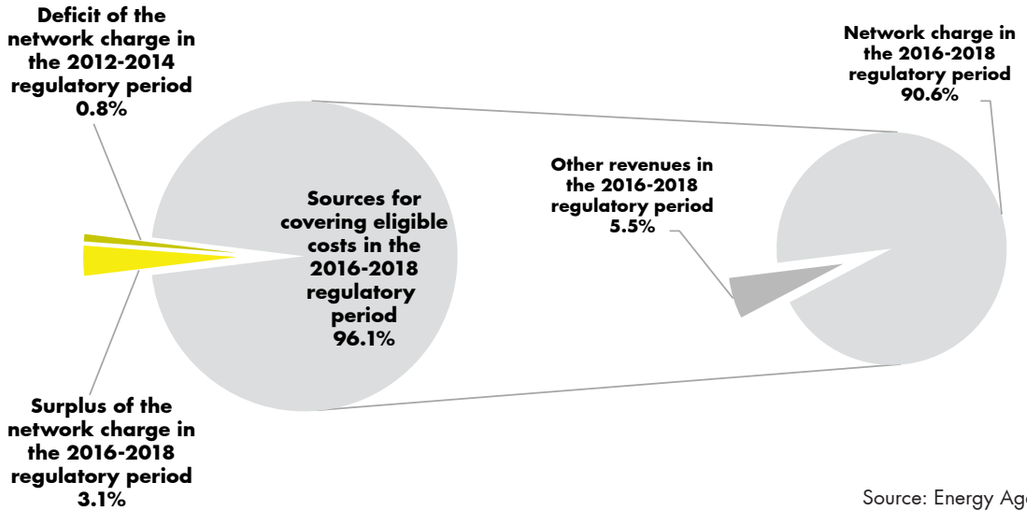
FIGURE 48: STRUCTURE OF RECOGNISED SOURCES OF THE TSO'S ACTIVITY IN THE 2016–2018 REGULATORY PERIOD



Source: Energy Agency

The structure of recognised sources for covering the eligible costs of the DS0's activity in the 2016–2018 regulatory period (Figure 49) shows that 96.1% of all sources were used to cover the recognised eligible costs of that period. In this activity, the recognised sources for covering eligible costs were also higher than the recognised eligible costs of that period, namely by EUR 34.8 million. EUR 6.8 million was used to cover the deficit of the network charge incurred in the 2012–2014 period, while the rest is the surplus of the network charge of the 2016–2018 regulatory period, which will be used to cover the eligible costs of that activity in the next regulatory periods.

FIGURE 49: STRUCTURE OF RECOGNISED SOURCES OF THE DSO'S ACTIVITY IN THE 2016–2018 REGULATORY PERIOD



Source: Energy Agency

Calculating the network charge

To calculate the network charge, the Energy Agency uses a non-transaction postage-stamp method, which means that the tariffs for calculating the network charge are unified for the whole territory of Slovenia within each consumer group. The electricity system operator classifies the end consumer into a consumer group according to voltage level (HV, MV, LV), type of connection (busbar, feeder), operating mode (operating hours) and type of consumption. The calculating method has not changed in the regulatory periods so far, as this maintains predictability for consumers.

To cover the eligible costs of the system operator that are funded from the network charge, the Energy Agency determines network charge tariffs for individual consumer groups. The tariffs are divided into:

- the network charge for the transmission system,
- the network charge for the distribution system,
- the network charge for the excessive reactive power, and
- the network charge for connected load.

Depending on the time of day, network charge tariffs for the transmission and distribution systems are divided into:

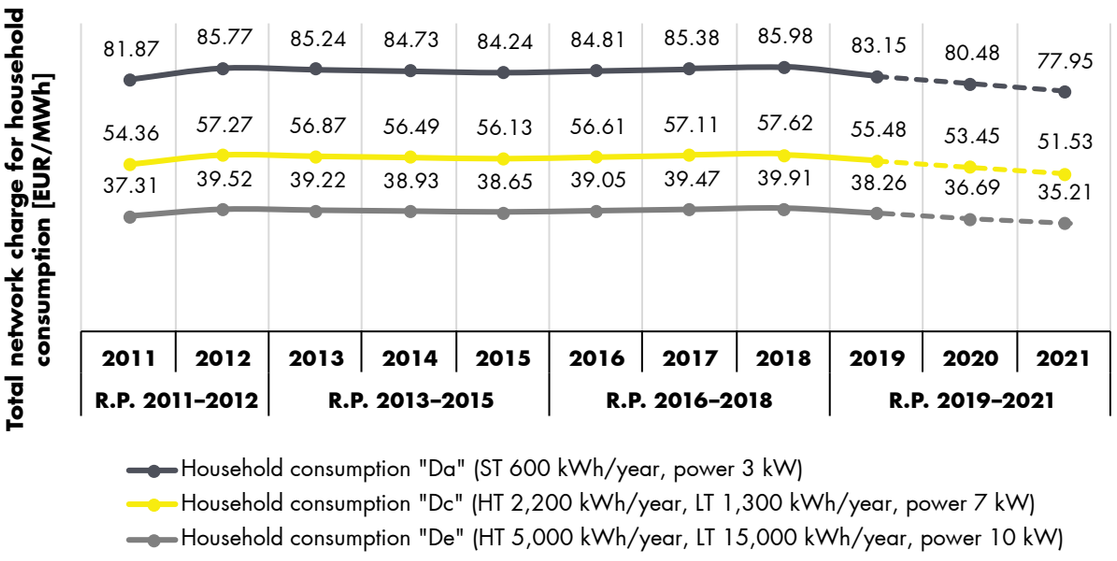
- High daily tariffs during high tariff time (HT), charged from Monday through Friday from 6 a.m. to 10 p.m., and
- Low daily tariffs during off-peak time (LT), charged in the remaining week hours and Saturdays, Sundays and public holidays (all day), or
- Single daily tariffs (ST), charged every day all day.

Both in end consumers on the LV level without power metering and in household consumers, the chargeable demand is determined based on the nominal capacity of a device preventing the agreed load from being exceeded (charge fuse) and the connection type (single-phase or three-phase connection).

Figures 50 and 51 show the fluctuation of the total network charge for the transmission and distribution systems per year of regulatory periods for some typical household and business consumers, defined by standard consumer groups.

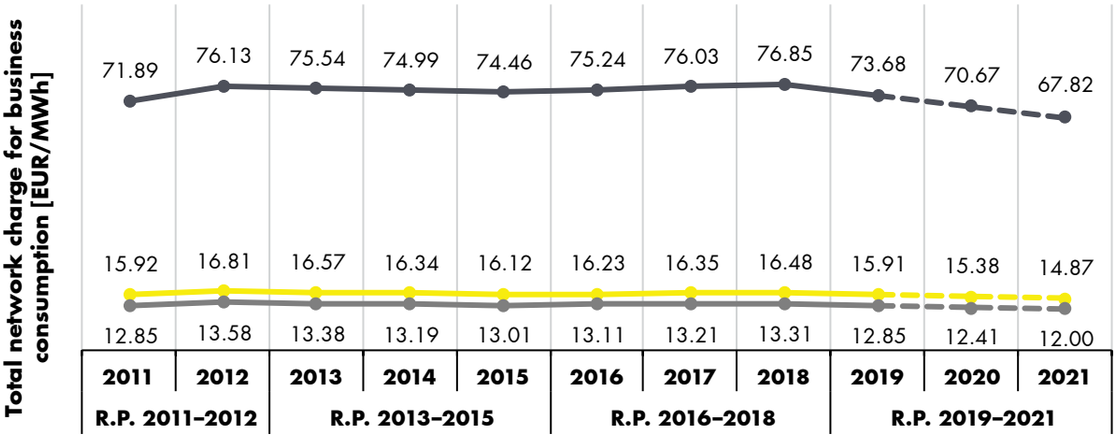
[20] The tariffs for the system operator's network charges for the 2019–2021 regulatory period were published in the Official Gazette of the Republic of Slovenia, no. 82/18.

FIGURE 50: FLUCTUATION OF THE TOTAL NETWORK CHARGE FOR THE TRANSMISSION AND DISTRIBUTION SYSTEMS FOR SOME TYPICAL HOUSEHOLD CONSUMERS PER REGULATORY PERIOD



Source: Energy Agency

FIGURE 51: FLUCTUATION OF THE TOTAL NETWORK CHARGE FOR THE TRANSMISSION AND DISTRIBUTION SYSTEMS FOR SOME TYPICAL BUSINESS CONSUMERS PER REGULATORY PERIOD



Source: Energy Agency

Allocation and use of cross-zonal transmission capacities

In 2019, the target European model of CZC allocation was implemented at all Slovenian borders

There are no restrictions on the access to the network within the Slovenian transmission system. This means that every member of the Slovenian balance scheme may access the transmission system and transfer any amount of electricity between any two points of the Slovenian transmission system. However, such conditions do not apply at the borders of the Slovenian bidding zone with the bidding zones of neighbouring countries. The Slovenian bidding zone is connected with the neighbouring bidding zones of Austria, Italy and Croatia via interconnectors. The capacities of these lines are limited, so it is necessary to establish procedures providing for the access of all interested market participants in a non-discriminatory manner.

European legislation requires that TSOs allocate the capacities of those limited interconnectors between individual bidding zones (which, in most cases, including Slovenia, correspond to the territories of individual countries) using market-based methods. These are methods whereby market participants pay for accessing the cross-zonal transmission capacities (hereinafter: CZCs). The prices paid for accessing the CZCs reflect the difference in price between neighbouring bidding zones or countries. To ensure equal opportunities for all participants, explicit and implicit auctions are used to allocate CZCs. Access to CZCs is normally auctioned on an annual, monthly and daily basis, while other capacities may be allocated in intraday time frames.

In 2019, the allocation of CZCs at the borders of the Slovenian transmission system with its neighbouring countries was largely carried out in accordance with the European target model. A significant development occurred on 20 November, when Slovenia with its Austrian and Croatian borders joined the pan-European single intraday coupling mechanism within the XBID project. Table 21 shows different methods of CZC allocation per border at the end of 2019.

TABLE 21: METHODS OF CZC ALLOCATION PER BORDER AT THE END OF 2019

Border	Period of CZC allocation	Method of CZC allocation
SI-IT	Yearly	Explicit auctions
	Monthly	Explicit auctions
	Day-ahead	Pan-European market coupling – implicit auctions
	Intraday	Bilateral market coupling – complementary implicit auctions
SI-AT	Yearly	Explicit auctions
	Monthly	Explicit auctions
	Day-ahead	Pan-European market coupling – implicit auctions
	Intraday	Non-market-based allocation until 19/11/2019; part of pan-European intraday coupling since 20/11/2019
SI-CRO	Yearly	Explicit auctions
	Monthly	Explicit auctions
	Day-ahead	Pan-European market coupling – implicit auctions
	Intraday	Non-market-based allocation until 19/11/2019; part of pan-European intraday coupling since 20/11/2019

Source: Energy Agency

The table shows that the conditions at all Slovenian borders have been in accordance with the target European model since 20 November 2019. This model requires explicit auctions for yearly and monthly allocations, implicit allocation in the form of auction trading for day-ahead allocations, and the use of continuous trading, which may be complemented by pan-European or regional complementary implicit auctions, for intraday allocations.

The day-ahead CZC allocation at the borders with Austria and Italy is carried out within interregional market coupling. BSP Energetska Borza, d.o.o. (hereinafter: BSP) participates in the coupling as a nominated electricity market operator (NEMO) for the Slovenian bidding zone. The Energy Agency appointed BSP as a NEMO for the bidding zone of the Republic of Slovenia again in 2019 for another four years. BSP participates in the Slovenian bidding zone by also implementing pan-European intraday coupling and the complementary implicit auctions for intraday capacity allocation at the Slovenian-Italian border.

All explicit auctions at the Slovenian borders are conducted by the Joint Allocation Office (JAO) headquartered in Luxembourg. The JAO acts as a common European platform for explicitly auctioned CZC allocations.

In practice, the access to CZCs consists of two phases. The first phase is the allocation of the right to their use, while the second is the confirmation of the actual use. In the case of explicit auctions, these are two separate procedures, while in implicit auctions (market coupling), obtaining capacity automatically implies its nomination, which is done by two market interfaces to their relative TSO. In the Slovenian bidding zone, the NEMO acts as the interface. A network user who obtains the right to use CZC in an explicit auction has to nominate its actual utilisation within a specified deadline, which is called a nomination. It does so in the form of a schedule. The network user can decide to use the whole CZC, part of it or not to use it at all. In the latter case, the "use-it-or-sell-it" rule applies to unused capacities obtained at yearly or monthly auctions, which means that the TSO sells the unused share of CZC at the next auction for a shorter period. The CZC holder gets paid for the unused share at the price achieved at that auction. In 2019, the largest share of CZC utilisation rate was achieved at the border from Slovenia to Italy and from Austria to Slovenia. A high utilisation rate was reached at the Croatian border in both transmission directions but the revenues from CZCs were relatively low due to a large quantity of CZCs available. Moreover, a relatively high utilisation rate of the direction from Slovenia to Croatia was the result of the fact that half of the production in the Krško NPP belongs to Croatia. The utilisation of CZCs for all borders in the 2015–2019 period is shown in Table 22.

The highest CZC utilisation rate was at border from Austria to Slovenia

TABLE 22: UTILISATION RATE OF CZCs IN THE 2015–2019 PERIOD

Border/Year	Utilisation rate of CZCs (%)				
	2015	2016	2017	2018	2019
SI-IT	87	79	58	81	59
IT-SI	3	10	20	6	24
SI-AT	12	17	8	16	7
AT-SI	96	89	93	63	80
SI-CRO	46	46	58	37	51
CRO-SI	36	37	28	41	18

Source: ELES

A comparison of CZC utilisation rates at individual borders shows that the transmission direction from Austria through Slovenia was the most interesting one. Therefore, the CZCs in this direction were the most utilised. In comparison with previous years, the interest in utilising the Slovenian-Italian border was significantly reduced, mainly as a result of increasingly higher price convergence between the prices in the Slovenian and Italian wholesale markets. There was an increase in the number of hours in the year in which the prices in both markets were identical or the price in the Slovenian market was even higher than that in the Italian one. The main reason for that was the accelerated deployment of solar power plants in Italy, especially in the south. However, the share of these plants in Italy is far from the share of mostly wind farms located in Germany and Austria, which create the greatest level of uncertainty for market participants. The CZC utilisation rate between Austria and Croatia is also heavily influenced by hydrological conditions in the Western Balkans countries. In years of favourable hydrological conditions in those countries, the CZC utilisation rate from Austria to Slovenia increases. In hydrological terms, 2019 was a relatively dry year, so the CZC utilisation rate from Slovenia to Croatia increased. This was also a result of CZC utilisation for the export of the Croatian part of the Krško NPP production.

Ensuring compliance with energy legislation

In accordance with Directive 2009/72/EC concerning common rules for the internal market in electricity, the Energy Agency has to comply with and implement all legally binding decisions of ACER and the European Commission, and ensure the compliance of decision-making processes with the guidelines referred to in that Directive and Regulation (EC) No 714/2009 on conditions for access to the network for cross-border exchanges in electricity.

In the process of issuing consents to the rules on the allocation and use of interconnection capacities, the Energy Agency verified their compliance with the guidelines referred to in Annex I to Regulation (EC) No 714/2009. In 2019, the Energy Agency issued a consent to the TSO's amendment to the Regional Specific Annex for CCR Core to the Harmonised Allocation Rules for long-term transmission rights.

In 2019, the Energy Agency participated in approving proposals and methodologies which have to be approved by all EU national regulatory authorities, individual regions or Member States in accordance with European regulations. In accordance with Regulation (EU) 2015/1222 establishing a guideline on capacity allocation and congestion management, in 2019 the Energy Agency issued two approvals at European level, four at regional level and one approval at national level as well as two requests for amendments at regional level.

In accordance with Regulation (EU) 2016/1719 establishing a guideline on forward capacity allocation, as already mentioned, the Energy Agency issued the consent to the Regional Specific Annex for CCR Core to the Harmonised Allocation Rules for long-term transmission rights. Moreover, it issued a consent to another pan-European methodology. Likewise, together with other regulatory authorities involved in capacity allocation, it participated in handing over a regional proposal to ACER.

In accordance with Regulation (EU) 2017/1485 establishing a guideline on electricity transmission system operation, in 2019 it issued two approvals to a proposal at the pan-European level and to five proposals at the regional level.

In accordance with Regulation (EU) 2017/2196 establishing a network code on electricity emergency and restoration, in 2019 the Energy Agency issued only one approval at the national level.

Pursuant to Regulation (EU) 2017/2195 establishing a guideline on electricity balancing, in 2019 the Energy Agency issued an approval to two national proposals (one of which was amended at the end of the year, so it actually issued three approvals). According to the regulatory authorities involved, not all pan-European and regional proposals complied with the requirements referred to in the Regulation, so the Energy Agency issued requests for the amendment of four pan-European and two regional proposals of methodologies to the TSO. In agreement with other regulatory authorities, it handed over three pan-European methodology proposals to ACER.

Regulation (EU) 2016/1388 establishing a Network Code on Demand Connection defines detailed requirements regarding grid connection and applies to new consumers who will connect to the power grid. In 2019, the Energy Agency approved the TSO's proposal on the inexhaustible requirements for grid connection of demand facilities and installations, which have to be included in the revised systemic operational instructions for the electricity transmission system. In 2018, after consulting the interested public, it adopted an act governing the methodology on approving the deviations from technical requirements for demand connection.

Regulation (EU) 2016/631 establishing a network code on the requirements for grid connection of generators defines detailed requirements regarding grid connection for power-generating modules and applies to new consumers who will connect to the power grid. In 2018, the Energy Agency approved the TSO's proposals on the distribution of important power-generating modules and the inexhaustible requirements for the grid connection of power-generating modules, which have to be included in the revised systemic operational instructions for the electricity transmission and distribution systems. After consulting the interested public, it also adopted an act governing the methodology on approving the deviations from the technical requirements for grid connection of power-generating modules.

Requirements regarding grid connection of high voltage direct current (HVDC) systems and direct current-connected power park modules are laid down in Regulation (EU) 2016/1447 establishing a network code on requirements for grid connection of high voltage direct current systems and direct current-connected power park modules. In 2019, the Energy Agency approved the TSO's proposal on the inexhaustible requirements for grid connection of HVDC systems, which have to be included in the revised systemic operational instructions for the electricity transmission system. In 2018, after consulting the interested public, the Energy Agency adopted an act governing the methodology on approving the deviations from technical requirements for the grid connection of HVDC systems.

Promoting competition

As part of its continuous monitoring process, the Energy Agency monitors developments in pricing (weighting factors, price trends, the impact of liquidity on prices, etc.), market transparency and integrity (access to information about prices, implementation of the Regulation on wholesale energy market integrity and transparency – REMIT), and market efficiency (openness and competitiveness). In 2019, the Energy Agency continued to implement the appropriate measures aimed at continuously eliminating barriers to the development of competition. One such measure is the publication of the operation, transparency, integrity and competitiveness indicators of relevant markets. In this way, the market is strengthened and high-quality energy supply services at optimal prices are guaranteed. Highlighted below are the key indicators which we use to evaluate the competitiveness, transparency and integrity of relevant markets.

Wholesale market

Producers, traders and suppliers of electricity exchange electricity in the wholesale market. That exchange can take place in organised trading venues (exchanges) or bilaterally (OTC – Over the Counter). The connections of the Slovenian energy network with foreign networks enable the participants of the Slovenian bidding zone to exchange energy with foreign bidding zones. If the participants transmit energy from the Slovenian bidding zone, we talk about export, if they feed it, about import. The free movement of energy within the available capacities means that the market conditions of one bidding zone transfer to other bidding zones. Therefore, it does not make sense to monitor only the national wholesale market. Monitoring should be conceived in a broader sense and follow price trends not only in the Slovenian bidding zone but also in the region.

Electricity prices

The Energy Agency monitors the level of wholesale prices in Slovenia and on related and reference markets that directly or indirectly affect prices in Slovenia. It has gathered information on prices from the BSP website as well as from commercial providers of analytical services and market information.

Electricity prices at power exchanges in Slovenia and foreign markets

The Slovenian electricity market is situated at the juncture of four large European markets: the German, the Austrian, the Italian one and that of South-Eastern Europe. In 2019, the Slovenian market joined the interregional day-ahead market coupling at the borders with Austria, Italy and Croatia. As far as intraday trading is concerned, Slovenia has established bilateral market coupling only with Italy since 19 November, which is carried out through complementary regional intraday auctions (CRIDA). Due to a gradual implementation of European regulations establishing a guideline on network codes, the

Decrease in the average base and peak prices in the day-ahead market

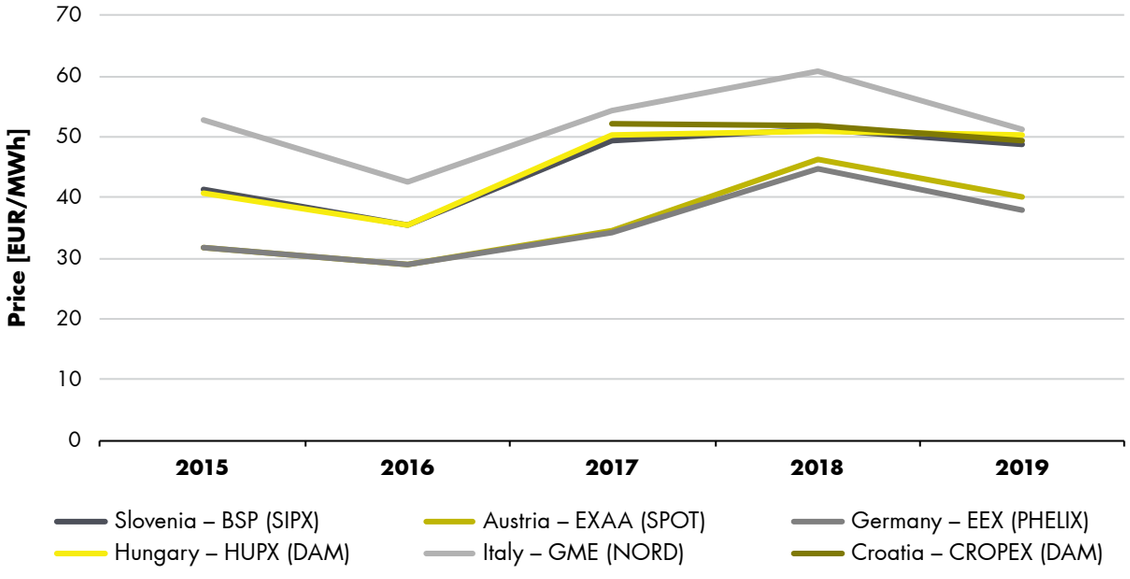
introduction of day-ahead and intraday coupling is expected at all European borders. In addition, the gradual coupling of systemic services and balancing energy will take place. As regards single intraday coupling, the Slovenian electricity exchange joined the European single intraday market on 20 November 2019, but only with its borders with Croatia and Austria. For the time being, the border with Italy only includes complementary regional intraday auctions.

Figure 52 shows trends in average base prices on the power exchanges in Slovenia and its neighbouring countries in recent years. The average base and peak prices in the day-ahead market at the Croatian CROPEX exchange are shown since 2017 because trading in these products was established in October 2016. The Slovenian and Croatian markets established interregional day-ahead coupling in 2018. The Slovenian and Hungarian markets are not directly connected as there is no transmission line between the countries, while the construction project of the Cirkovce–Pince transmission line is under way.

In 2019, the average base price on the power exchange in Slovenia decreased by 4.7% compared to the average price in 2018, thus amounting to 48.74 EUR/MWh. As we can see in Figure 52, electricity prices decreased in all markets under review, with the biggest drop in prices recorded in the Italian GME (NORD) market, where prices went down by over 15%. Despite its decline, the highest average price (51.25 EUR/MWh) in the day-ahead market continues to be recorded in the Italian power exchange.

The lowest base price (37.90 EUR/MWh) was recorded in the German power exchange, where the average prices dropped by 15.1% compared to 2018. In October 2018, the Germany/Austria common pricing area split into two national pricing areas. In the newly created German and Austrian pricing areas, pricing is performed according to the market conditions prevailing in the given area. As a result, prices are not the same and if we observe the price trends in the EEX (Germany) and EXAA (Austria) energy exchanges, we can see that they diverge.

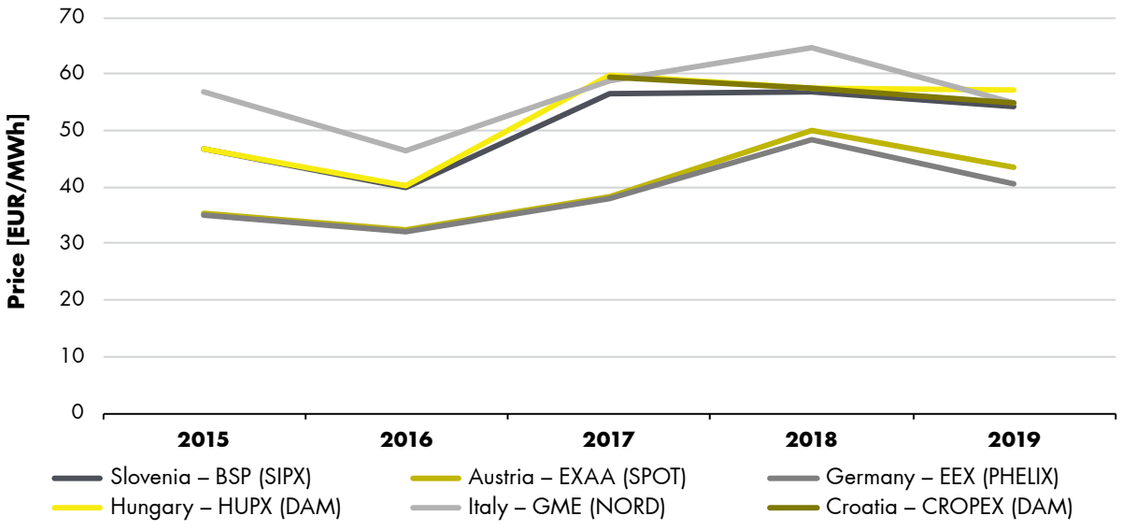
FIGURE 52: TRENDS IN AVERAGE BASE PRICE IN THE DAY-AHEAD MARKET IN SLOVENIA AND IN FOREIGN EXCHANGES IN THE 2015–2019 PERIOD



Source: Montel

The trends in average peak price in day-ahead markets in individual markets are shown in Figure 53. In 2019, the average peak price on the power exchange in Slovenia decreased by 4.8% compared to the average price in 2018, thus amounting to 54.16 EUR/MWh. Similarly to base prices, peak prices diminished in all markets under review compared to 2018. However, here the biggest drop in prices was recorded in the German power exchange, where the average peak price fell by almost 16%. The smallest decrease in prices occurred in the Hungarian power exchange (–0.6%), where the average peak price in 2019 was the highest of all the markets under review, amounting to 57.01 EUR/MWh.

FIGURE 53: TRENDS IN AVERAGE PEAK PRICE IN THE DAY-AHEAD MARKET IN SLOVENIA AND IN FOREIGN EXCHANGES IN THE 2015–2019 PERIOD



Source: Montel

There are several reasons for the decrease in prices in the markets under review. The prices in the German power exchanges affect other EU markets. The most important reason for the drop in prices in Germany could be electricity generation from renewable sources. Most electricity in 2018 was generated by brown coal power plants (131.3 TWh), which caused the prices to rise due to all the direct costs related to that type of generation (costs of coal and emission allowances). In contrast, most electricity in Germany in 2019 was generated by wind farms (127.23 TWh). The production of brown coal power plants decreased to 102.05 TWh in 2019. In addition, the production of hard coal power plants also saw a significant drop.[21]

Another reason for lower electricity prices in power exchanges is the low price of natural gas in gas hubs. The prices of natural gas in Europe in early July reached the lowest values in a decade[22]. The prices of natural gas significantly affect the price of electricity. Because of that, we assume that just gas-fired power plants in Germany generated almost 9 TWh more electricity in 2019 in comparison with 2018. The decrease in prices of gas in Italy, which has numerous gas-fired power plants, also had a significant impact on the decline in electricity prices. According to data from Gas Infrastructure Europe[23], gas storage facilities in Europe were almost 93% full in early September, which is considerably more than their average in that period.

The decreased price of electricity was also significantly influenced by the reduced economic growth in Germany and some other EU Member States. As the largest consumer of electricity, industry experienced lower production rates, affecting a decrease in demand, which further influenced the prices.

In early 2019, in a period of low electricity generation from renewable sources, average prices in day-ahead power exchanges were the highest. At that time, rainfall was low, which affected the small quantity of electricity generated by hydro power plants. At the same time, the needs for energy grew due to low temperatures. The highest price in the Slovenian power exchange, which is also the highest of all the markets under review, was reached on 2 September. The transmission capacities in the direction from Austria to Slovenia and from Italy to Slovenia were fully engaged, which indicates great demand in Slovenia, and the capacities from Slovenia to Croatia were also engaged. Between 17 August and 16 September 2019, Unit 6 of Šoštanj TPP, with an installed

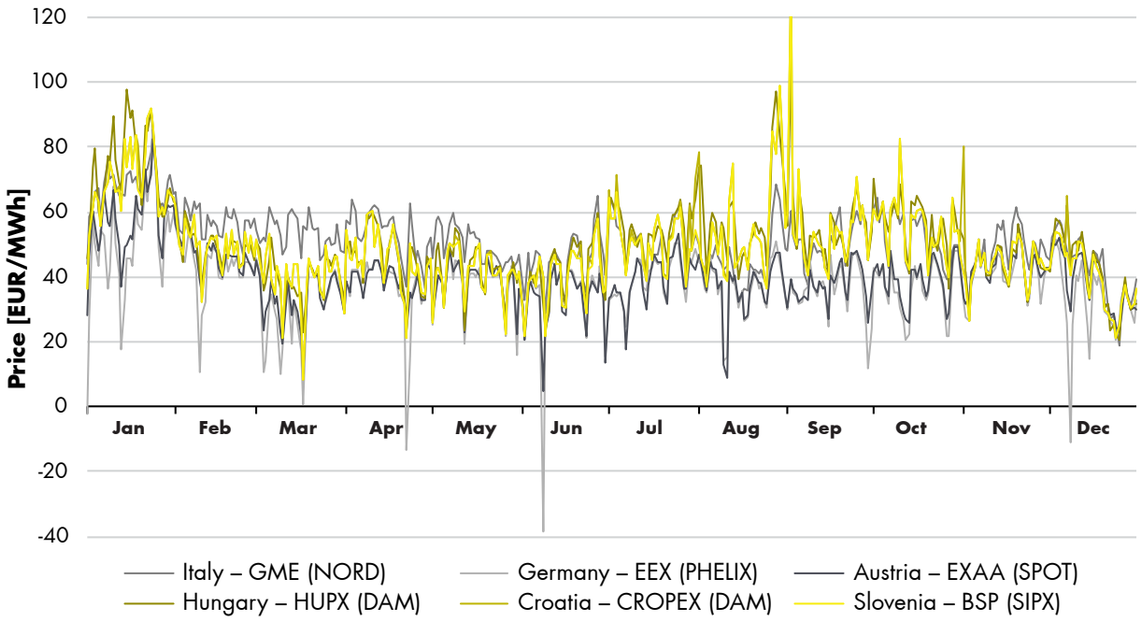
The highest (day-ahead) base price in the Slovenian power exchange was on 2 September and amounted to 133.18 EUR/MWh

[21] https://energy-charts.de/energy.htm?source=all-sources&period=annual&year=2019&month=6
[22] https://oilprice.com/Energy/Energy-General/European-Gas-Prices-Plunge-To-10-Year-Low.html
[23] https://oilprice.com/Energy/Energy-General/European-Gas-Prices-Plunge-To-10-Year-Low.html

capacity of 539 MW, was shut down, which may have affected the prices in the power exchange. The prices in the Croatian and Hungarian power exchanges also reached a record high on that day, which implies great demand in both neighbouring countries.

In 2019, we only recorded negative prices in the German power exchange. A record level, 38.46 EUR/MWh (base price), was reached on 8 June 2019, when wind farm generation amounted to as high as 0.62[24] TWh. That considerably exceeds the average daily generation (in June, the average daily generation[25] from wind farms amounted to 0.225 TWh of electricity).

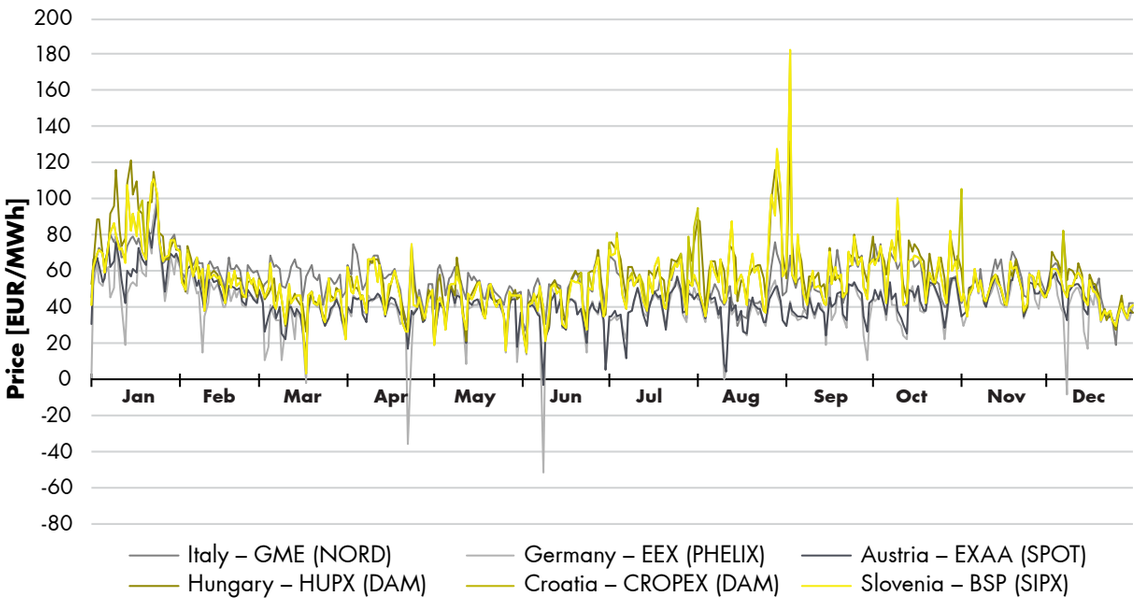
FIGURE 54: TRENDS IN BASE PRICE IN THE DAY-AHEAD MARKET IN SLOVENIA AND IN FOREIGN EXCHANGES



Source: Montel

[24] https://energy-charts.de/energy.htm?source=all-sources&period=daily&year=2019&month=6
[25] https://energy-charts.de/energy.htm?source=all-sources&period=monthly&year=2019&month=6

FIGURE 55: TRENDS IN PEAK PRICE IN THE DAY-AHEAD MARKET IN SLOVENIA AND IN FOREIGN EXCHANGES



Source: Monte

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Table 23 shows the results of a comparative analysis of the prices that were reached in the day-ahead market in the BSP (Slovenia), GME (Italy), EXAA (Austria) and CROPEX (Croatia) exchanges in 2018 and 2019. The difference between electricity prices in BSP and EXAA has been increasing. The share of hours when prices in EXAA were lower than in BSP increased, amounting to over 76%. In contrast, the difference between electricity prices in BSP and GME as well as BSP and CROPEX has been declining. The share of hours when market prices were the same grew in both cases. A particularly sharp rise occurred between the BSP and CROPEX markets, where the share of hours when the price is the same amounted to as much as 57%.

TABLE 23: COMPARISON OF PRICES (ACCORDING TO THE SHARE OF HOURS) BETWEEN POWER EXCHANGES IN THE DAY-AHEAD MARKET

	Share of hours in 2018	Share of hours in 2019
Lower price in BSP than GME	67.32%	40.51%
Lower price in GME than BSP	1.64%	11.54%
Same price in BSP and GME	31.04%	47.95%
Lower price in BSP than EXAA	34.71%	23.45%
Lower price in EXAA than BSP	65.23%	76.45%
Same price in BSP and EXAA	0.06%	0.10%
Lower price in BSP than CROPEX	27.72%	2.31%
Lower price in CROPEX than BSP	48.65%	40.67%
Same price in BSP and CROPEX	23.63%	57.02%

Source: BSP

Estimated market price of electricity for which producers are eligible for support

The Energy Agency determines the estimated market price of electricity generated in power stations included in the support scheme by monitoring the effect that the price of that electricity has on the development of prices of the remaining electricity in the market which does not benefit from financial support for generation. That monitoring aspect is particularly important if the share of electricity for which producers are eligible for support is large. That is because it can begin to distort market prices while placing producers without support in a non-competitive position. The share of generated electricity for which producers can receive support stayed below 10% of all the electricity generated in Slovenia. In 2019, it was 7.6%. Although no influence of the support on pricing was detected, the Energy Agency keeps monitoring the market and determining the estimated market price of electricity for which producers are eligible for support.

The model for calculating the market price of electricity for which producers are eligible for support has not changed since its introduction. More detailed descriptions can be found in previous reports on the energy situation in Slovenia. It is based on the weighted price of electricity generated and sold in the market by producers that are eligible for operational support and the weighted price of electricity acquired by Borzen in the Eco Group. That price is formed at an annual auction carried out by Borzen, while the energy is acquired from the producers which receive support in the form of guaranteed purchase.

The estimated market price of electricity for which producers are eligible for support is higher than the average hourly price in the Slovenian power exchange.

As has been the case for several consecutive years now, in 2019 most of the electricity included in the support scheme was sold freely on the market, so within the operational support. The estimated market price was thus mainly influenced by the weighted price of electricity achieved by the producers by selling the generated electricity to the suppliers on the market. Table 24 shows the estimated market price of electricity together with the average hourly price in BSP for the 2015–2019 period. In 2019, this price was higher than the average hourly price in BSP.

TABLE 24: COMPARISON OF THE ESTIMATED MARKET PRICE OF ELECTRICITY FOR WHICH PRODUCERS ARE ELIGIBLE FOR SUPPORT AND THE AVERAGE ANNUAL HOURLY BASE PRICE IN BSP IN THE 2015–2019 PERIOD

Year	Estimated market price (EUR/MWh)	Average hourly price in BSP (EUR/MWh)
2015	42.18	41.41
2016	39.04	35.62
2017	36.69	49.52
2018	44.54	51.16
2019	55.86	48.74

Sources: Energy Agency, Borzen, BSP

Emission allowance trading

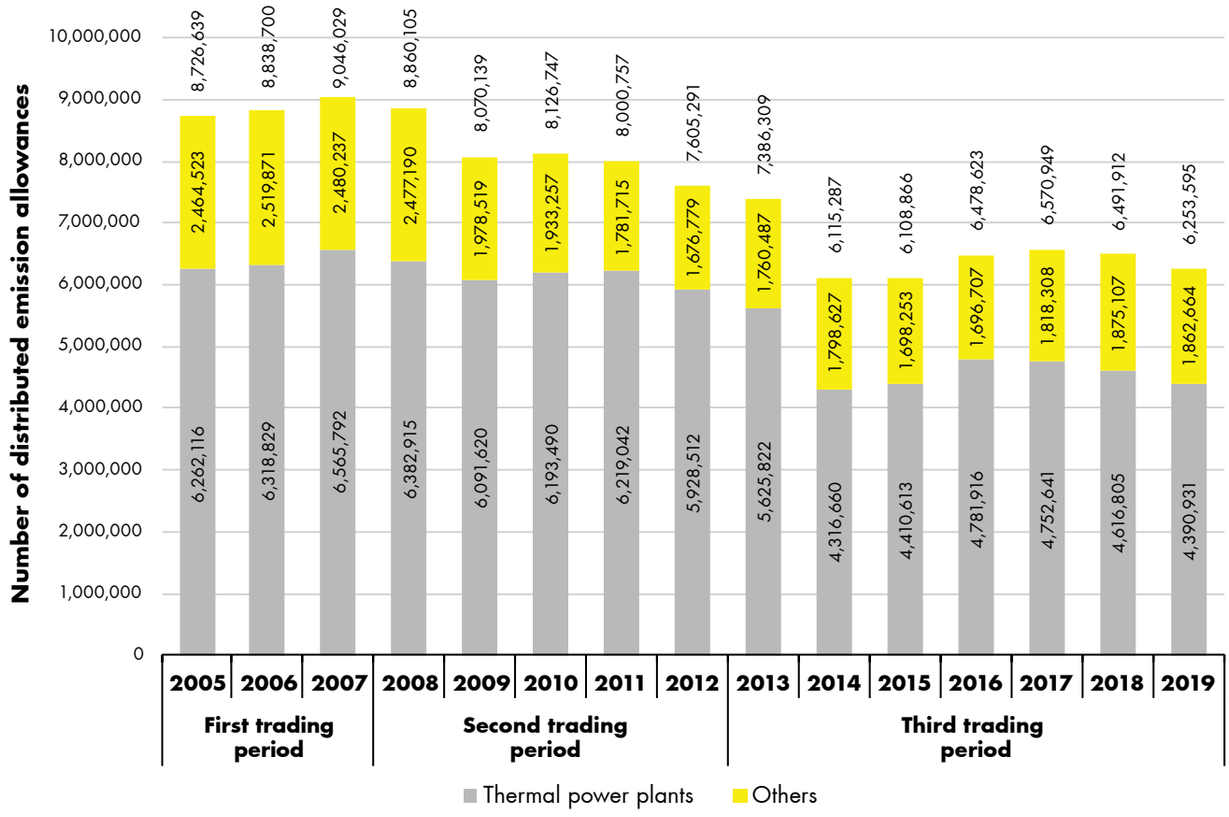
Emission allowance is a general term for a certificate or authorisation to emit one tonne of carbon dioxide or other greenhouse gas equivalent in the atmosphere.

The number of distributed emission allowances in Slovenia decreased for the second consecutive year. Compared to 2018, it fell by 3.7%. This is a result of fewer emission allowances being allocated to thermal power plant companies, which received almost 5% fewer emission allowances in 2019 than in 2018. Despite its higher generation of electricity, Šoštanj TPP, otherwise the largest allowance user in Slovenia, received fewer emission allowances. This can be a result of the environmental rehabilitation[26] of Unit 5, which was put into operation in August 2018, after almost three years, and now needs fewer emission allowances to operate. Another reason could be the more favourable conditions to import electricity within pan-European coupling.

3.7% fewer emission allowances allocated in Slovenia

The rest of the industry took over 1,862,664 emission allowances, which is 0.7% fewer than in 2018.

FIGURE 56: NUMBER OF DISTRIBUTED EMISSION ALLOWANCES FOR ALL THREE TRADING PERIODS IN THE 2005–2019 PERIOD



Source: ARSO

[26] https://www.hse.si/en/generator-5-of-the-sostanj-thermal-power-plant-tes-produces-electricity-again/

Figure 57 shows price trends of emission allowances (product of EUA on EEX). The average price in the period under review was around EUR 25 per tonne of CO_2. That was the price of emission allowances in early 2019, which, with some intermediate fluctuations, then reached its lowest level in late February (EUR 18.82 per tonne of CO_2). That was the consequence of good hydrological conditions in individual EU countries in that period, when electricity generation in hydro power plants was high, which affected the price of emission allowances. After that period, prices began to rise with some intermediate fluctuations, reaching a high in late July (EUR 29.8 per tonne of CO_2). That period was marked by high temperatures and poor hydrological conditions, which increased electricity generation in thermal power plants and, consequently, affected the price of emission allowances. Prices declined slightly in September and, with some intermediate fluctuations, trended around EUR 25 per tonne of CO_2 until late 2019.

FIGURE 57: PRICE TRENDS OF EMISSION ALLOWANCES (EUA) IN THE EEX EXCHANGE (BOUGHT IN 2019 FOR 2020)

Source: Montel

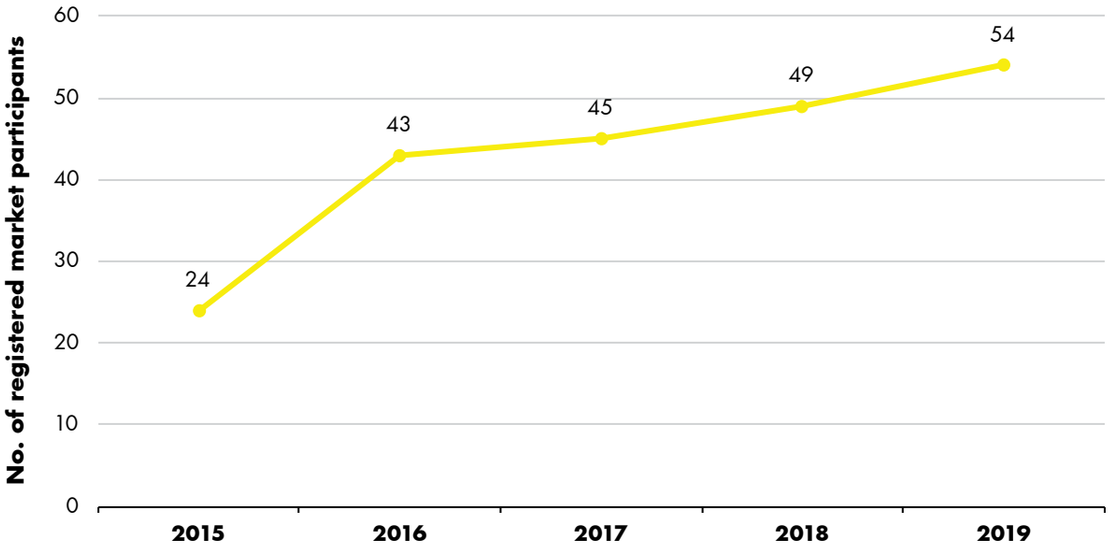
Market transparency

REMIT (Regulation (EU) No 1227/2011 on wholesale energy market integrity and transparency) is the key foundation for ensuring integrity and transparency in the energy market. It is a comprehensive regulatory framework for monitoring and supervising the European electricity and natural gas wholesale markets. The Regulation consists of three major parts: prohibition of market manipulation and insider trading, a requirement for effective and timely publication of inside information, and the appropriate legislative framework for comprehensive market monitoring.

Market monitoring includes the monitoring of all wholesale energy products, including orders to trade, irrespective of whether they are traded on bilateral or organised markets. It also includes basic information on the availability of the energy infrastructure. The type and method of reporting information are specified in Regulation (EU) No 1348/2014. All data is gathered by the Agency for the Cooperation of Energy Regulators (ACER). Pursuant to an agreement, ACER provides the Energy Agency with daily data, which it needs to monitor the national energy market. Two aspects of such submission are essential: the data should refer to the Slovenian bidding zone and be related to the activity of market participants that are registered with the Energy Agency.

In accordance with REMIT, market participants have to register with the national regulatory authority in the Member State in which they are established or resident or, if they are not established or resident in the EU, in a Member State in which they are active. Fifty-four participants registered with the Energy Agency by the end of 2019 (Figure 58).

FIGURE 58: REGISTRATION OF MARKET PARTICIPANTS IN SLOVENIA IN THE 2015–2019 PERIOD



Source: Energy Agency

Within the monitoring process of wholesale energy markets under REMIT, the Energy Agency examined five cases of breaches of the Regulation in 2019. They were all submitted to the Energy Agency in accordance with the cooperation agreement concluded with ACER. Procedures were initiated on the basis of reported suspicious transactions or alarms triggered by the control system for detecting manipulation and abuse within the continuous market monitoring system. Four cases are related to prohibited conduct in the electricity market and one in the natural gas market. Three of the five cases are under investigation, which implies gathering additional evidence related to the alleged breaches of the market participants, while two are in the examination phase of the alleged breaches. The Energy Agency has been dealing with all the cases in close cooperation with foreign regulatory authorities in the region and with ACER, which ensures a coordinated approach in solving the cases.

5 open cases of breaches of REMIT

Market effectiveness

The Energy Agency monitors the effectiveness of the wholesale market in Slovenia, wholesale markets in the region and markets in countries which, due to their integration and size, influence electricity prices in the entire European Union. This chapter focuses on trading in Slovenia. It includes indicators that illustrate the effectiveness of wholesale markets in Slovenia in terms of their level of competitiveness and liquidity. Monitoring the registration of closed contracts and operational forecasts, which is essential for ensuring an effective market, provides a bigger picture of trading because it includes bilateral trading.

Registration of closed contracts and operational forecasts

The registration of closed contracts and operational forecasts is carried out by the market operator Borzen. These contracts are the basis for drawing up the trading plans of the members of the balance scheme and for calculating the imbalances of balance group leaders after the supply has taken place.

Borzen registers all closed contracts that affect the energy balance of a member of the Slovenian balance scheme. It registers all contracts concluded between members of the balance scheme, contracts concluded on the energy exchange and import-export closed contracts. Contracts concluded on bilateral markets are part of registered import-export closed contracts and closed contracts concluded between members of the balance scheme. Bilateral trading is carried out between two contracting parties outside an organised power exchange.

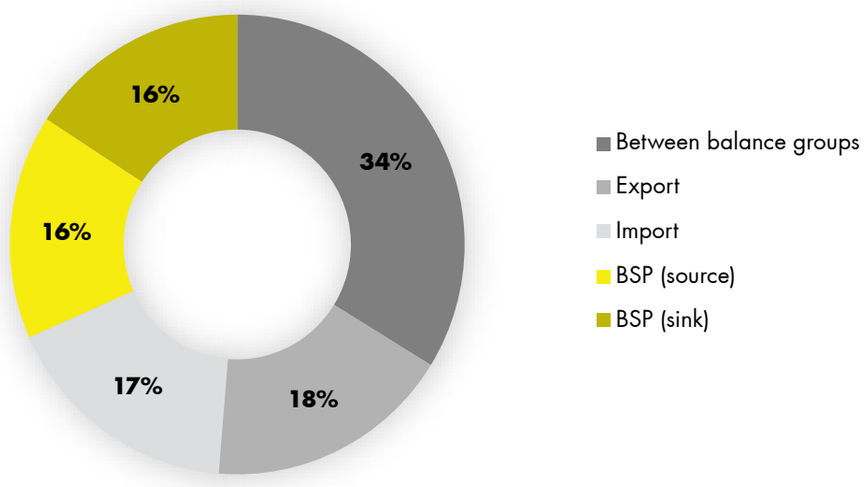
In addition to closed contracts, Borzen also registers operational forecasts, which represent forecasts of the delivery and consumption of electricity by the members of the balance scheme for those delivery points for which open contracts are concluded.

In 2019, the market operator registered a total of 107,947 closed contracts and operational forecasts for a total amount of 84,343,025 MWh. Compared to the previous year, the total number of registered closed contracts and operational forecasts dropped by 1.1% in 2019, while the trading volume rose by 1.5%.

The amount of electricity which was sold or purchased through closed contracts in 2019 was 56,239,158 MWh. Compared to 2018, when the total amount of closed contracts was 54,488,921 MWh, that amount increased by 3.2%.

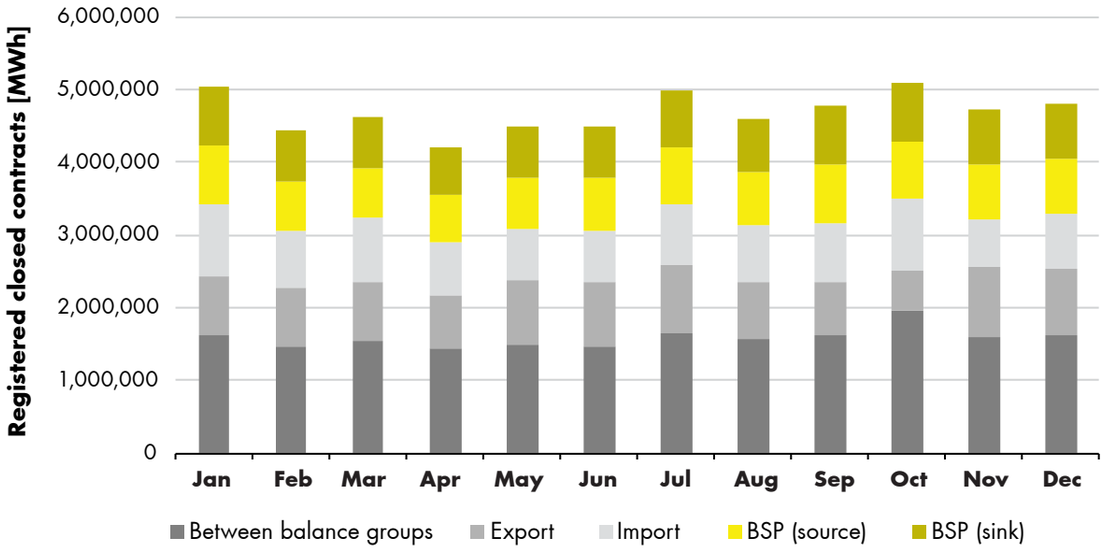
The structure of the volume of registered closed contracts and their corresponding quantities are shown in Figures 59 and 60.

FIGURE 59: STRUCTURE OF THE VOLUME OF REGISTERED CLOSED CONTRACTS IN 2019



Source: Borzen

FIGURE 60: AMOUNT OF ELECTRICITY SOLD OR PURCHASED THROUGH CLOSED CONTRACTS PER MONTH IN 2019



Source: Borzen

Day-ahead market

Day-ahead trading takes place on BSP in the form of auction trading. During the trading stage, market participants enter standardised hourly products into a trading application. The marginal price is calculated based on an algorithm of the trading application. Such trading is included in interregional market coupling, where any available CZCs are allocated. In 2019, that market coupling included the borders of the Slovenian bidding zone with the bidding zones of Italy, Austria and Croatia. The volume of trading is influenced by numerous factors, most importantly by the quantities of available CZCs.

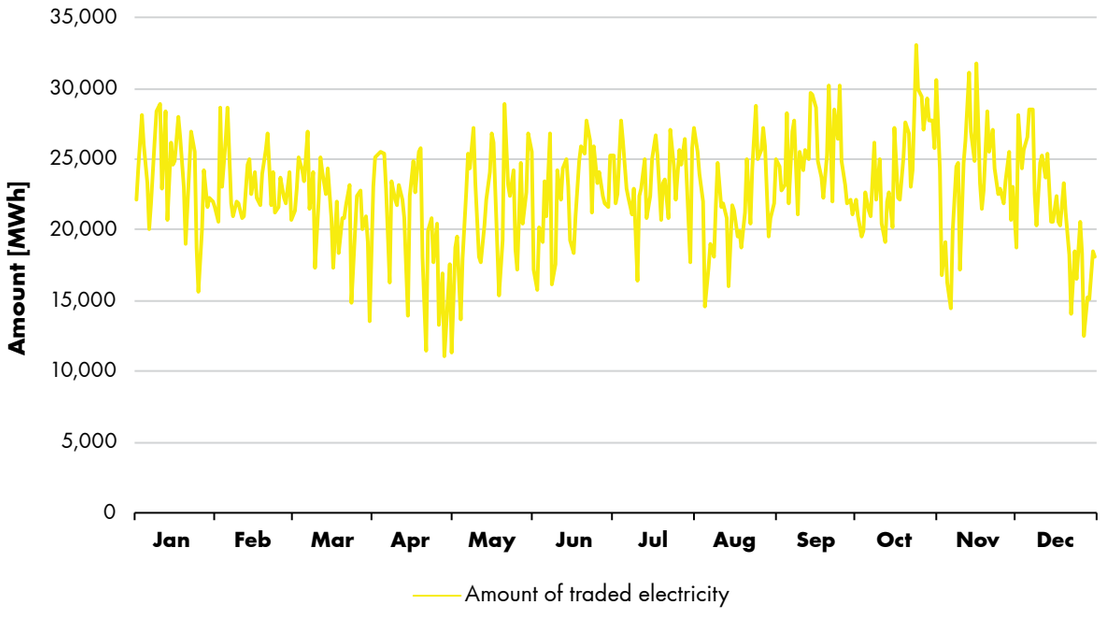
Twenty-one market participants were involved in day-ahead trading in 2019, which is four fewer than in 2018. The majority of the participants were from abroad.

The total volume of trading in the Slovenian day-head market in 2019 amounted to 8,284,347 MWh or 11.3% more than in 2018. The average daily trading volume was 22,697 MWh and the highest daily trading volume, which was reached on 24 October 2019, was 33,047 MWh.

11.3% larger volume of trading in the Slovenian day-ahead market

The highest monthly trading volume was achieved in September 2019 and amounted to 755,770 MWh, which accounts for 9.1% of the total trading volume in that year. The highest monthly trading volume in 2019 was 6.6% lower than the highest monthly trading volume in 2018. The lowest monthly trading volume, amounting to 612,779 MWh, was reached in April. Only the monthly trading volumes in March and April did not exceed the trading volume in the same period in 2018.

FIGURE 61: AMOUNT OF ELECTRICITY TRADED IN 2019



Source: BSP

Intraday market

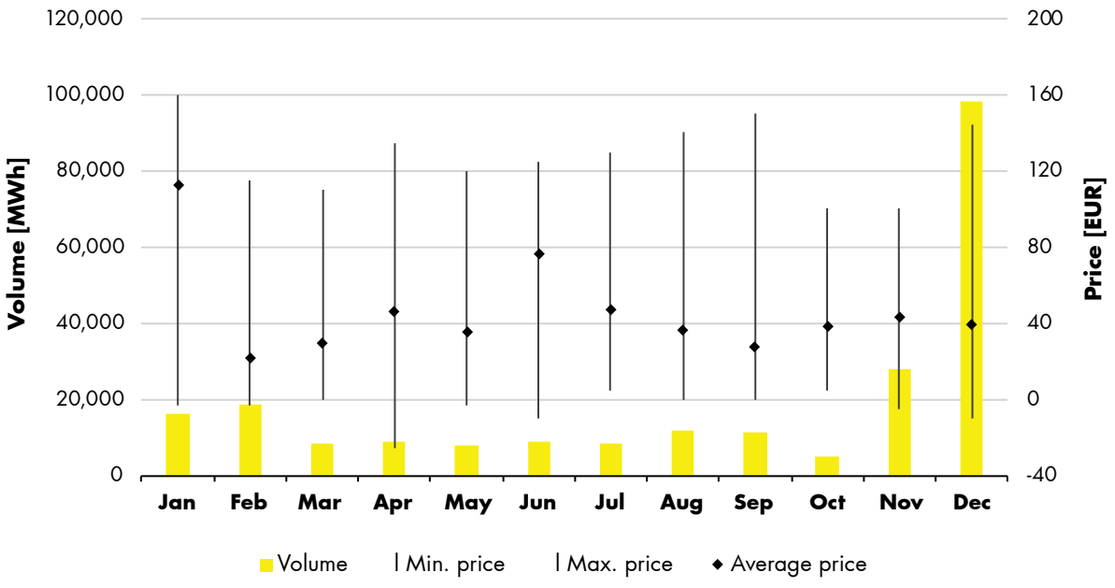
Intraday trading allows market participants and balance groups to post additional bids or purchases after the close of day-ahead trading and thus adjust their trading plans accordingly and harmonise them with the operational forecasts. Trading in the intraday market concludes one hour before physical delivery and converts into trading in the balancing market, where market participants are left to trade only with the TSO. Prices in the intraday market always provide a clearer reflection of the real-time value of energy, which can be put to use by market participants. As providers of flexibility, they can adjust their generation and/or consumption within a short period of time.

Intraday trading in the Slovenian organised market is also conducted on BSP. Continuous trading was limited to the Slovenian market until 19 November 2019, when the Slovenian intraday market at its borders with Austria and Croatia joined the single European intraday market as part of the SIDC project. Eight Slovenian and five foreign market participants participated in the intraday market on BSP at the end of 2019. Besides continuous trading, market participants can perform intraday auction trading through complementary regional auctions with Italy.

In 2019, the total volume of intraday continuous trading increased by as much as 98% and reached 259 GWh, of which 140 GWh accounted for the volume of trading in the balancing market and 119 GWh for the volume of the remaining intraday continuous trading. Due to market coupling, the total volume of the remaining intraday continuous trading grew significantly in comparison with 2018, when it was 2 GWh. An explanation of why certain quantities in intraday trading are treated as quantities in the balancing market is given in the following chapter.

98% increase in the volume of intraday continuous

FIGURE 62: VOLUME OF TRADING AND PRICE RANGES IN THE INTRADAY MARKET



Source: BSP

Figure 62 shows the trends in trading quantities and price ranges of hourly and 15-minute products in the intraday continuous market. A sudden surge in trading volume after the coupling into the European SIDC market took place can be seen. While the trading volume and prices were shaped mainly by trading in the balancing market until November 2019 (comparison of the trends in Figures 62 and 63), greater independence of the intraday continuous market and balancing market is expected after the coupling.

9% increase in trading volume in the balancing market

The volume of auction intraday trading amounted to 400 GWh in 2019 (implicit auctions MI2 and MI6 at the Slovenian-Italian border), which is a 100% upswing compared to the previous year. Bids in the total amount of 4,102 GWh were recorded, of which 2,310 GWh were purchase bids and 1,792 GWh were sales bids. Despite the larger trading volume, slightly fewer bids were recorded in this exchange segment.

The volume of trading on the intraday power exchange accounted for 7.3% of all trading on the Slovenian electricity exchange. Compared to 2018, when it amounted to 4.3%, this share saw an increase in 2019. The reason for that is the already mentioned surge in both intraday trading segments.

Balancing market

The balancing market in Slovenia is run by Borzen, the electricity market operator. In the balancing market, the TSO buys the appropriate amount of balancing energy from providers if there is not sufficient energy in the system, or sells potential surpluses[27]. In doing so, the TSO releases automatically activated frequency restoration reserves and maintains the necessary volume of frequency restoration reserves. Reserve activation is normally more expensive than purchasing energy in the balancing market. The rules for implementing the balancing market set down that bids entered by members of the balancing market within intraday trading may be accepted by the TSO as bids placed in the balancing market, and that all transactions concluded with the TSO's bids for the purpose of balancing the power system are regarded as transactions in the balancing market. Transactions in the balancing market can be divided into transactions carried out in the intraday trading stage and transactions carried out in the balancing market stage.

Trading in the balancing market is carried out as continuous trading, i.e. 24 hours a day, seven days a week and one day in advance at most, with hourly, 15-minute, base-load and peak-load products as well as block products. The transaction is concluded whenever the appropriate supply and demand meet. For practical reasons, trading in the Slovenian balancing market is carried out together with intraday trading. Under the authority of the market operator, both markets are carried out by BSP. The same rules apply to both markets, subject to the principle that intraday trading ends one hour before the time of delivery and converts into trading in the balancing market.

Besides the TSO, another six of a total of 34 members of the balancing market participated in trading, which is one fewer than in 2018.

In 2019, 4,751 transactions were concluded in the balancing market for a total volume of 140.3 GWh. Out of these, 43.8 GWh represented the purchase of balancing energy and 96.5 GWh the sale of balancing energy by the TSO. In comparison with the previous year, the volume grew by 9%, while the number of concluded transactions rose by as much as 47%. Most of the trading was performed for hourly products in the total volume of 114.3 GWh of electricity. With 4,061 transactions, hourly products were also the most traded product in the balancing market.

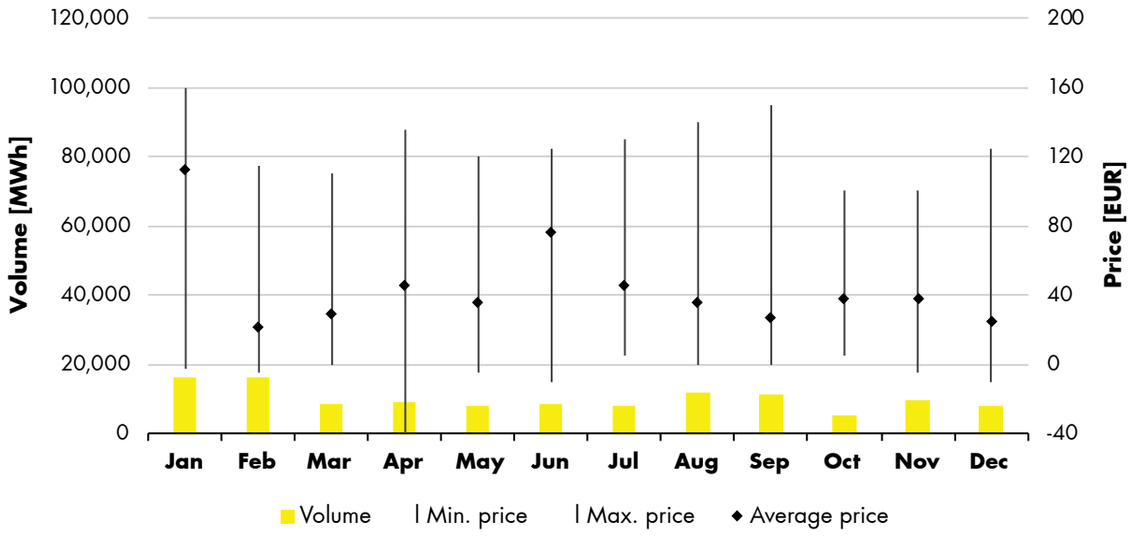
The balancing market accounted for 30.8% of all balancing of the system in 2019, which is 3.6 percentage points more than in 2018.

The number of transactions concluded in the balancing market stage has been increasing since 2014. In 2019, it represented 72% of all transactions concluded in the balancing market.

The highest price of electricity for the settlement of imbalance was 220 EUR/MWh in 2019, and the lowest was –50 EUR/MWh. In both cases, they were transactions of block products. The TSO mainly acted as a seller of electricity in the balancing market.

[27] One hour before the time of delivery, transactions between different balance group members are not possible since transactions in the balancing market always have to be concluded by the TSO on one side, which may be selling or purchasing (a single buyer).

FIGURE 63: VOLUME OF TRADING AND PRICE RANGES IN THE BALANCING MARKET



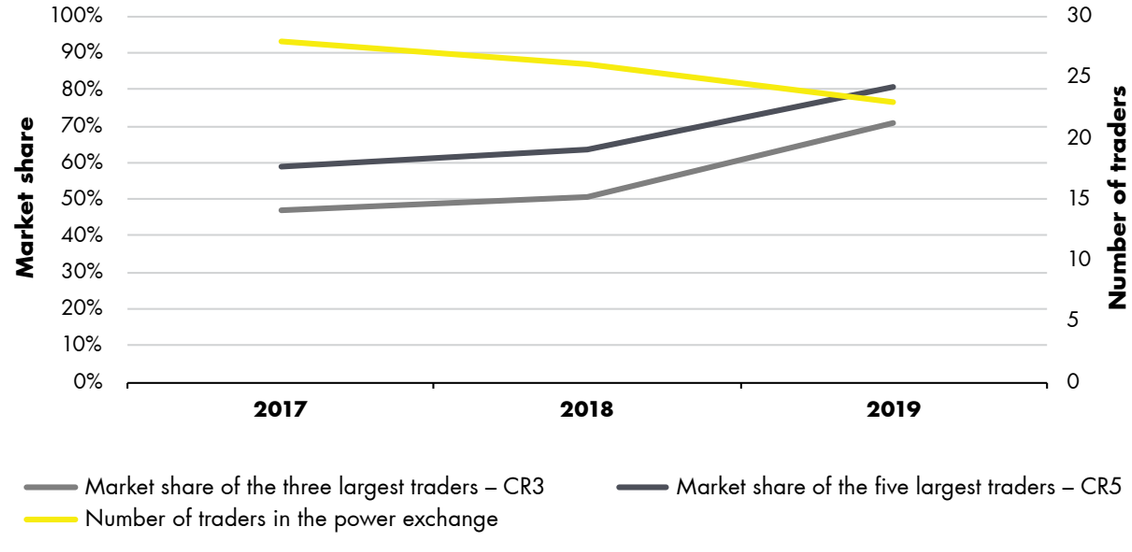
Source: Borzen

Concentration in the power exchange

In 2019, 23 Slovenian and foreign companies traded on BSP in the day-ahead market, which is five fewer than at the end of 2018. The number of traders operating on BSP has been steadily falling in recent years. As an indicator of the level of concentration, the total market share of the three largest traders was 70.8% (CR3) in 2019, which is a significant rise from 2018 (50.4%). The total market share of the five largest traders was 80.8%, which is also an increase compared to 2018. Such a rise is the result of a shift in balance among the companies with the largest market share.

The HHI was 2,280, which indicates a high concentration in the wholesale market.

FIGURE 64: MARKET SHARE AND NUMBER OF TRADERS IN THE SLOVENIAN POWER EXCHANGE ACCORDING TO TRADED VOLUME



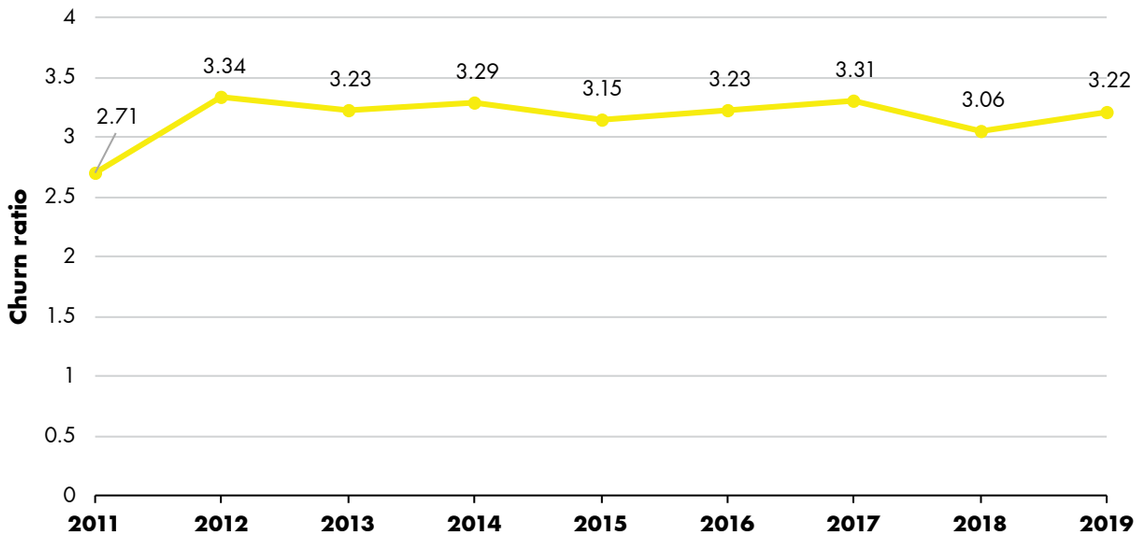
Source: BSP

Wholesale market liquidity

The Energy Agency monitors the liquidity of the Slovenian wholesale electricity market using an established index called the churn ratio. This index provides us with the information of how many times a unit of electricity had been traded before it was delivered to the end consumer. The calculation is based on a methodology that takes into account the quotient between the sum of the recorded volume from closed contracts minus the exported volume, and the consumption in Slovenia. The volume from closed contracts includes the volume traded on BSP as well as that traded on the bilateral market. Figure 65 shows the trends of the index during the nine-year period under review. Compared to the previous year, the value of the index slightly increased in 2019. The index value remained above three, indicating that the Slovenian wholesale electricity market is well developed and has a high level of liquidity. Even though our wholesale market is smaller in comparison with other European markets, a relatively large number of active participants are present. They are Slovenian and foreign, large as well as small, which shows that the Slovenian market is open to the entry of new participants. The number of transactions concluded by the market participants is comparable to that of participants in foreign markets. That is why the prices of products are stable and do not undergo drastic changes in case of low liquidity.

The wholesale electricity market continues to be well developed and has a high level of liquidity

FIGURE 65: TRENDS OF THE CHURN RATIO PER YEAR IN THE 2011–2019 PERIOD



Sources: Borzen, Energy Agency

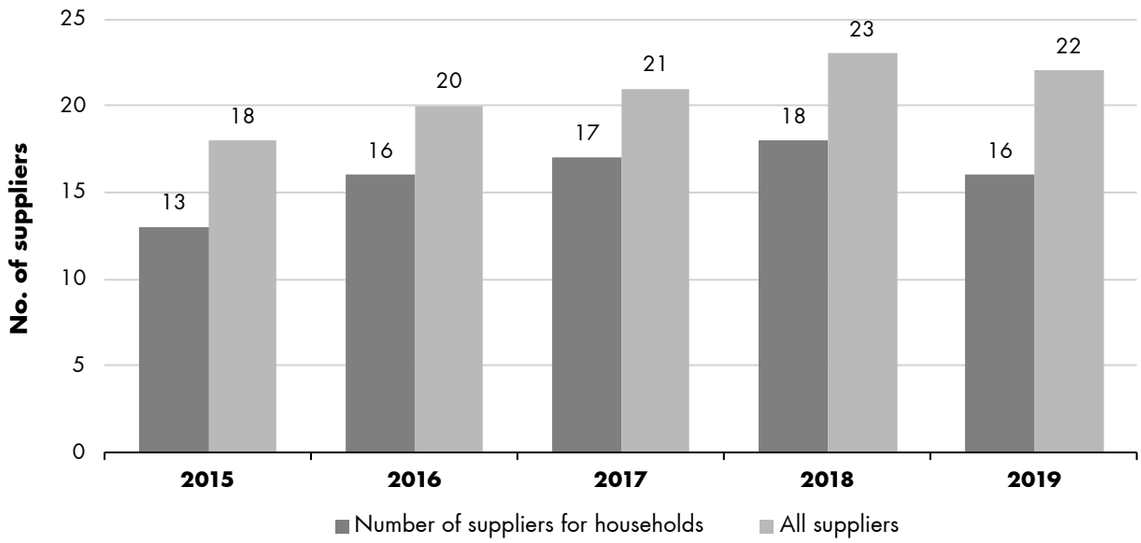
Retail market

Suppliers and end consumers in the Slovenian retail market sign open contracts, in which the quantities of supplied electricity and the time profile of supply are not set in advance. Twenty-two electricity suppliers were active in this market in 2019, of which 16 supplied electricity to household consumers. All consumers in Slovenia were delivered 13.78 TWh of electricity, which is 0.7% less than in 2018.

In this period, no new suppliers entered the retail electricity market. Due to a merger (Petrol, d.d. acquired Petrol energetika, d.o.o.), there is one less supplier in the market, while one supplier stopped supplying energy to household consumers in 2019.

No new electricity suppliers entered the market

FIGURE 66: TRENDS IN THE NUMBER OF SUPPLIERS IN THE SLOVENIAN RETAIL MARKET IN THE 2015–2019 PERIOD



Source: Energy Agency

The business models of suppliers are still different. Some supply electricity only to household consumers, others to businesses only, but most of them to both. Market participants keep using new communication channels, e.g. by advertising new services and offers on social media, they are able to reach a wide range of people. Choosing a supplier does not depend only on the price of a specific service but also other factors, such as extra services and benefits, the consumers' trust in the brand, the option to purchase new, contemporary heating and energy supply solutions, and various payment options.

Prices

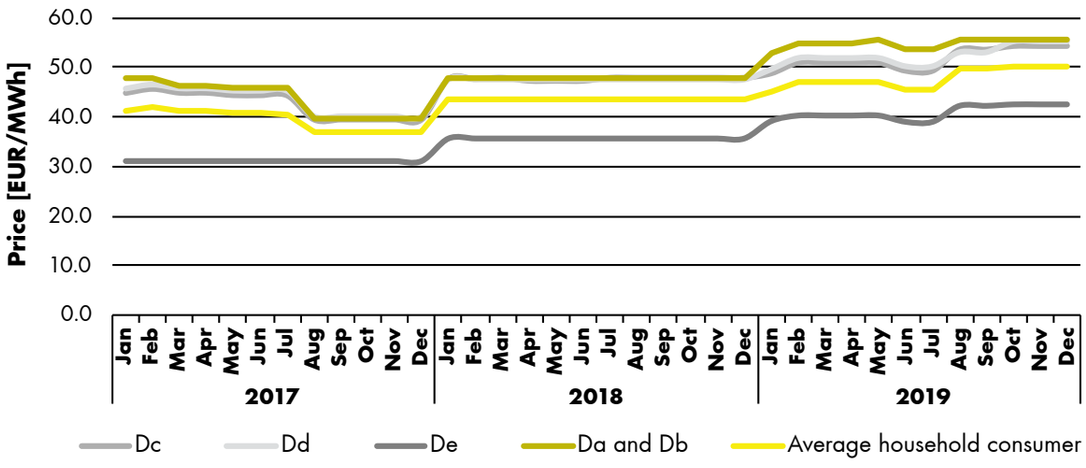
Retail electricity prices are not regulated and are set on the market. The Energy Agency regularly monitors the prices set for household and business consumers based on data on prices and offers in the retail market for households and small business consumers, which is submitted by the suppliers on a monthly basis.

Retail price index for typical household consumers

On the basis of monitoring the retail market for household consumers, the Energy Agency determines retail price indices (RPI). This index is based on the lowest offer in the retail market which is accessible to all household consumers and enables them to switch suppliers at any time without a contractual penalty. Therefore, the RPI reflects the price potential of the relevant market.

Figure 67 shows the trends of the RPI for standard consumer groups Da, Db, Dc, Dd, De and an average Slovenian household consumer[28] in the 2017–2019 period. Most of the consumers in the retail market (except those who have contracts that include contractual penalties) have the option of switching their supplier or a product provided by their current supplier. In that way, they are sure to be supplied electricity at a price reflected by the RPI.

FIGURE 67: RPI IN THE 2017–2019 PERIOD



Source: Energy Agency

Figure 67 shows that the RPI increased in all consumer groups in early 2019 and, with intermediate fluctuations, kept a constant value. The RPI level decreased slightly in all consumer groups in June. We assume that suppliers raised their prices in early 2019 because of risk management based on the forecast growth of wholesale prices. Due to competition, a downward correction ensued. The RPI level rose again in all consumer groups in August. The most prominent increase of the RPI level was recorded in consumer groups De and Dd. At the end of 2019, the RPI value was considerably higher for all consumer groups than in 2018.

Considerable increase in the price of offers

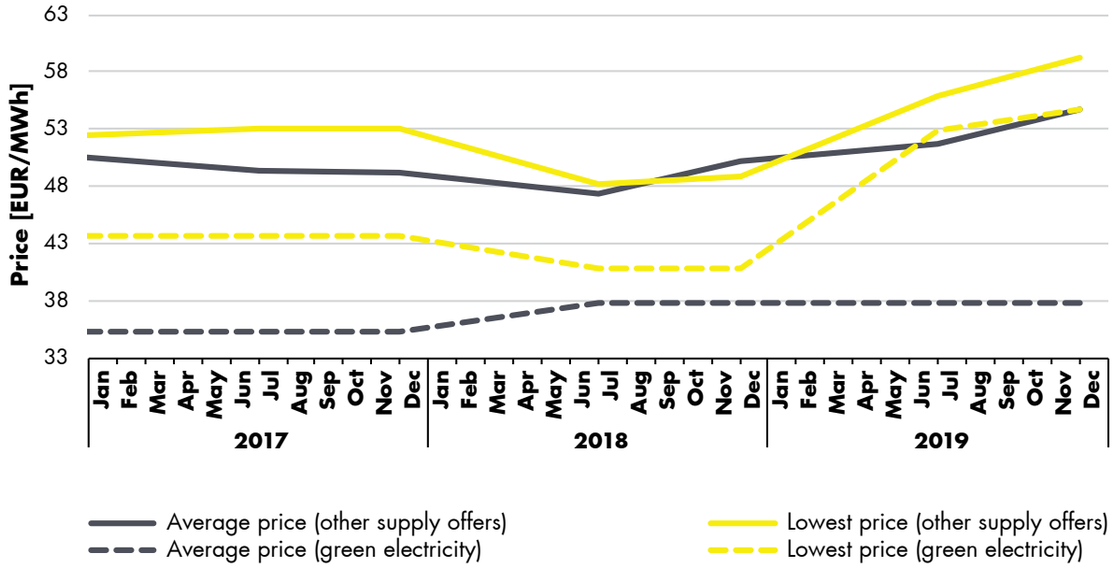
[28] Consumption LT 2,100 kWh and HT 1,996 kWh a year, connected load 8 kW.

Analysis of green electricity prices

As part of their electricity supply services, electricity suppliers offer consumers specific products that, among other things, differ in their structure of primary production sources. Consumers can choose between the supply of electricity which was produced exclusively from renewable energy sources (green electricity) and other products that include other energy sources in their production sources (other supply offers).

At 31 December 2019, suppliers in this market provided only five green options (7% market share). Changes in the price of individual green products have a significant impact on the average price of green electricity.

FIGURE 68: PRICE TRENDS OF GREEN ELECTRICITY AND OTHER OFFERS IN SLOVENIA FOR A TYPICAL HOUSEHOLD CONSUMER IN THE 2017–2019 PERIOD



Source: Energy Agency

Considerable increase of the lowest price of green electricity in 2019

Figure 68 shows the trends in the average price of green electricity and other offers and the trends in the lowest price of green electricity and other offers available in the market for a typical household consumer in the 2017–2019 period[29].

The average prices of green electricity were higher than the average prices of other supply offers in 2019. The difference between the two prices was constant in 2019 and greater than in 2018, which could be a result of increased generation of renewable electricity in 2018. The average prices of green electricity were lower than the average prices of other supply offers only at the end of 2018.

The lowest price of green electricity grew significantly in 2019, while the lowest prices of other supply offers remained at the same level as in 2018.

[29] Dc – consumption 3,500 kWh a year, connected load 7 kW.

Final electricity prices

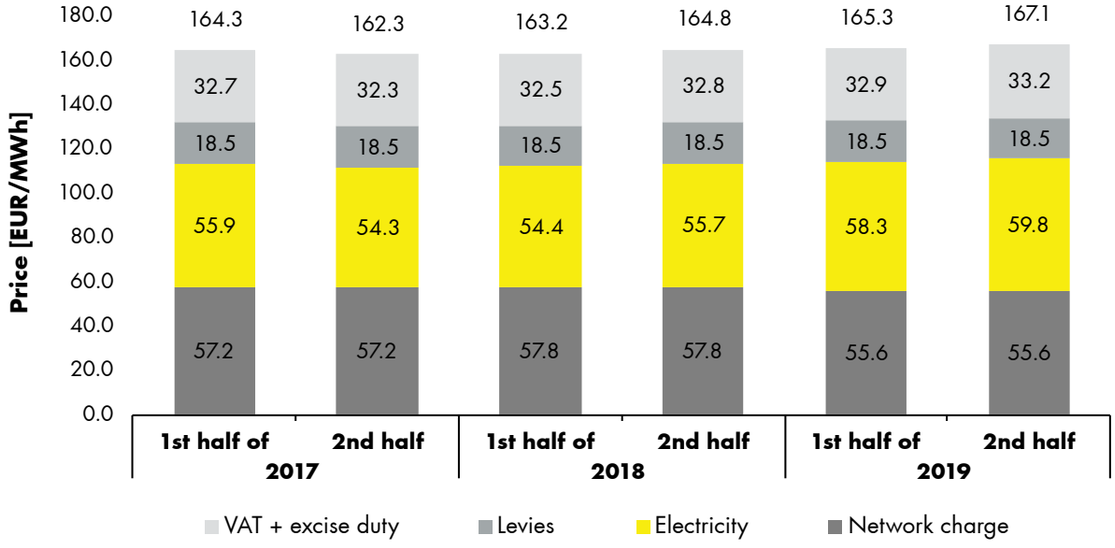
An analysis of the structure of the final prices of electricity delivered to typical household consumers is presented below. The final electricity price for a consumer consists of:

1.1% higher
final electricity price for household consumers

7.6% higher
average final electricity price for business consumers

- the electricity price set freely on the market;
- the network charge (for the transmission and distribution network);
- levies (for supporting electricity production with high-efficiency cogeneration and renewable electricity, for supporting energy efficiency programmes and for the operation of the market operator);
- excise duties and
- value added tax (VAT).

FIGURE 69: TRENDS OF THE FINAL ELECTRICITY PRICE IN SLOVENIA FOR A TYPICAL HOUSEHOLD CONSUMER IN THE 2017–2019 PERIOD



Sources: Energy Agency, STAT

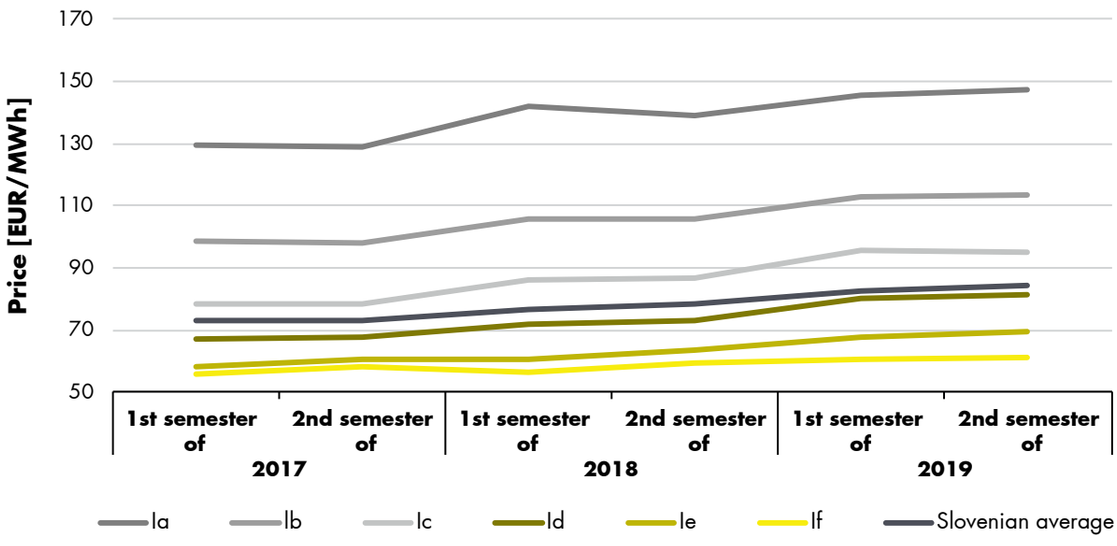
Compared to 2018, the final electricity price increased by 1.1% in 2019 (Figure 69). This is mainly due to a rise in the electricity price, which grew by 7.4% compared to 2018. In contrast, the network charge decreased by 3.8% compared to the previous year, primarily because of a decline in the network charge for the distribution system along with an insignificant increase of the network charge for the transmission system. The energy efficiency levy was 0.8 EUR/MWh at year end and the renewable energy sources (RES) levy was 17.7 EUR/MWh. Both levies have remained unchanged since 2016. The share of the network charge in the final electricity price for a typical household consumer was 33.2%, the share of energy was 35.8%, the share of the levies was 11.2% (of which the RES levy was 10.6%), and the share of VAT and the excise duty was 19.8%.

3.8% lower
network charge for a typical household consume

10.6%
was the share of the RES levy in the final electricity price for a typical household consumer

The average final electricity price for business consumers, without taking into account VAT[30], was 93.2 EUR/MWh in 2019, which is a 7.6% rise compared to 2018. The final prices went up for all consumer groups, with the highest upswing recorded in the Id consumer group, where the price was 11.1% higher in 2019 than that at the end of 2018. The lowest price growth was recorded for the largest consumer group, If, where the price was 2.5% higher at year end than that at the end of 2018 (Figure 70). Such an increase in retail prices for business consumers does not reflect the situation in wholesale markets, where prices went down.

FIGURE 70: TRENDS OF THE FINAL ELECTRICITY PRICE IN SLOVENIA FOR TYPICAL BUSINESS CONSUMERS IN THE 2016–2019 PERIOD

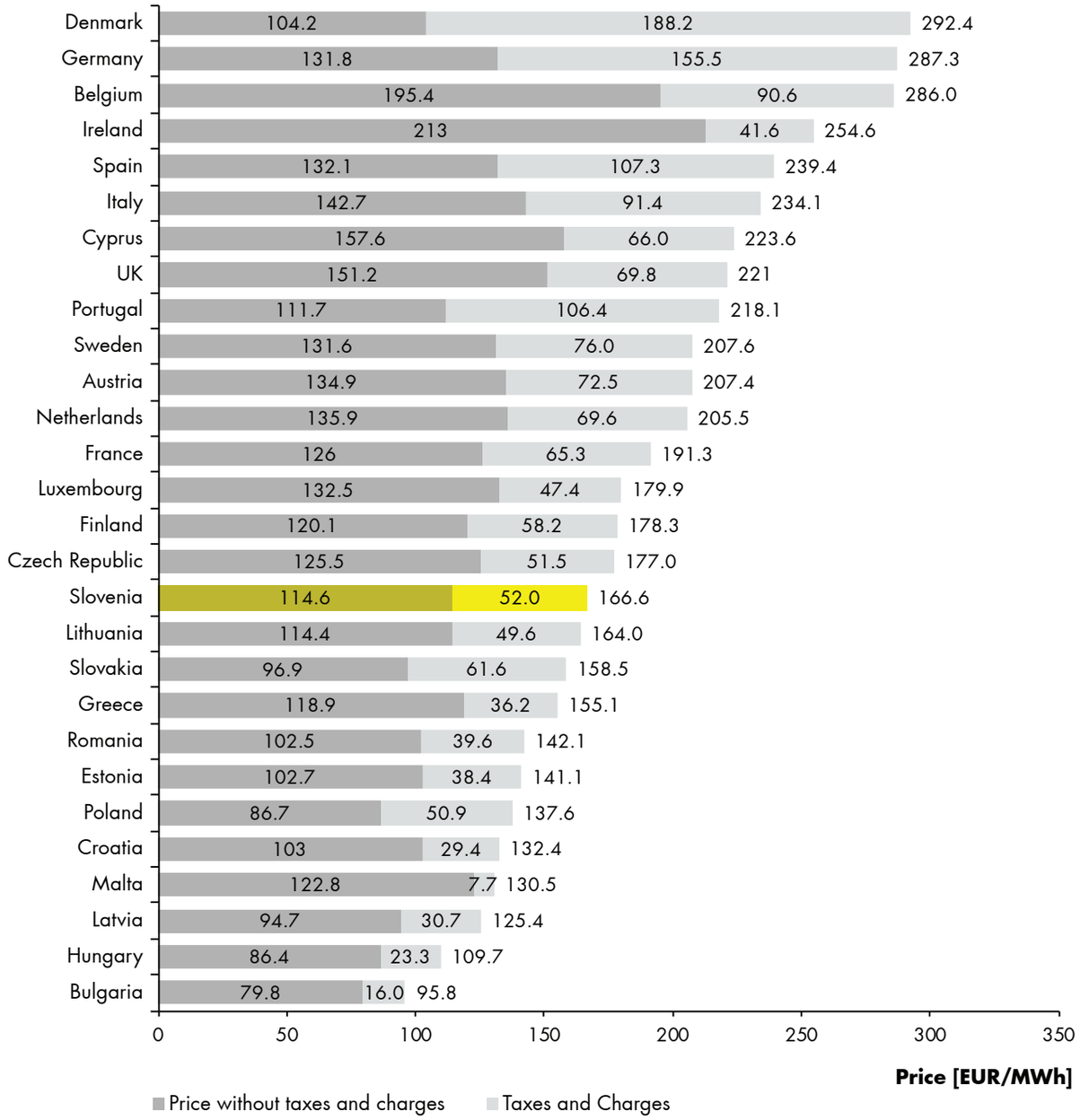


Source: STAT

[30] Source: STAT, the tax is not taken into account to ensure comparability with Eurostat's methodology.

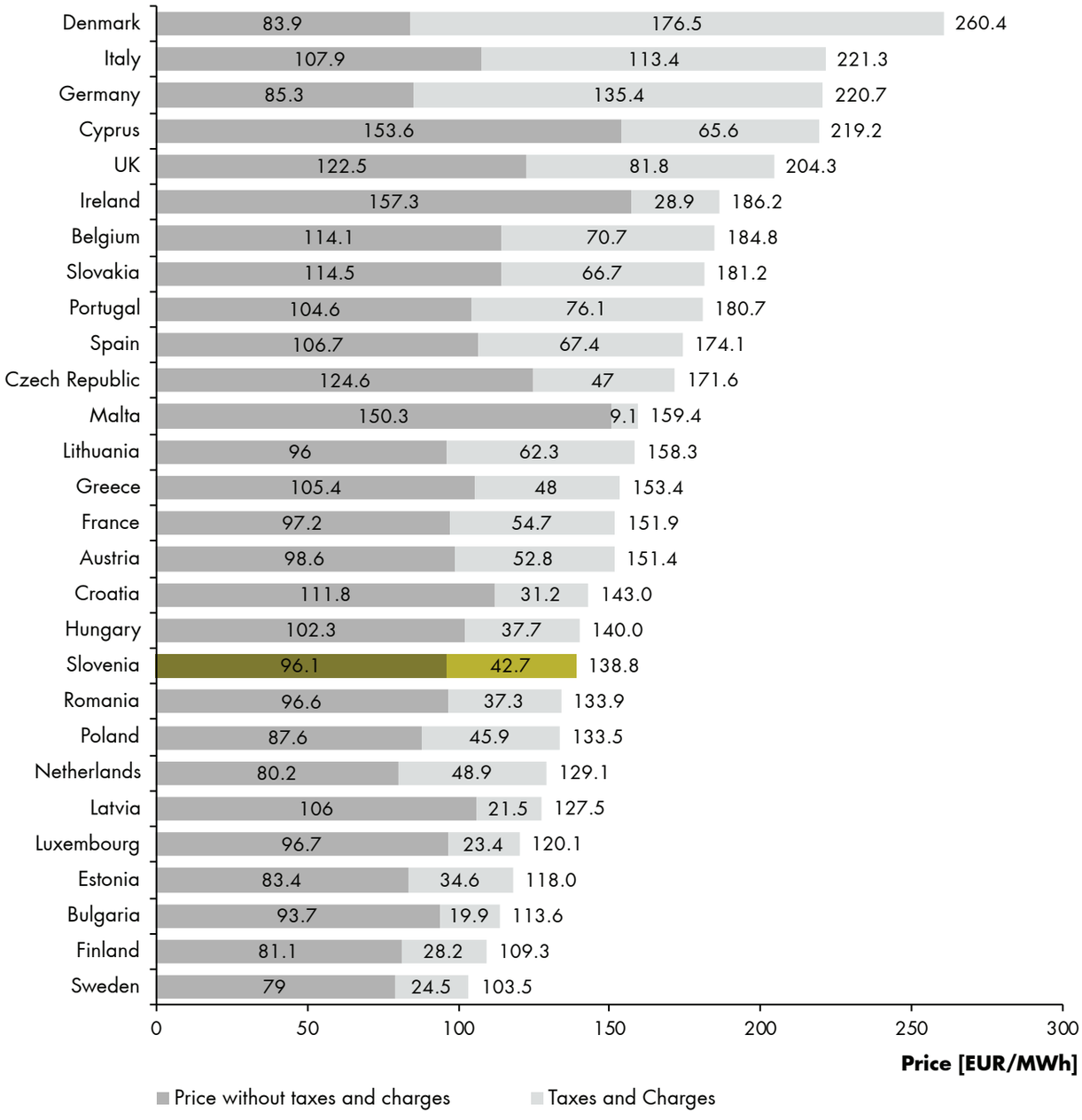
Figures 71 and 72 show the comparison of final electricity prices in EU Member States in 2019 for typical household and business consumers selected in accordance with the Eurostat methodology. Taxes and charges include levies, excise duty and VAT, while the price without taxes and charges includes the price of energy and the network charge.

FIGURE 71: COMPARISON OF ELECTRICITY PRICES FOR A TYPICAL HOUSEHOLD CONSUMER WITH AN ANNUAL CONSUMPTION BETWEEN 2,500 kWh AND 5,000 kWh (Dc) IN EU MEMBER STATES AND SLOVENIA IN 2019 IN EUR/MWh



Source: Eurostat

FIGURE 72: COMPARISON OF ELECTRICITY PRICES FOR A TYPICAL BUSINESS CONSUMER WITH AN ANNUAL CONSUMPTION BETWEEN 20 MWh AND 500 MWh (Ib) IN EU MEMBER STATES AND SLOVENIA IN 2019 IN EUR/MWh

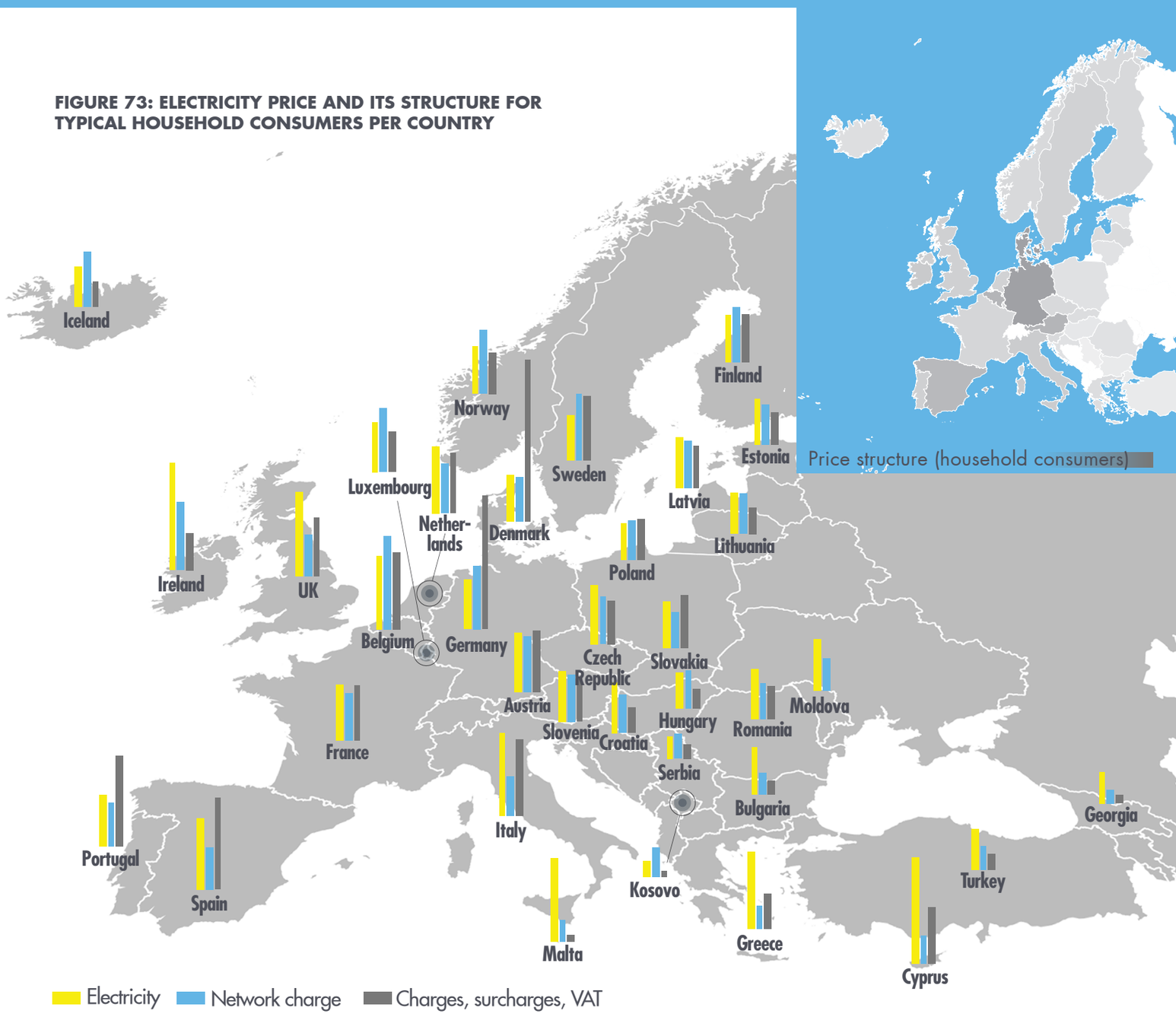


Source: Eurostat

Compared to 2018, final electricity prices in Slovenia increased in both market segments but they were lower than the average prices in the EU. The highest price for business and household consumers in the EU was in Denmark, where the majority of the price consists of charges and taxes.

Despite the good integration of countries with transmission networks and organised power exchanges, the European electricity market seems to indicate different final electricity prices for household consumers in the EU at the long-term and continuous trading level. A typical household consumer in Slovenia paid a price that is lower than the EU average (the colours of the countries in the upper part of Figure 73 represent the final price level).

FIGURE 73: ELECTRICITY PRICE AND ITS STRUCTURE FOR TYPICAL HOUSEHOLD CONSUMERS PER COUNTRY

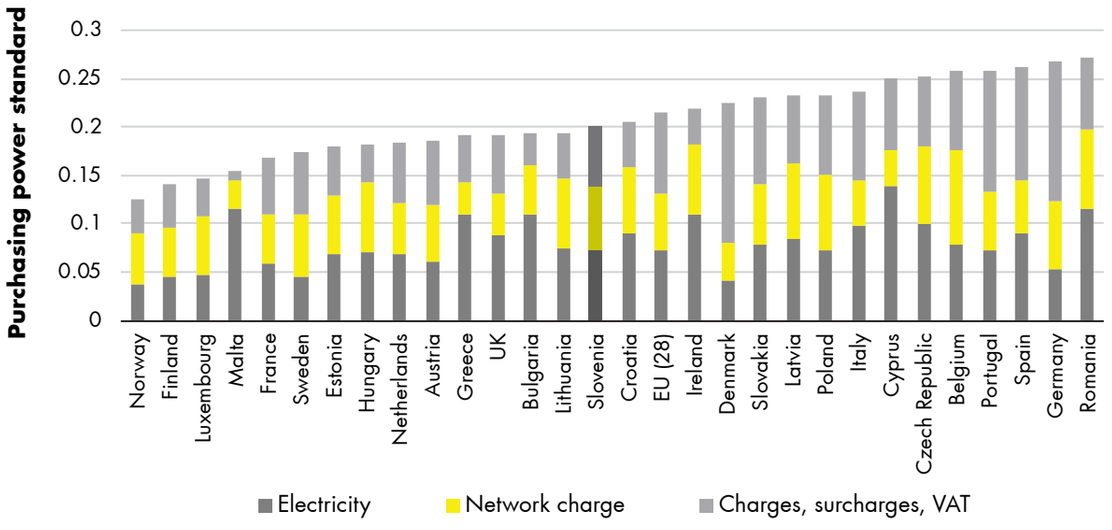


Source: Eurostat

To a large extent, the differences between countries are due to surcharges or charges, where countries form support RES mechanisms at national level, and to the price of electricity supply. The latter mostly depends on the availability of primary energy sources, their production prices and the activity level of market participants. The least diversity in prices in the EU is seen in network charges, which are regulated pursuant to the guidelines from EU directives and are implemented by national regulatory authorities. The share of electricity supply accounts for 36% of the final price for a typical household consumer in Slovenia, which is comparable to the EU average (34%), the network charge accounts for 33% of the final price, while the supplements and levies with VAT for 31%.

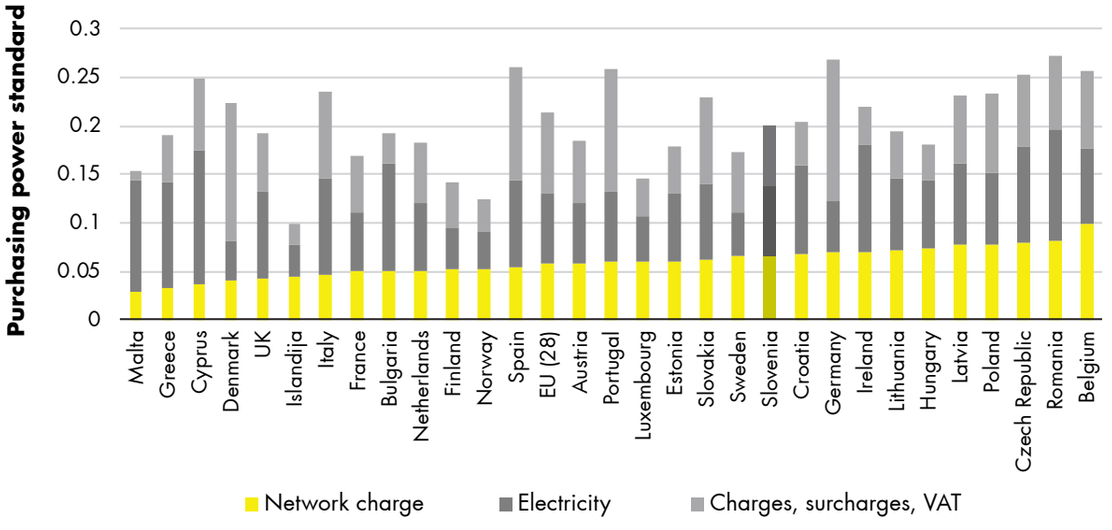
Figures 74 and 75 provide a comparison of the total price of electricity supply and the network charge in the total price of supply for a typical household consumer in the EU according to their purchasing power standard[31]. The price of supply for a typical household consumer in Slovenia was below the EU average in 2019, the network charge was above average, and the levies and taxes amounted to 75% of the EU average.

FIGURE 74: COMPARISON OF THE TOTAL PRICE OF ELECTRICITY SUPPLY FOR A TYPICAL HOUSEHOLD CONSUMER IN EU MEMBER STATES ACCORDING TO THEIR PURCHASING POWER STANDARD



Source: Eurostat

FIGURE 75: COMPARISON OF SHARES OF THE NETWORK CHARGE IN THE TOTAL PRICE OF ELECTRICITY SUPPLY FOR A TYPICAL HOUSEHOLD CONSUMER IN EU MEMBER STATES ACCORDING TO THEIR PURCHASING POWER STANDARD



Source: Eurostat

[31] The purchasing power standard (PPS) is an artificial currency. It equals to one euro at the average level of EU Member States. In theory, one PPS can buy the same amount of goods and services in any Member State. Cross-border price level differences mean that different amounts of units in the national currency are necessary for the same goods and services. The PPS is calculated by dividing any economic aggregate of a country in its national currency into its purchasing power parities. Purchasing power parities are exchange rates that equalise the purchasing power of different currencies by eliminating price level differences between countries.

Mark-up and responsiveness of retail prices

An analysis of correlation between wholesale prices and the energy component of retail prices for household consumers represents the suppliers' estimated gross mark-up but it also indicates the level of responsiveness of retail prices to changes in wholesale prices. The analysis illustrates the total indicators for Slovenia and does not compare the mark-ups of individual suppliers.

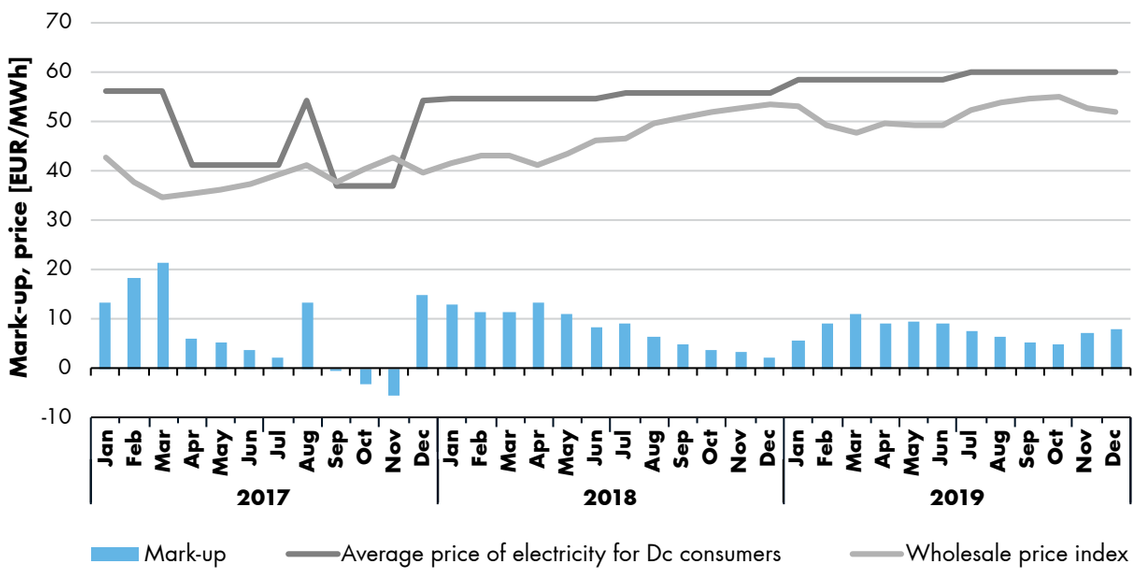
Here, the mark-up is only a theoretical indicator and does not imply the suppliers' profit since they have other expenses related to their comprehensive offer besides electricity supply.

In that context, the mark-up is the difference between the price on the energy bills of a typical household consumer with an annual consumption between 2,500 kWh and 5,000 kWh (consumer group Dc) and the estimated costs of supplying that energy. To estimate the costs of energy supply, we use the wholesale price index, which is weighted so as to represent an approximation of the "optimum" strategy for energy supply in forward and daily wholesale markets[32].

The level of convergence between the energy component of retail prices and wholesale prices over a longer period of time can be used as an additional indicator of the efficiency and competitiveness of the retail market.

The average mark-up of retail prices in 2019 was 7.6 EUR/MWh, which is slightly less than in 2018, when the mark-up was 8.2 EUR/MWh.

FIGURE 76: MARK-UP AND RESPONSIVENESS OF THE ENERGY COMPONENT OF RETAIL PRICES



Sources: STAT, Energy Agency

Figure 76 also shows the relative convergence of wholesale prices and the energy component of retail prices. Compared to the previous year, the energy components of retail prices increased by 7% in 2019, while the wholesale price index by 11%. The correlation coefficient of the monthly levels of these two price elements is 0.68 over a three-year period, which indicates moderate to strong convergence. In principle, greater correlations are good since they imply appropriate responsiveness and a higher level of competitiveness in the retail market.

[32] The methodology is explained in more detail in Annex 6 of the ACER/CEER Annual Report on the Results of Monitoring the Internal Electricity and Natural Gas Markets in 2014.

Transparency

Financial transparency of suppliers and invoice transparency

As part of its market monitoring process, the Energy Agency analyses the suppliers' annual reports, which are drawn up pursuant to the Companies Act (ZGD-1). The results of these analyses are internal background documents and management reports of these companies, which the Energy Agency uses in correlation analyses for the needs of market monitoring.

The transparency of electricity invoices is not systemically regulated in an explicit way but, based on an analysis of the situation in 2019, the Energy Agency estimates that overarching legislation ensures an appropriate level of transparency. The suppliers' invoices display a breakdown of the costs of electricity, the network charge, levies, the excise duty and tax. In addition, the invoices include information on the structure of primary electricity sources, carbon dioxide emissions and the resulting radioactive waste.

Publication of the structure of energy sources

The structure of primary energy sources for the electricity that individual suppliers delivered to their consumers in the preceding calendar year has to be published on the electricity suppliers' website, promotional material and invoices. This data is updated on 1 June.

Invoices have to include a breakdown of electricity generated from coal, natural gas, petroleum products and nuclear fuel as well as from RES. The shares of individual RES have to be displayed separately. Renewable electricity may be displayed within the supplier's portfolio in a share corresponding to the amount of cancelled guarantees of origin on the supplier's, or rather its consumers', invoice. The shares of other sources are indicated pursuant to the remaining national and European structure of energy sources. The method for presenting the breakdown of energy sources and the method for determining the remaining structure of energy sources in Slovenia as well as the inclusion of the remaining European structure of energy sources in the breakdown of electricity supply of individual suppliers are laid down in the Legal Act on the method for determining and presenting the breakdown of electricity generation by energy source.

Guarantees of origin for electricity

A guarantee of origin is a document used by electricity producers and suppliers to prove the origin of electricity supplied to their end consumers. Even though the EZ-1 amended in 2019 authorises the option of issuing guarantees of origin for electricity generated from non-renewable energy sources, this area has to be regulated in more detail with a regulatory provision that is under way. Again in 2019, most of the guarantees of origin were issued for renewable electricity. In order to prove the origin of renewable electricity, suppliers cancelled a total of 1,835 GWh of guarantees of origin in Slovenia in 2019. Moreover, to prove the origin of electricity, 112.3 GWh of guarantees of origin for renewable electricity were transferred to suppliers according to the share they achieved in the sale of electricity to end consumers. Those guarantees were issued to producers that receive support in the form of guaranteed purchase.

Obligation to determine and publish regular offers

Suppliers have to provide household consumers and small business consumers with transparent information on their offer of electricity supply and the related price lists as well as the general terms and conditions for their supply services, at least by publishing this information on their website. Until the Act Amending the EZ-1 published in the summer of 2019, suppliers were also obliged to determine and publish a regular price range pursuant to the definition of a regular price list, provided they met the conditions.[33]

[33] Until the entry into force of the EZ-1B, the Energy Act defined a regular price list as a price list for a particular type of consumer (a household or small business consumer), which applies to all consumers that conclude a supply contract with the supplier, with the exception of special offer or package price lists, and includes at least 50% and at least 1,000 consumers with each supplier.

Transparency activities and measures

The Energy Agency contributes to transparency by monitoring the retail market and providing information and services within its single point of contact, which comprise:

- comparison and validation e-services, including a list of suppliers and system operators that includes the profiles of individual companies;
- key indicators in energy markets (eMonitor portal) and
- other useful data and relevant and up-to-date information contributing to the transparency of the retail market and services (structured list of legislation, explanation of the invoice, etc.).

The monitoring process is carried out based on public and other data that the Energy Agency obtains from persons with reporting obligation. Based on the results of monitoring, reports on violations or restrictive practices, etc., the Energy Agency carries out surveillance activities and implements measures whose aim is to provide transparency. Those include bilateral cooperation, drawing up legislative amendments, influencing the regulatory provisions of secondary legislation to which the Energy Agency provides its opinion or consent, carrying out public consultations, undertaking corrective action aimed at the operation of market participants by implementing supervisory procedures, and guiding stakeholders through their participation in professional associations (e.g. the Energy Market Data Exchange Section (IPET Section) of the Energy Industry Chamber of Slovenia).

Within its single point of contact, the Energy Agency's website provides users with comparison and validation e-services, which include the key web applications for comparing electricity supply costs and verifying one's bill.

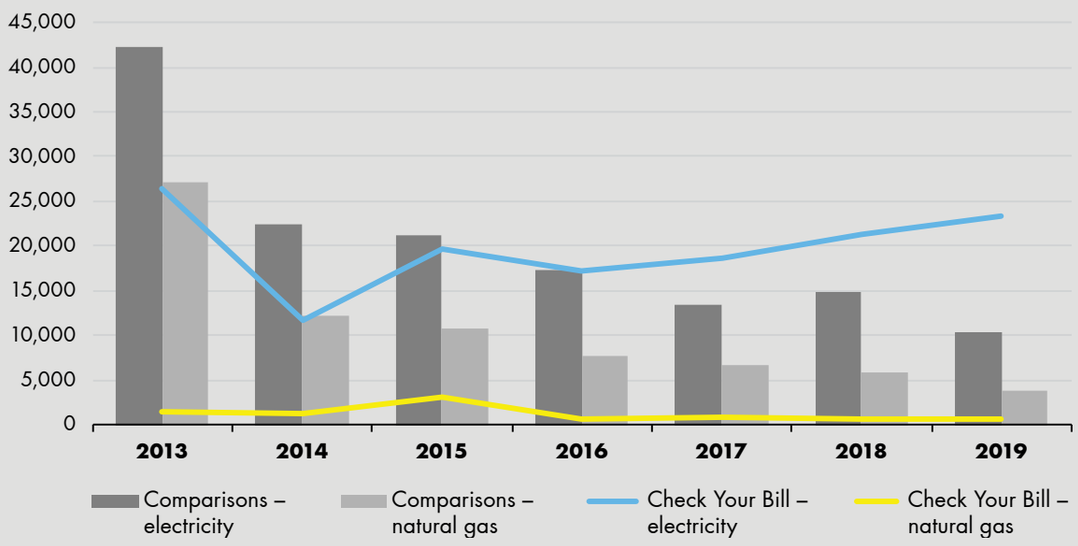
The set of comparison e-services enables users to calculate and compare the costs of electricity supply according to individual consumption types. Comparative calculations can be carried out for the supply to household and small business consumers. Suppliers submit information about their offers to the Energy Agency in a standard format on a monthly basis in accordance with the Act concerning the method of electronic data reporting for valid regular tariffs comparison of electricity and natural gas suppliers for household and small business customers. Due to regulatory restrictions (which were eliminated in the summer of 2019 with the amended EZ-1) and the time necessary to adjust the services, the 2019 comparison was again limited to the comparison of the costs under regular price lists. In late December 2019, after the successful implementation of a project aimed at adapting its services, the Energy Agency again managed to provide its users with a comparison of all the offers on the market. In 2019, users still had to search for information from several sources: in addition to the information available at the Energy Agency's single point of contact, also from individual suppliers or from a commercial provider of comparative services, which did not cover all the market offer either. That situation prevented users from obtaining an effective and comprehensive comparison. As part of its comparison services, the Energy Agency enables users to make a comparative calculation of the costs for the use of the network for all consumer groups according to the user's consumption type (app Calculate the Costs for the Use of the Network).

The web application Check Your Monthly Bill enables users to verify the accuracy of the issued monthly electricity bill according to the selected supplier, supply offer and type of consumption. This calculation is done separately according to the bill's legally required items: it is possible for all products on the market and not only for those based on regular price lists but does not support checking balance payments.

CASE STUDY: Preliminary assessment of the effects of eliminating the regulatory restrictions of the Energy Agency's comparison services

In 2019, the national retail market still did not include a comparison service that would cover the entire product range available on the market. This situation had not changed since 2014, when the EZ-1 entered into force and the Energy Agency had to limit the extent of its comparison services. The Act Amending the EZ-1, which entered into force in the summer of 2019, includes the long-awaited elimination of the restriction only to the regular offer imposed on the Energy Agency's comparison services, which had a negative impact on the transparency level of the retail market. Only about a third of the suppliers in the retail market determined their offers based on regular price lists in 2019. An analysis of the number of cost comparisons performed using comparison services has confirmed that the interest in regular offers in the retail market had been steadily declining due to more appealing (special, package) offers since the entry into force of the 2014 EZ-1. The number of comparative calculations performed for electricity supply in 2019 ended up being only about a quarter of those performed in 2013, while an even bigger decrease was recorded for natural gas (Figure 77). The potential saving by switching suppliers is much bigger if one opts for market products that are not based on regular price lists (see case study Assessment of the potential benefits of switching suppliers).

FIGURE 77: ANALYSIS OF THE USE OF COMPARISON AND VALIDATION E-SERVICES WITHIN THE SINGLE POINT OF CONTACT

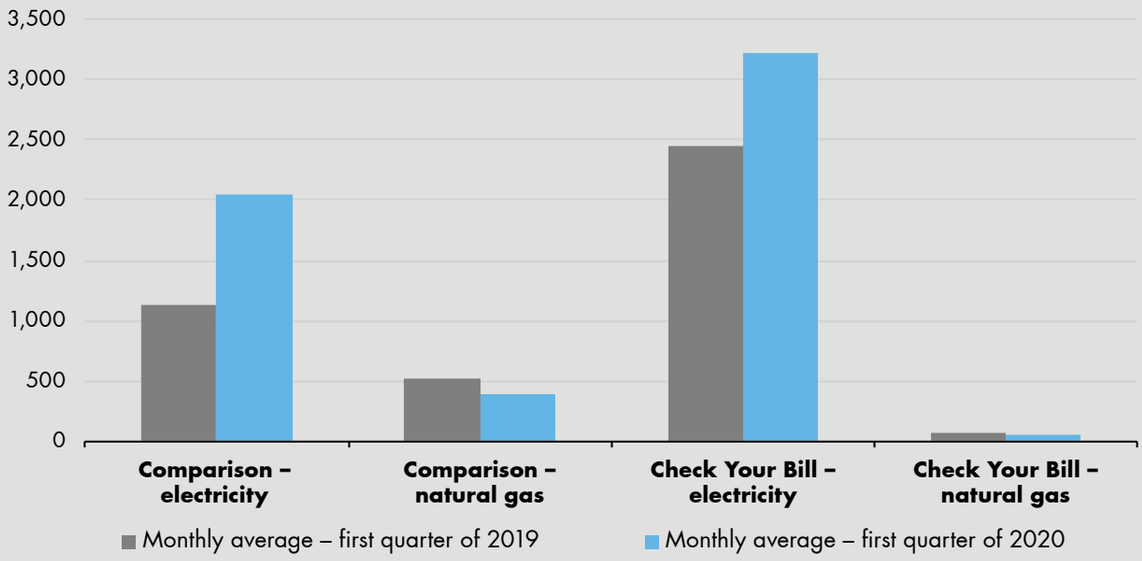


Source: Energy Agency

The analysis also shows that the number of comparisons performed to verify the accuracy of electricity bills has been increasing, with some irrelevant variations, for five years. According to the Energy Agency's information, that is the result of using this function to also compare the offers available on the market (indirectly, by performing several consecutive calculations) since it enables users to check the issued bills based on all the products on the market.

An independent and regulated comparison of all the offers on the market in one spot is sure to fundamentally contribute to more transparent offers in the retail market. This has been confirmed by an analysis of the use of the Energy Agency's comparison services for electricity supply, where the number of comparative calculations rose by over 80% in the first quarter of 2020 (Figure 78). Unfortunately, the natural gas trend did not take a positive turn, which can be attributed to a less diverse offer compared to that of the electricity market. In fact, regular price lists in the natural gas market comprise a larger share of all the offers in the market (36% at 30 June 2019) compared to the electricity market, where they account for less than 10% of all the offers (8% at 30 June 2019). In addition, the natural gas market traditionally involves less activity.

FIGURE 78: COMPARISON OF THE USE OF COMPARISON AND VALIDATION E-SERVICES BASED ON THE NUMBER OF CALCULATIONS IN THE FIRST QUARTER OF 2019 AND 2020



Source: Energy Agency

Because the Energy Agency's comparison and validation services have reached their technical and economic end-of-life stage and also due to their restrictions, the Energy Agency has already started developing new solutions, which will take into account market developments and ensure compliance with the requirements from the new package of EU directives (Clean Energy for All Europeans package).

The DSO's website provides a variety of useful information for consumers, including an up-to-date list of electricity suppliers as well as processing and technical information regarding connections, changes to a connection, reading metering devices, and the technical properties of local interfaces on smart meters, which enable consumers and their authorised representatives to access metering data in real time. Users also have at their disposal a simple web application to calculate the breakdown of the network charge, network charge surcharges and levies for household consumers.

Market effectiveness

The Energy Agency monitors the effectiveness and competitiveness of the retail market by continuously gathering data from market participants and public data aggregators (Ministry of Infrastructure). Indicated below are the market shares of suppliers in specific market segments and the changes occurred compared to 2018.

Market shares and concentration in retail markets

Electricity supply to all consumers

Table 25 shows the market shares of suppliers according to their electricity supply, taking into account the supply in the entire retail market, which also includes large end consumers connected to the transmission system and closed distribution systems.

TABLE 25: MARKET SHARES AND HHI OF SUPPLIERS TO ALL END CONSUMERS

Supplier	Supplied electricity (GWh)	Market share
GEN-I	2,486.3	18.0%
ECE	2,378.8	17.3%
Energija plus	1,774.5	12.9%
E3	1,481.6	10.8%
Petrol	1,212.9	8.8%
TALUM	1,016.8	7.4%
HSE	817.7	5.9%
HEP	789.4	5.7%
Elektro energija	763.6	5.5%
Others	700.4	5.1%
Acroni	353.8	2.6%
Total	**13,775.8**	**100.0%**
HHI of suppliers to all end consumers	**1,169**	

Source: EPOS portal

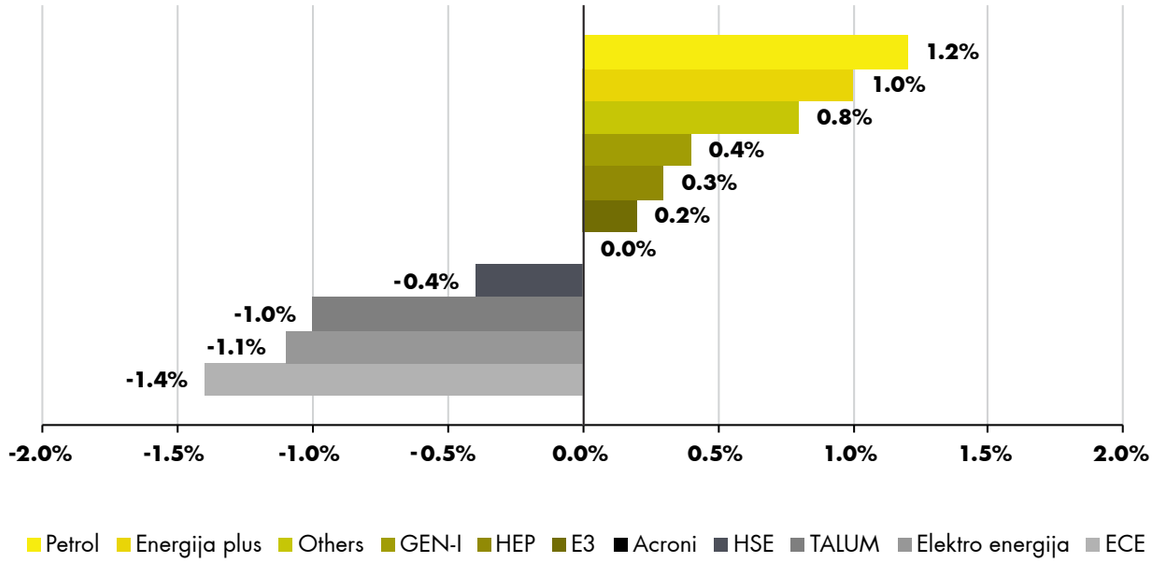
An HHI between 1,000 and 1,800 indicates a moderately concentrated retail market. Compared to 2018, when it was 1,179, the HHI saw a negligible fall.

Medium market concentration in the retail electricity market

In comparison with the preceding year, the market shares that increased the most in 2019 were those of Petrol, Energija plus and some smaller suppliers. The supplier that recorded the biggest loss of market share was ECE.

The changes of the suppliers' market shares in 2019 were not prominent, which means that their market positions did not change significantly. After the merger with Petrol energetika, Petrol's market share has been rising (the 2018 increase in market share was a result of the merger). Other smaller suppliers are also continually building up their market shares, which has a beneficial impact on the competitiveness of the Slovenian retail market.

FIGURE 79: CHANGES IN MARKETS SHARES OF SUPPLIERS TO ALL END CONSUMERS IN 2019 COMPARED TO 2018



Source: EPOS portal

Electricity supply to business consumers

Table 26 shows the market shares of electricity suppliers in the retail market to business consumers in 2019.

TABLE 26: MARKET SHARES AND HHI OF SUPPLIERS TO ALL BUSINESS CONSUMERS

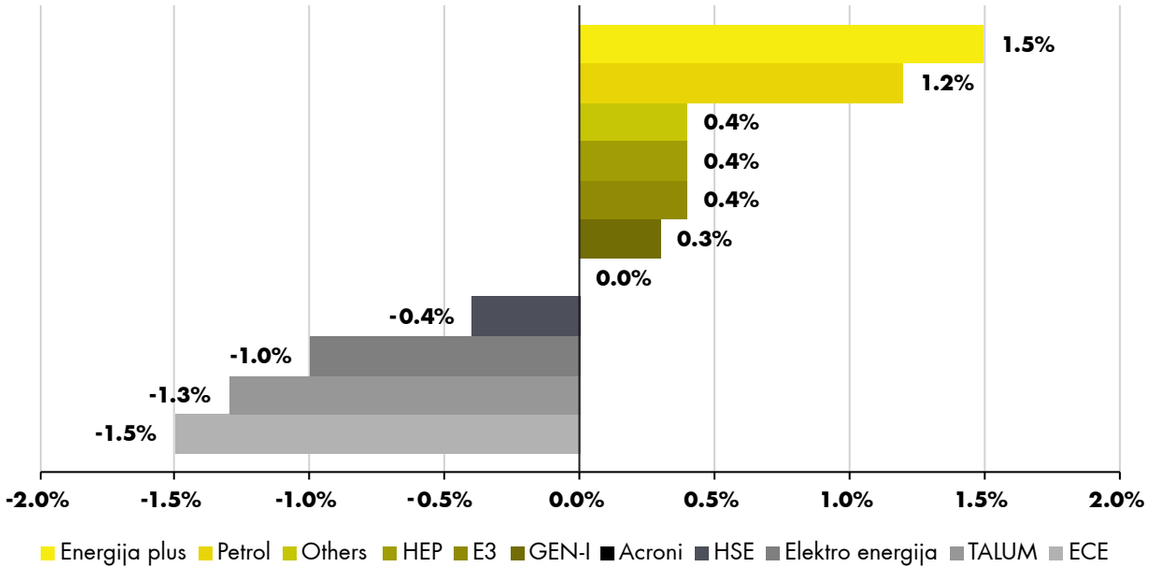
Supplier	Supplied electricity (GWh)	Market share
ECE	1,813.8	17.4%
GEN-I	1,659.8	15.9%
Energija plus	1,322.6	12.7%
TALUM	1,016.8	9.8%
E3	963.9	9.3%
Petrol	913.5	8.8%
HSE	817.7	7.9%
HEP	789.4	7.6%
Others	462.6	4.3%
Acroni	353.8	3.4%
Elektro energija	297.5	2.9%
Total	**10,411.4**	**100.0%**
HHI of suppliers to business consumers	**1,136**	

Source: EPOS portal

The retail market for business consumers continued registering medium market concentration in 2019. The HHI was 1,136, which is an irrelevant decrease compared to 2018 (when the HHI was 1,149).

As shown in Figure 80, the largest market share compared to 2018 was gained by Energija plus and Petrol. The greatest loss of market share compared to 2018 was recorded by ECE and Talum.

FIGURE 80: CHANGES IN MARKETS SHARES OF SUPPLIERS TO ALL BUSINESS CONSUMERS IN 2019 COMPARED TO 2018



Source: EPOS portal

Electricity supply to household consumers

Table 27 shows the market shares of electricity suppliers in the retail market to household consumers in 2019.

TABLE 27: MARKET SHARES AND HHI OF SUPPLIERS TO ALL HOUSEHOLD CONSUMERS

Supplier	Supplied electricity (GWh)	Market share
GEN-I	826.5	24.6%
ECE	564.9	16.8%
E3	517.7	15.4%
Elektro energija	466.1	13.9%
Energija plus	451.9	13.4%
Petrol	299.4	8.9%
Others	237.8	7.0%
Total	**3,364.3**	**100.0%**
HHI of suppliers to household consumers	**1,624**	

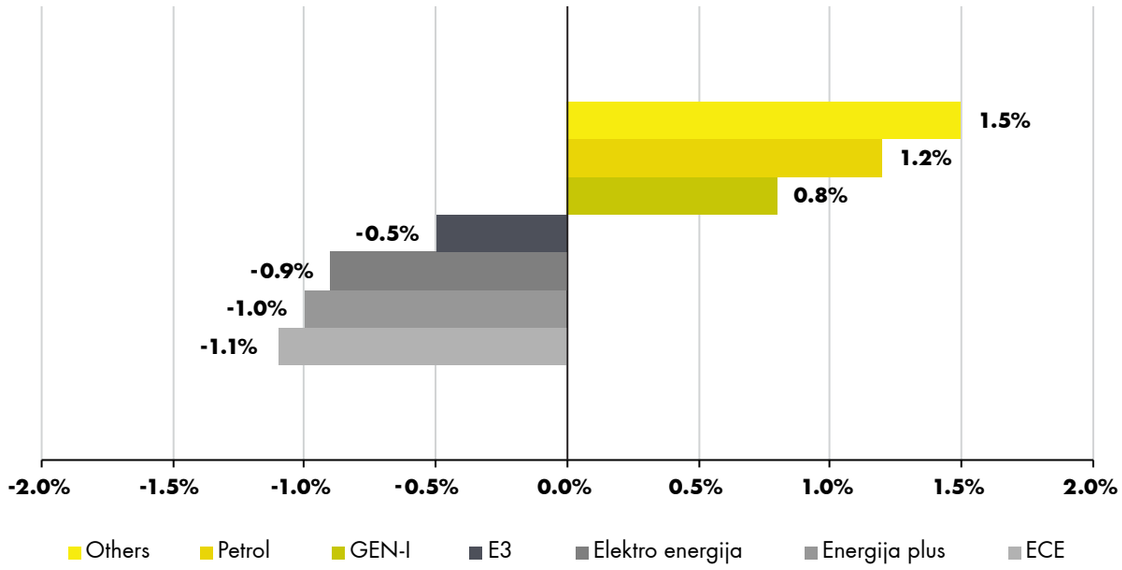
Source: EPOS portal

The retail market for household consumers continued registering medium market concentration in 2019. The HHI was 1,624, which is a slight fall compared to 2018, when it was 1,655.

The largest market share in this segment was recorded by GEN-I, followed by ECE and E3. The market share of the three largest suppliers is 56.7%, which is a slight drop compared to the market share at the end of 2018 (when it was 57.6%).

The greatest loss of market share was registered by ECE and Energija plus, while other smaller suppliers and Petrol gained the most.

FIGURE 81: CHANGES IN MARKETS SHARES OF SUPPLIERS TO ALL HOUSEHOLD CONSUMERS IN 2019 COMPARED TO 2018



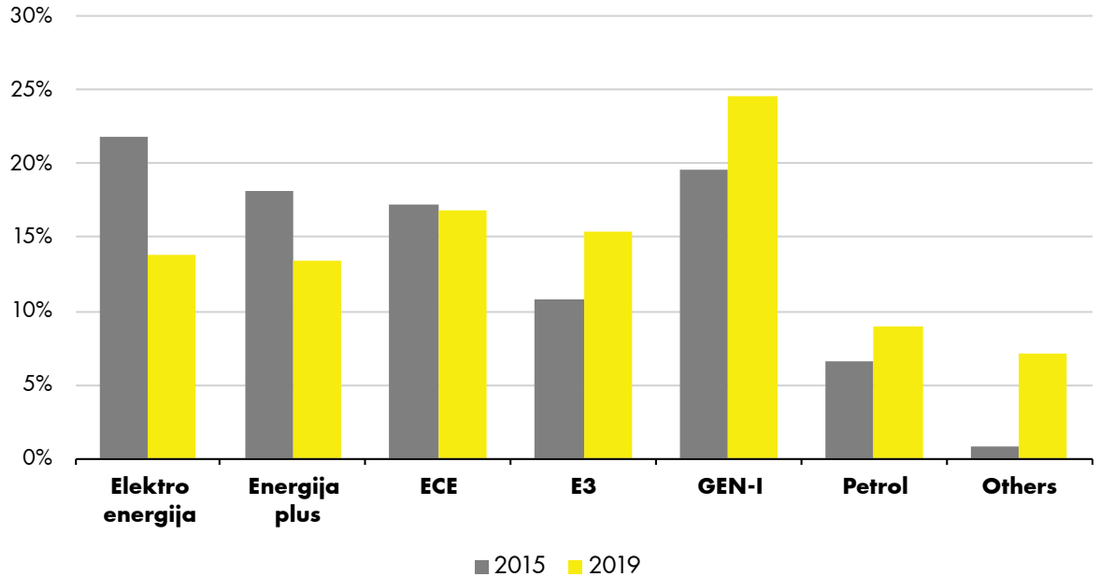
Source: EPOS portal

Figure 82 shows the market shares of suppliers to household consumers. It presents their market shares in 2015 and 2019. In the five-year period under review, the greatest loss of market share on this market was recorded by Elektro energija, which was the largest supplier according to market share size in Slovenia in 2015, and Energija plus. In this period, Elektro energija lost a major part of its market share (8%), which is also a result of ownership association with GEN-I and the restructuring of its portfolio according to a new business model.

The largest market share in the household consumer market was gained by other smaller suppliers, whose active involvement took over a significant part of the market, which increased its competitiveness. In the same period, E3, GEN-I and Petrol also increased their market shares.

Significant structural changes in the retail household consumer market over the last five years

FIGURE 82: COMPARISON OF THE MARKET SHARES OF SUPPLIERS TO HOUSEHOLD CONSUMERS IN 2015 AND 2019

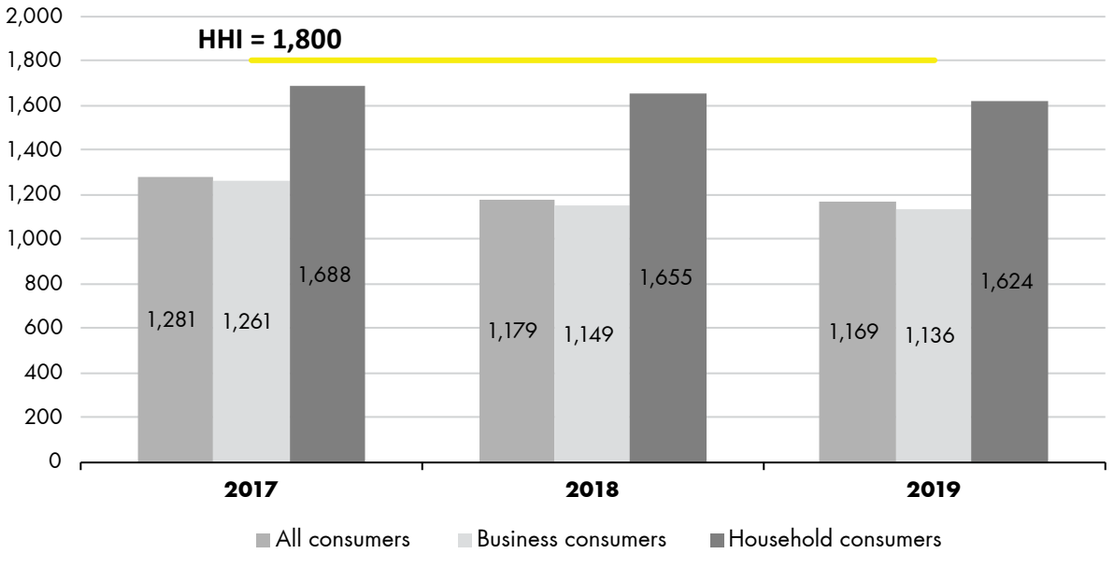


Source: EPOS portal

Comparison of concentrations in the relevant markets

The HHI dropped slightly in all retail markets under review in 2019, which indicates better competition in the relevant market, mostly in the case of household consumers.

FIGURE 83: HHI IN RETAIL MARKETS IN THE 2017–2019 PERIOD

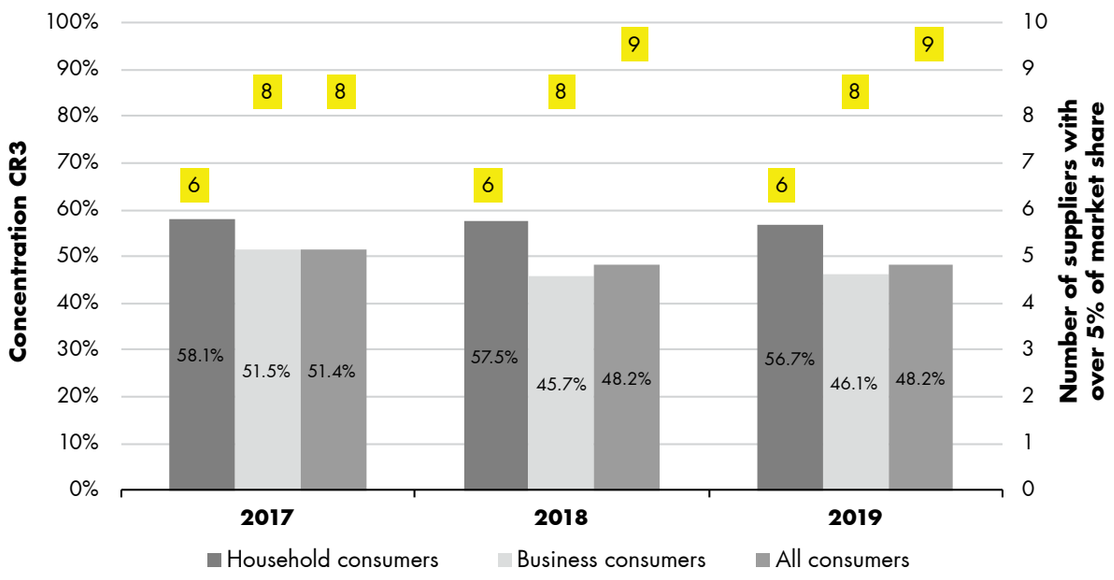


Source: EPOS portal

A concentration ratio (CR) is a standard indicator of market concentration according to market shares. For the purposes of this report, CR3 is shown, which measures the total market share of the three largest suppliers in the market.

The CR3 in all the markets under review indicates medium market concentration (Figure 84).

FIGURE 84: CONCENTRATION (CR3) IN RETAIL MARKETS AND NUMBER OF SUPPLIERS WITH OVER 5% OF MARKET SHARE IN THE 2017–2019 PERIOD



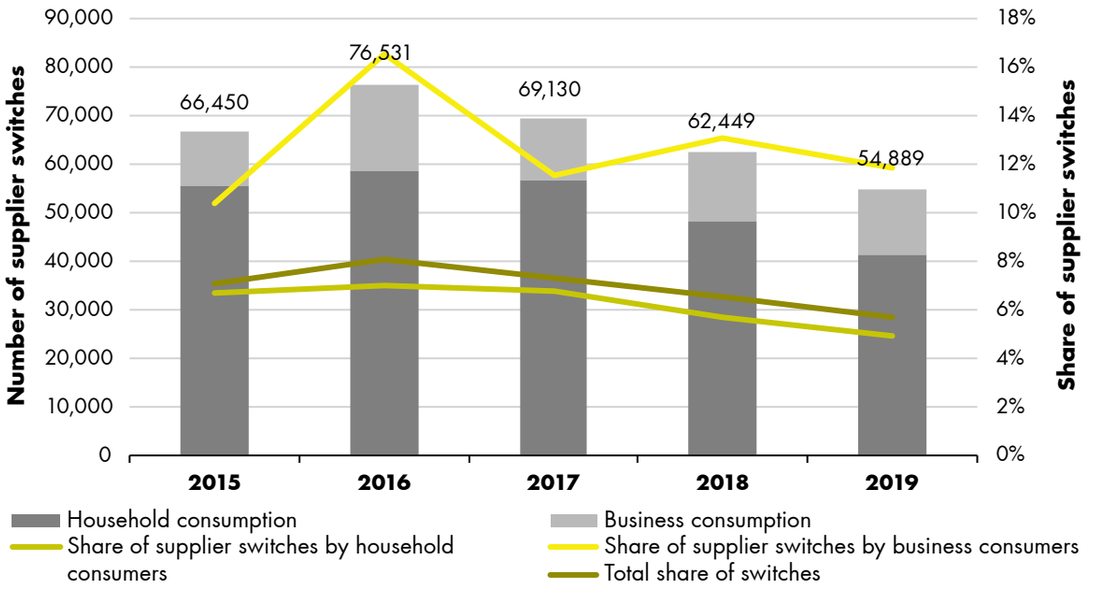
Source: EPOS portal

Switching suppliers

In 2019, 54,889 consumers switched their electricity supplier, of which 41,466 were household consumers and 13,423 were business consumers. On average, 3,456 household consumers and 1,119 business consumers switched their electricity supplier every month. The number of switches has decreased for the third consecutive year and is the lowest in the period under review. Figure 85 shows the trends in the total number of switches according to consumption type and the share of switches made by household and business consumers since 2015.

The number of switches has decreased for the third consecutive year and is the lowest in the last five years

FIGURE 85: TRENDS IN THE NUMBER OF SUPPLIER SWITCHES IN THE 2015–2019 PERIOD



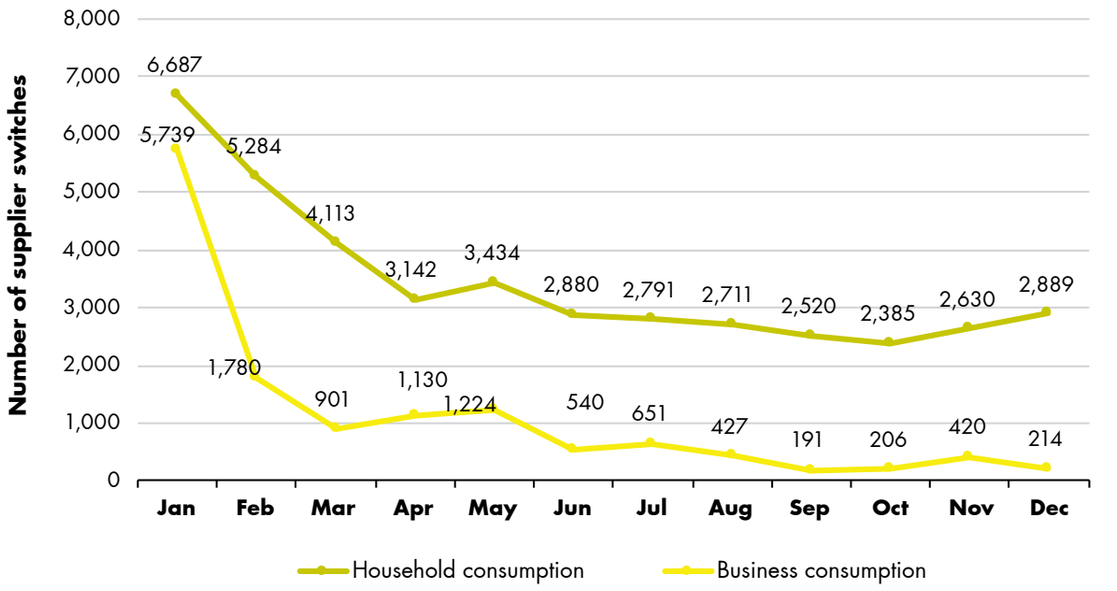
Sources: SODO, Energy Agency

The share of supplier switches made by household consumers was 4.9% in 2019. A decreasing share of supplier switches has a negative impact on the level of market competitiveness since consumers' inactivity affects the activities of the suppliers in the market. For the sake of comparison, the largest share of supplier switches made by household consumers (according to metering points) in the EU in 2018 was in Norway[34], which had a 21.4% share, while the share of another eight countries was over 10%, which is considerably more than in Slovenia.

Figure 86 shows the number of supplier switches in 2019 by month. The number of switches decreased until October (with the exception of May[35]). In November and December of 2019, the number of switches rose slightly but it was lower than the monthly average.

[34] Monitoring Report on the Performance of European Retail Markets in 2018, CEER, November 2019
[35] The analysis does not show the correlation with the campaign of the Slovenian Consumers' Association (ZPS) and the publication of the competitive offers of those suppliers that did not participate in the campaign.

FIGURE 86: TRENDS IN THE NUMBER OF SUPPLIER SWITCHES BY CONSUMPTION TYPE

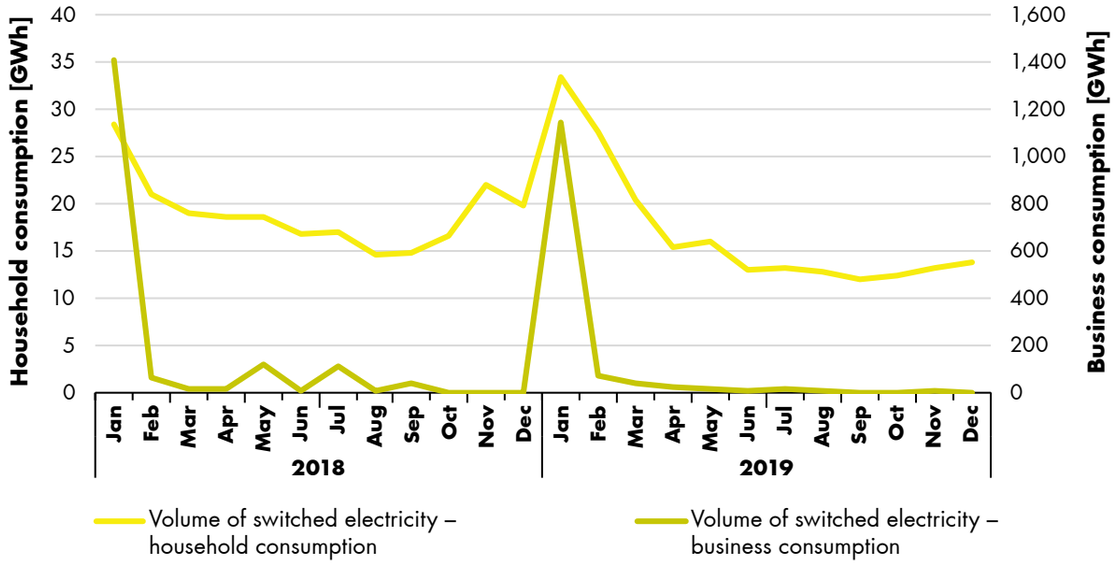


Sources: SODO, Energy Agency

There were 13,423 supplier switches made by business consumers in 2019, which is 6.2% less than in 2018. A higher number of switches made by business consumers at the beginning of the year is otherwise normal because their supply contracts usually terminate.

Figure 87 shows the trends in the switched volume of electricity from January 2018 to December 2019.

FIGURE 87: VOLUME OF SWITCHED ELECTRICITY BY CONSUMPTION TYPE



Sources: SODO, Energy Agency

The volume of switched electricity is closely related to the number of supplier switches. Switched electricity is the volume consumed by a consumer in a specific period of time that will cause an increase in electricity consumption with another supplier due to the switch. That is why a higher number of supplier switches made by household and business consumers implies a higher volume of switched electricity. The largest share of supplier switches made by business consumers (according to the volume of switched electricity) in the EU in 2018[36] was recorded in Poland[37], which had a 61.9% share, while the share of another five countries was over 25%, which is considerably more than in Slovenia (17.3% of switched electricity in 2019).

In 2019, another group purchase of electricity and natural gas was organised on the market (Switch and Save 3 campaign of the Slovenian Consumers' Association[38]). In the first two campaigns, over 25,000 households switched suppliers, with the total savings exceeding 2 million euros. At the end of both preceding campaigns, the monthly number of supplier switches deviated significantly from the monthly average, which confirms the consumers' extraordinary interest. Unfortunately, the latest Switch and Save 3 campaign did not achieve the effect of the preceding two since far fewer households joined this campaign, only 508.

Despite the substantial potential savings (see chapter Assessment of the potential benefits of switching suppliers), the number and share of supplier switches made by household consumers in Slovenia has been steadily decreasing in recent years and shows a cooling retail electricity market[39].

[36] Data for 2019 will be published in November 2020.
[37] Monitoring Report on the Performance of European Retail Markets in 2018, CEER, November 2019
[38] https://www.zps.si/index.php/zamenjaj-in-prihrani/zamenjaj-in-prihrani-3/9463-znizajmo-racun-za-elektriko-in-plin-zamenjaj-in-prihrani-3
[39] Report on the Energy Situation in Slovenia in 2018, pages 94 and 95

CASE STUDY: Consumers' awareness of their options and their trust in the market

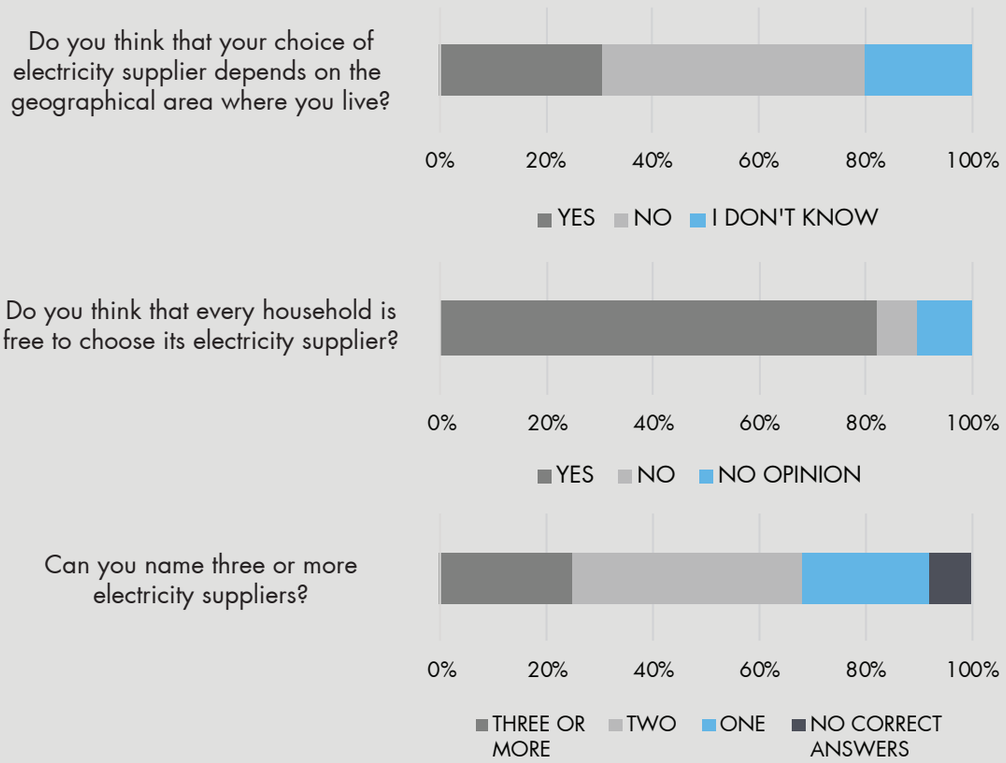
As part of the transformation of the energy sector, the Clean Energy for All Europeans package gives the central role to the active consumer who will engage in the market more actively and to a greater extent than ever before. That undoubtedly requires well-developed retail markets at the national level. The Energy Agency has found that the retail electricity (as well as the natural gas) market has been cooling down[40]. By monitoring the relevant market in 2018, the Energy Agency has taken the view that there is, in terms of its structure and scope, a relatively stable share of active consumers who switch their supplier every year and actively search for the cheapest sales conditions to purchase electricity. Those consumers have supposedly made full use of the potential savings with the switches they have made, so their activity has been diminishing. Consumers' awareness of the benefits of switching suppliers is not expanding from that circle of active consumers. This is thought to be the key cause of the cooling trends in the relevant market despite a wide and diverse offer, extra benefits for new clients, different payment options and a simple supplier switching process. The cooling of the market has been further confirmed by the case study Analysis of the competitiveness of the retail market based on a composite indicator.

The Energy Agency has verified the hypotheses of the consumers' unsatisfactory awareness of the potential of switching suppliers according to CEER's[41] standardised indicators, which are based on carrying out surveys. The selected indicators are part of a set of indicators used by the industry's energy regulators to self-assess our retail markets according to CEER's instructions. The self-assessment is the basis for implementing corrective measures aimed at ensuring a comparable level of development of the relevant markets in the EU by 2025, which would benefit all consumers. Therefore, the purpose of the survey was to check the consumers' awareness of electricity suppliers and the possibilities of switching suppliers, the responsibility to supply and distribute energy, and their level of trust in the energy market.

In cooperation with the outsourced Informa Echo, the Energy Agency conducted a survey on a representative sample of 1,002 household electricity consumers in Slovenia, taking into account different characteristics (household income, number of household members, number of children, building type, type of residential area, region, gender, age, education, employment, marital status, additional leisure activities).

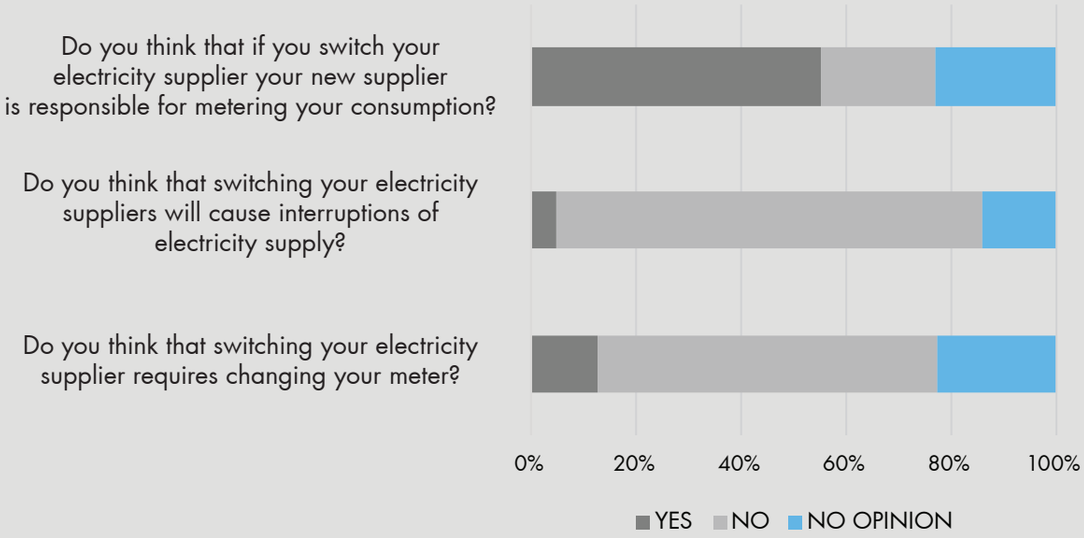
The results of the survey by individual indicators are presented below.

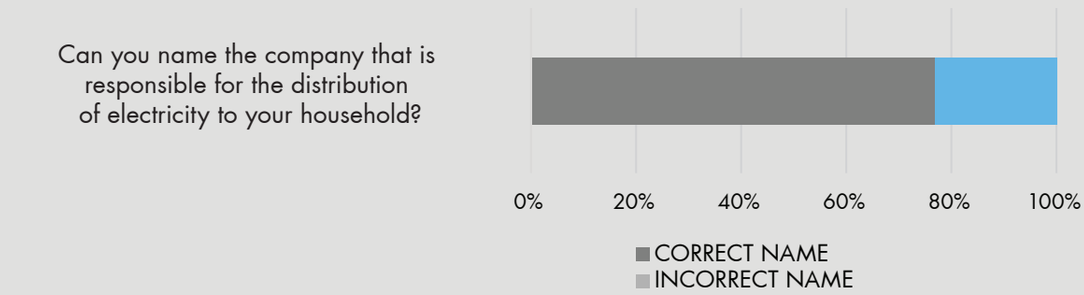
Percentage of consumers who are aware that they can switch their electricity supplier



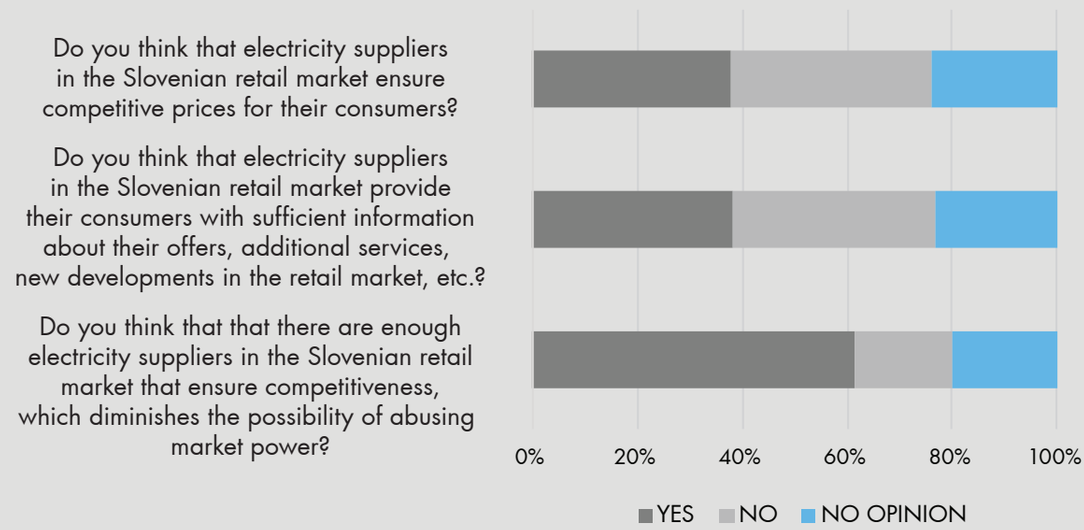
[40] Decrease of the composite indicator CI (case study in the Report on the Energy Sector in Slovenia in 2018)
[41] 2017 Handbook for National Energy Regulators – How to assess retail market functioning, Ref: C16-SC-52-03, January 2017

Percentage of consumers who know that electricity distribution companies are responsible for an uninterrupted supply and for metering consumption





Percentage of consumers who trust the energy market



The results of the survey have shown that 68% of the respondents know more than one (their own) electricity supplier, while as much as 82% of them think that they are free to choose their electricity supplier. Half of the respondents are aware that their choice does not depend on geographical factors.

More than three quarters of the respondents (77%) correctly named the company that distributes electricity in their area, while an even larger share think that switching their supplier does not cause any interruptions of electricity supply. Over 50% of the people surveyed are aware that switching their supplier does not require changing their meter. At the same time, over half of the respondents mistakenly believe that their new supplier is responsible for metering their consumption after the switch.

Over half (61%) of the respondents think that there are enough companies in the relevant market, which diminishes the possibility of abusing market power. However, respondents hold strongly differing opinions as to whether suppliers provide consumers with sufficient information about new developments and whether they ensure competitive prices for consumers. The percentage of those who agree (over a third) or disagree (over a third) and, consequently, of those without an opinion is completely comparable.

Based on the results of the survey, we can conclude that consumers are well aware of the possibilities to switch suppliers and can clearly distinguish between the roles and responsibilities of electricity distribution and supply.

While the trust in the market is sound, the results highlight the issue of the consumers' awareness of new opportunities (offers, new services and new developments on the market).

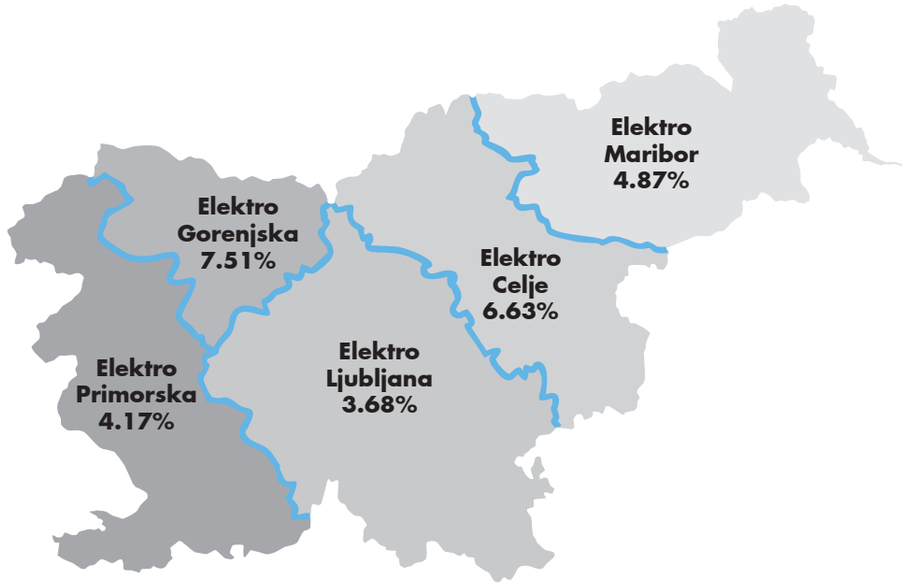
The causes of such insufficient awareness are varied:

- the suppliers' communication strategies mainly focus on gaining new consumers (suppliers usually do not inform their existing consumers about their special offers);
- independent comparison services, which are managed by the Energy Agency, were limited only to the regular offer until the end of 2019 (see case study Preliminary assessment of the effects of eliminating the regulatory restrictions of the Energy Agency's comparison services);
- the consumers' frequent passivity after they have switched their supplier (consumers no longer follow the offer on the market due to different reasons – contracts, etc.).

The reinstated comparison services, which comprise the entire offer on the market, will not, by themselves, eliminate all the causes for the cooling market. Additional measures will have to be adopted to raise awareness among consumers about their active role and new opportunities on the market, which are related to market development and the transformation of the industry.

To identify any deviations from the Slovenian average, the Energy Agency has performed an in-depth analysis of supplier switches made by household consumers in individual geographic areas. The results have enabled an analysis according to individual distribution areas. The consumer's choice (supplier, product) does not depend on their location but the economic and demographic development of the areas is diverse. There are still suppliers on the market that historically originate from electricity distribution companies, i.e. the owners and contractual managers of networks in individual distribution areas. Some suppliers still have ownership affiliation with those companies, which, in case of an ineffective division of activities, could be a potential obstacle to choosing suppliers freely.

FIGURE 88: SHARE OF SUPPLIER SWITCHES MADE BY HOUSEHOLD CONSUMERS IN THE AREAS OF INDIVIDUAL DISTRIBUTION COMPANIES



Sources: SODO, Energy Agency

Electricity suppliers supply electricity on the entire Slovenian territory, so all consumers are guaranteed the same freedom of choice. If the consumers' level of engagement were the same on the entire Slovenian territory, so just in theory, the number of supplier switches would be proportional to the total number of connected household consumers in individual areas of the distribution system. Consequently, the shares of switches would be the same.

Nonetheless, the analysis has shown that the highest share of supplier switches made by household consumers occurred in the distribution area of Elektro Gorenjska (the area with the smallest number of household consumers, 78,653), while the smallest share occurred in the distribution area of Elektro Ljubljana (the area with the highest number of household consumers, 307,105). Compared to the total share of switches made by household consumers in the Slovenian retail market (4.9%), two areas (Elektro Gorenjska and Elektro Celje) registered a significantly higher share of supplier switches, while two areas (the areas of Elektro Ljubljana and Elektro Primorska) recorded a fairly lower share.

The highest share of supplier switches made by household consumers was recorded in the area of Elektro Gorenjska

The highest share of supplier switches in the area of Elektro Gorenjska can be a result of greater price elasticity of demand in that area. On the other hand, the lowest share of supplier switches in the area of Elektro Ljubljana does not necessarily imply lower price elasticity of demand. The number of switches in fact also depends on the consumers' increased activity in previous periods, targeted advertising, the loyalty to suppliers that are or used to be integrated with a distribution company, consumer trust in a brand, etc. Considering the market structure or the suppliers' regional dominance, we could assume that the

below-average trends of the switches are a result of the consumers' reasoned outstanding loyalty to the suppliers mentioned above. However, an expanded analysis should be carried out to confirm this assumption.

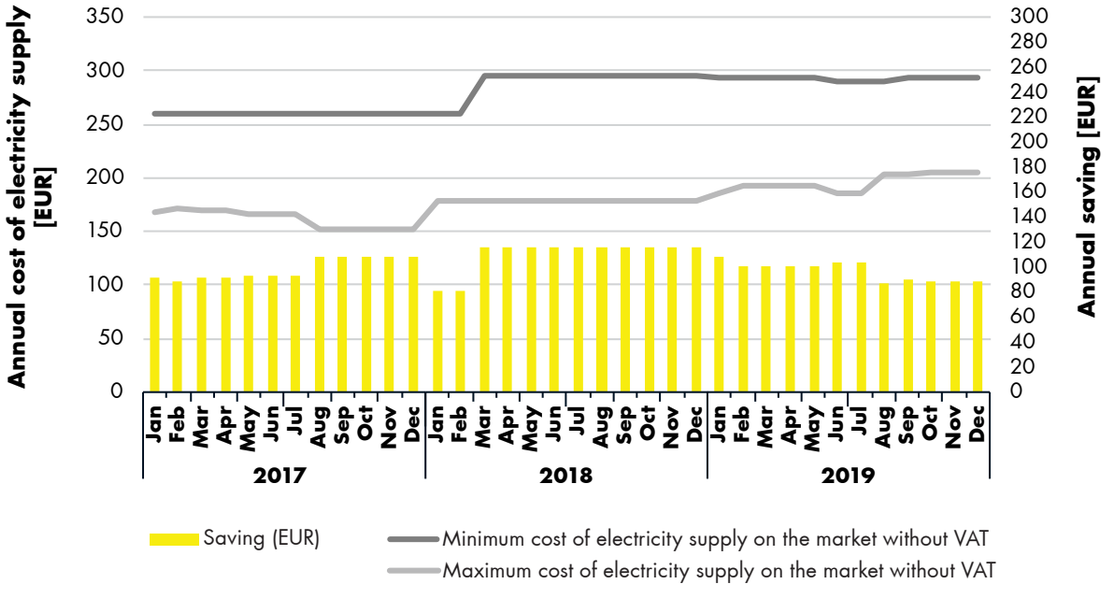
The retail market in Slovenia has experienced considerable changes in recent years. Market competition has increased due to the introduction of new suppliers, access to information is easier due to the progress in digitisation, there are numerous new services available on the market, and the suppliers' business models are also different. All of this should affect the engagement of consumers. Nevertheless, there are apparently particular reasons for the dynamism of the retail market to be cooling, which have to be researched and the appropriate corrective measures taken. The analysis actually shows this cooling only in certain areas, while others recorded trends that exceed the highest share of switches at national level from 2016.

Assessment of the potential benefits of switching suppliers

By switching its supplier, every household or business consumer can reduce its annual electricity costs, coordinate and improve the contractual relations with its supplier and therefore, gain additional benefits.

Figure 89 shows trends in the minimum and maximum costs of an average Slovenian household consumer[42] for electricity supply in the retail market on an annual basis without the network charge, levies and VAT.

FIGURE 89: POTENTIAL ANNUAL SAVING BY SWITCHING SUPPLIER BASED ON THE DIFFERENCE BETWEEN THE MOST EXPENSIVE AND THE CHEAPEST SUPPLY OFFER ON THE MARKET



Source: Energy Agency

If a consumer whose 2019 supply was provided based on the most expensive offer opted for the cheapest offer in the market, their potential saving in that period would be between EUR 88.5 and EUR 109. Compared to 2018, the potential saving is slightly lower. This is a result of an increase in the cheapest offer on the market, which rose continuously in 2019, with some intermediate fluctuations, affecting the price difference between the cheapest and the most expensive offer on the market. Potential savings are discussed in more detail in the case study Assessment of the potential benefits of switching suppliers.

Average potential saving by switching suppliers lower by 14% compared to 2018

[42] Consumption LT 2,100 kWh and HT 1,996 kWh a year, connected load 8 kW.

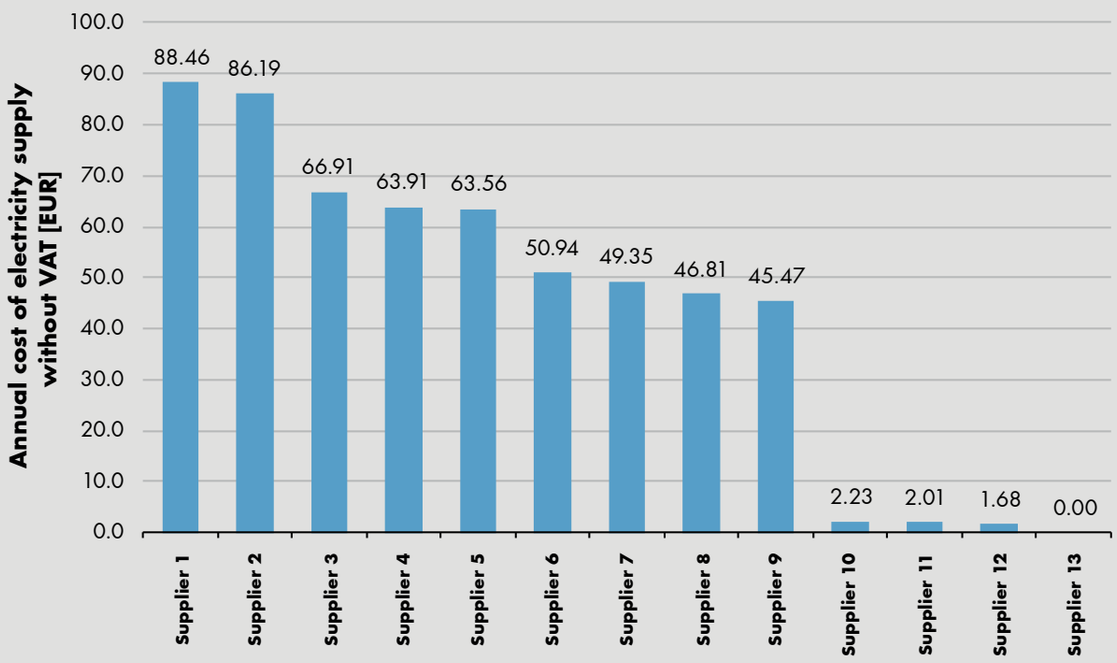
CASE STUDY: Assessment of the potential benefits of switching suppliers

A large part of electricity and natural gas supply to consumers in the retail market is provided based on the suppliers' regular or basic offers. These offers are available to all consumers and enable them to switch suppliers at any time without a contractual penalty.

An analysis of the potential benefits of switching electricity suppliers was carried out for an average household consumer in Slovenia.[43] The analysis included 13 suppliers, which published their electricity offers for household consumers without any specific restrictions, so including those suppliers whose offer does not officially meet the criterion of the definition of a regular price list (because the requirement regarding the number of concluded contracts was not met). The potential saving was calculated based on the difference between the prices from the regular offer of individual suppliers for household consumers and the cheapest offer on the market at 31 December 2019 which was available to all consumers (Poceni elektrika brand by supplier GEN-I).

The analysis has shown that if a consumer whose supply was provided based on the most expensive regular offer opted for the cheapest offer on the market, their potential saving would be EUR 88.5[44] after one year, provided that prices remained unchanged. Consumers' average potential saving with the suppliers under review would be EUR 47.

FIGURE 90: POTENTIAL ANNUAL SAVING BY SWITCHING ELECTRICITY SUPPLIERS BASED ON THE DIFFERENCE BETWEEN THE REGULAR OFFER OF INDIVIDUAL SUPPLIERS AND THE CHEAPEST SUPPLY OFFER ON THE MARKET AT 31 DECEMBER 2019

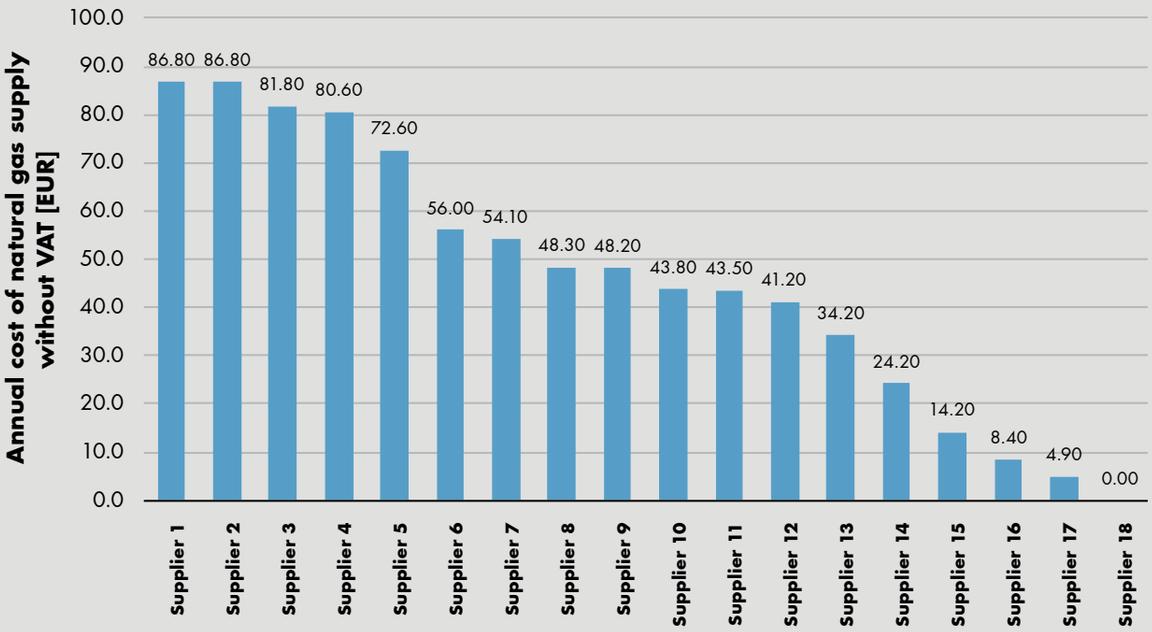


Source: Energy Agency

An analysis of the potential benefits of switching natural gas suppliers was carried out for a consumer with a consumption of 10,000 kWh. The analysis included 18 suppliers, which published their natural gas offers for household consumers without any restrictions. Potential savings were calculated using the same methodology as for electricity. The cheapest offer on the market at the end of 2019 that was also methodologically appropriate was "Ogrevaj ceneje JESEN 2019" ("Heat up cheaper AUTUMN 2019") by the supplier Energetika Celje.

[43] Consumption type: 8 kW, 2,100 kWh (LT), 1,996 kWh (HT)
[44] Saving in electricity costs on an annual basis, without the network charge, levies and VAT.

FIGURE 91: POTENTIAL ANNUAL SAVING BY SWITCHING NATURAL GAS SUPPLIERS BASED ON THE DIFFERENCE BETWEEN THE REGULAR OFFER OF INDIVIDUAL SUPPLIERS AND THE CHEAPEST SUPPLY OFFER ON THE MARKET AT 31 DECEMBER 2019



Source: Energy Agency

The analysis has shown that if a consumer whose supply was provided based on a supplier's most expensive regular offer opted for the cheapest offer on the market, their potential saving would be EUR 86.8, provided that prices remained unchanged. That would be the potential saving in natural gas costs on an annual basis, without the network charge, levies and VAT. Consumers' average potential saving with the suppliers under review would be almost EUR 49.

If all the electricity and natural gas consumers whose supply is provided based on suppliers' regular offers switched their supplier for the cheapest offer on the market, the total annual potential saving would be EUR 23.2 million. The actual saving for consumers would be EUR 17.9 million in electricity supply and EUR 5.3 million in natural gas supply.

Measures for promoting competition

The Energy Agency monitors the retail electricity market and, in doing so, cooperates with regulatory and supervisory authorities at national level, e.g. the Market Inspectorate of the Republic of Slovenia, the Slovenian Competition Protection Agency and, when appropriate, independent and non-profit consumer organisations. The Energy Agency's measures are varied and derive from its internal analyses, bilateral operations and the results of public consultations. It is also responsible for updating relevant information on market developments within its single point of contact.

Price regulation

Retail electricity prices are not regulated so the Energy Agency does not issue any recommendations on retail pricing. The only exception is the price of electricity for last resort supply, which is regulated and provided by the DSO. The price of that supply is set and made public by the DSO. It must be higher than the market price of the supply to a comparable consumer but it must not exceed it by more than 25%. If the DSO does not set the price or sets it contrary to regulations, it is set by the Energy Agency.

Measures for improving the transparency of the offer in the retail market

The Energy Agency's website provided its users with a tool for comparing the costs of supply according to the suppliers' offers that are based on regular price lists. As of 19 December 2019, this comparison tool includes all offers available on the market. Only around a third of electricity suppliers in the retail market designed their offers based on regular price lists in 2019. This situation was without doubt caused by a flaw in the already deleted definition of a regular price list under the EZ-1 and the limitation of the number of consumers on which that definition was based. Moreover, some suppliers purposefully designed their offer so that the criteria of the definition of a regular price list would not be met. Therefore, an enormous number of available offers was not included in the Energy Agency's online comparison service for most of the calendar year. Immediately after the entry into force of the Act Amending the EZ-1, which removed the provisions concerning regular price lists in the summer of 2019, the Energy Agency started to perform intensive updates of its comparison services in order to restore a comparison of all the offers in the retail market. A higher transparency level of the retail market for household consumers was achieved in December 2019, when the Energy Agency allowed consumers to perform an independent comparison of all the offers in the market in one spot but with certain restrictions. There is also a project under way for renovating the comparison services, which will remedy the shortcomings and limitations of the current solution. Consumers will be able to access a new user experience which will take into account market developments.

Effective data exchange in key market processes

The Act on the identification of entities in the data exchange among participants in the electricity and natural gas markets requires market participants to use standardised identifiers of key data entities in the electronic exchange of data in the market. The Energy Agency monitored and directed the activities of the DSO in using open standards to identify data entities and all other aspects of using open standards in the data exchange among system operators and suppliers (identification of market participants in the balance schemes of market operators, identification of distribution system areas, labelling metering points on suppliers' invoices, etc.). As part of the measures implemented on the basis of the third energy package aimed at unifying the most important data exchange processes at the national and regional levels, the Energy Agency has been establishing an efficient data exchange between market participants, steering the participants towards the use of open standards and reuse of generic models of the European forum for energy Business Information eXchange (ebIX) and ENTSO-E models to the greatest extent possible.

In accordance with the Energy Agency's general act, all key data entities in an electronic data exchange have to be defined with standardised identifiers. The new energy package and the vision for the evolution of energy networks by 2050 envisage the full integration of energy networks (electricity, gas, heat) and the consumers' complete engagement (development of a flexibility market). The harmonisation of data exchange processes using open standards in energy markets is thus becoming even more important and a crucial action to eliminate certain barriers to entry for new market participants and to reduce entry costs. The Energy Agency has been implementing its strategy through public consultations, bilateral cooperation and participation in professional platforms, such as the IPET Section. In 2019, many development activities within ebIX® were focused on modelling data exchange processes for flexibility trading and on drawing up proposals to expand the Harmonised Electricity Market Role Model (introduction of new roles, such as the aggregator or flexibility service provider). At the national level, an expert discussion on this subject was under way in the IPET Section, where the Energy Agency is actively involved.

Providing consumers with standardised data services

An important regulatory barrier to develop data services based on detailed metering data has been eliminated

The Act Amending the EZ-1, which was adopted in the summer of 2019, has provided the legal basis for processing personal data of system users and accessing that data via the single point of contact of the national data hub. The amendments to the EZ-1, which were introduced including through inputs from the Energy Agency, have enabled operators again to process 15-minute metering data of household consumers. This option had been blocked following the opinion of the Information Commissioner in the first quarter of 2018.

The Government Decree on measures and procedures for the introduction and interoperability of advanced electric power metering systems and the Plan for the introduction of an advanced metering system in the Slovenian electricity distribution system define, among other things, the system architecture, roles and responsibilities, its minimum functionalities, and some aspects of the implementation of data exchange based on relevant standards (CIM, etc.) The Decree requires the DSO to establish a single access point for accessing data in the advanced metering system. Based on the Plan mentioned above, the system is implemented as a central system for accessing metering data (CSDMP), which is managed by the DSO and provides data exchange services among business entities and network users (B2B and B2C). No progress has been made in accordance with the Plan regarding the establishment of the CSDMP and the related data services for eligible users since the DSO carried out only an insignificant extent of activities. However, on 4 October 2019, distribution companies, united under the Electricity Distribution Economic Interest Grouping, established a free single online portal called Moj elektro, a metering data single access system (SEDMP)[45], which provides a certain segment of B2C data services of the CSDMP and enables the management of authorisations for accessing data. Users can access detailed, 15-minute metering data, which is defined as personal data in the case of household consumption. In addition to the existing data services in the B2B segment (e.g. the PERUN platform, etc.), the range of data services was expanded to the B2C segment in October 2019, which definitely benefits the system users. Nonetheless, given the uncoordinated implementation of activities concerning advanced metering systems in Slovenia by the DSO and distribution companies as well as the non-compliance of new solutions with the Plan, the vision of developing advanced metering systems remains unclear. The project for developing the SEDMP is supposed to be followed by the development of services for other users eligible to access data (suppliers, aggregators, etc.) within B2B. The portal should also provide end consumers whose metering points have the appropriate technical equipment with information regarding the quality of electricity supply. However, based on available information, it is unclear whether that would imply a new range of services or replacing the existing ones (e.g. PERUN) or the development of a CSDMP, which would require an update of the Plan. The definition of the range of standardised data services provided by the DSO to system users either free of charge or for a fee remains undetermined since the process of coordinating and confirming the new systemic operational instructions for the electricity distribution system (SONDSEE) has not concluded yet. The issue of providing effective local access to metering data in real time (in the I1 interface of a smart meter) remains unresolved as well, especially due to the technical restrictions of built-in smart meters and the inadequate standardisation of the interface.

End consumers and their authorised representatives provided with single access to detailed metering data

Other measures

The same rules on the prevention and restriction of competition and the abuse of a dominant position apply to the electricity market as to other types of goods. As publicly available information indicates, the Slovenian Competition Protection Agency did not identify any restrictive practices or possible dominant position on the market in companies operating on the electricity market in 2019. As far as concentration assessment is concerned, that Agency issued one decision in 2019 closing a concentration assessment procedure

[45] https://mojelektro.si

filed by Petrol following the withdrawal of the company's application. The acquisition of joint control by the companies HSE, d.o.o., Elektro Celje, d.d., Elektro Gorenjska, d.d. and Elektro Primorska, d.d. of ECE, d.o.o. and E3, d.o.o. was already announced in 2017. In that case, the Slovenian Competition Protection Agency decided in 2019 that the concentration is in line with competition rules, provided that the corrective measures laid down in the decision are met.

Active consumption, flexibility market and other development-related aspects

Promoting active consumption and introduction of the flexibility market

System operators and distribution companies worked on 18 research and innovation projects in 2019. Fourteen of those have a direct or indirect connection with the development of a flexibility market. Most of the projects are implemented within the European Union's Horizon 2020 research and innovation programme (15 projects) and other partnerships. The content of three projects is related to the projects qualified within the Energy Agency's research and innovation scheme. Three projects from the Horizon 2020 programme that were launched in 2019 are presented below. The other projects are described in the Report on the Energy Situation in Slovenia in 2018.

14 projects related to the development of a flexibility market

The FlexPlan[46] project (which includes ELES) aims at establishing an innovative grid planning methodology and tool, taking into account the possibility to introduce new storage elements and flexibility resources in electricity transmission and distribution grids as an alternative to building new transmission and distribution lines. In this way, the project tries to answer the question of what the role of flexibility sources could be as an alternative to expanding the grid and how to maintain the current security levels.

The core objective of the INTERRFACE[47] project, which includes Elektro Ljubljana, ELES, C&G and the Energy Agency, is to ensure coordination between TSOs and DSOs while empowering consumers to become active. An Interoperable pan-European Grid Services Architecture (IEGSA) will act as the interface between the power system and the consumers and allow the seamless and coordinated operation of all stakeholders to use and procure common services. The project's pilot activities in Slovenia are run by Elektro Ljubljana.

The X-FLEX[48] project, which includes Petrol, Elektro Celje and the University of Ljubljana, proposes a set of integrated solutions that will facilitate the optimum combination of decentralised flexibility assets, both on the generation side and on the demand side. Active consumers will be able to offer their flexibility in the local and wholesale market creating benefits to all the actors in the smart grid value chain. The pilot project, which will be led by Petrol and carried out in the distribution area of Elektro Celje, involves the use of a reduced network charge for community self-supply based on the concept of location netting of electricity generation and consumption of the users in a community.

In 2019, the TSO updated the Rules and conditions for providers of balancing services on the ELES balancing market, which open up prospects for the participation of active consumers in implementing systemic services either through aggregators or independently. Most of the active consumption is connected to the distribution system, so the discussion regarding mutual coordination between the TSO and DSO continued during the process of updating the systemic operational instructions for the electricity distribution system.

[46] https://www.eles.si/en/flexplan-project

[47] TSO-DSO-Consumer INTERFACE aRchitecture to provide innovative grid services for an efficient power system; http://www.interrface.eu/,
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 824330.

[48] Flexible solutions for decentralised energy grids; https://cordis.europa.eu/project/id/863927

Open public consultation on the introduction of a flexibility market

The Energy Agency has carried out the first, initial set of public consultations in accordance with the AREDOP model for the introduction of a flexibility market[49] in Slovenia. It has done so as a result of an extensive consultation document drawn up based on internal analyses and the results of the INTERRFACE project. The consultation document deals with concepts related to the flexibility market and the key roles played by active consumers, the two system operators, suppliers or the responsible representatives of balance groups, aggregators, energy service providers and the market operator. This was the first, initial content set of consultations, which aimed at identifying the most demanding or problematic areas in terms of implementation. In this part of the consultation process, the Energy Agency carried out an extensive expert workshop with a view to enabling a wider discussion, which was joined by all the relevant stakeholders, invited experts and journalists. The consultation contributed significantly to a common understanding of the issue, to identifying needs and preparing to implement the Clean Energy for All Europeans package.

The market operator incorporated some provisions in the Rules on the operation of the electricity market that enable the implementation of a so-called independent aggregation. Alternative models, which would promote the development of active consumption and access to the flexibility market based on providing system services for the TSO's needs, are under discussion. The market operator participates in the PAKT[50] project, whose aim is to integrate the flexibility of industrial consumers, develop an aggregation platform and integrate meters with an additional communication module for connecting to the electricity trading system. The market operator also participates in the FARCROSS[51] project, which is aimed at optimising the utilisation of the physical (cross-border) power infrastructure to develop new hardware and software solutions, which would improve power flows on the same physical infrastructure (cross-border lines).

[49] https://www.agen-rs.si/objavljena/-/asset_publisher/M2GdU2jRtCxV/content/regulativne-spremembe-za-vzpostavitev-nove-vloge-na-trgu-aktivni-odjemal-1
[50] https://www.borzen.si/sl/Domov/menu1/Reference/Sodelovanje-pri-projektih/Projekt-PAKT
[51] https://www.borzen.si/sl/Domov/menu1/Reference/Sodelovanje-pri-projektih/Projekt-FARCROSS

CASE STUDY: A view of the evolution of active consumption

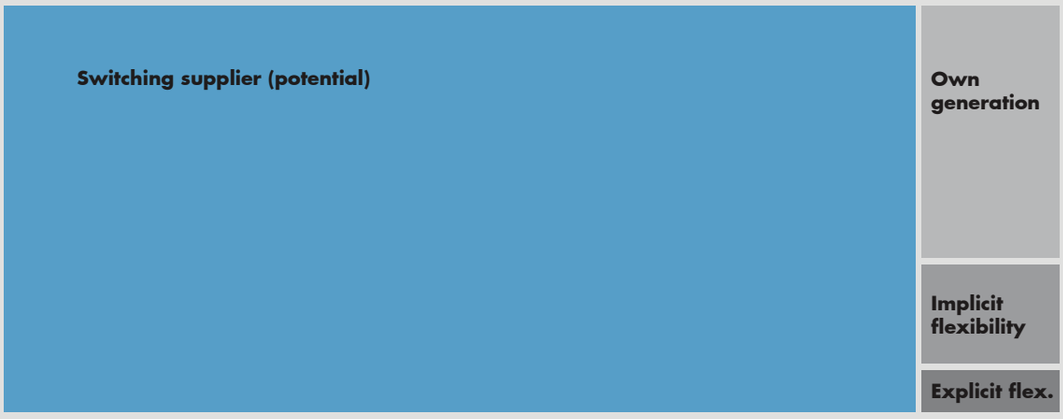
The flexibility of active consumption is one of the key factors of the development of the energy sector that would significantly reduce greenhouse gas emissions and increase the share of RES in the end use of energy, while still ensuring an appropriate level of supply quality. Active consumption[52] denotes a consumer, or a group of jointly acting consumers, who consumes, stores or sells electricity generated within its premises, also through aggregators, or participates in demand response or in energy efficiency schemes, provided that those activities do not constitute its primary commercial or professional activity.

The share of flexible electricity generation has been decreasing, while generation from RES (solar, wind, hydro) is not flexible because it strongly depends on the availability of the sources or on weather conditions. The shares of utilisation of solar power, hydropower and wind power will rise substantially by 2040 (National Energy and Climate Plan, NECP). By utilising the flexibility of active consumption, different types of energy storage (hourly, daily, weekly, seasonal) and smart charging electric vehicles, the consequences of the fluctuating availability of RES can be mitigated while ensuring higher utilisation of the power grid even when the RES integration level is high.

When assessing the population of consumers who engaged in the developing flexibility market of active consumption in 2019, we can start by looking at the data on the number of consumers who have their own generation sources and already participate in the provision of implicit or explicit flexibility services within the Energy Agency's pilot projects and systemic balancing services. We can thus estimate that active consumption in 2019 comprised only around 0.9% of all consumers in the power system. 0.7% of those can be attributed to households and 0.2% to business consumption.

Supposing a successful and effective implementation of the Clean Energy for All Europeans package, we can expect energy communities, local flexibility markets and peer-to-peer trading by 2025. In accordance with strategies at the EU and national levels, we can expect active consumption to intensify by 2030, i.e. at least to the average trending level in the retail market, which is measured by the share of supplier switches. Therefore, to estimate the potential share of active consumers, the population of consumers who switched their supplier in 2019 can be added to the population of active consumers mentioned above. These consumers are, in a stricter sense, already active and also more conscious than other consumers. Given the appropriate business models, they could potentially engage more actively in the flexibility market. The consumers who switched their supplier in 2019 represent a 5.7% share. Figure 92 shows the structure of the estimated number of active consumers in 2019 together with the overwhelming percentage of consumers who switched suppliers.

FIGURE 92: STRUCTURE OF EXISTING AND POTENTIAL ACTIVE CONSUMERS IN 2019



Source: Energy Agency

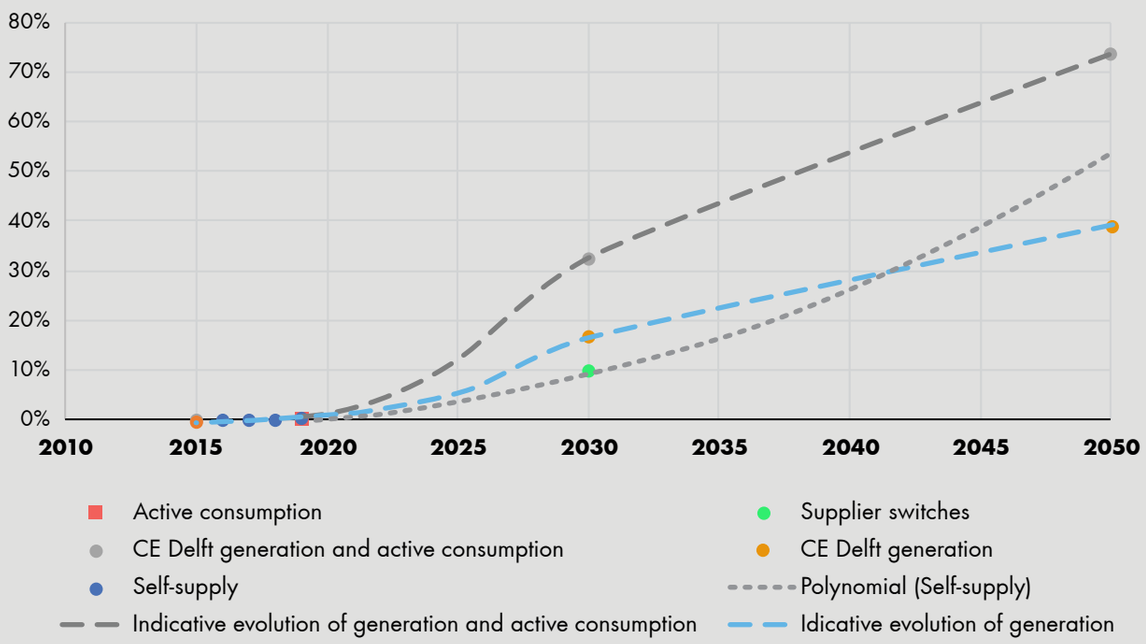
[52] https://www.agen-rs.si/documents/10926/106759/Regulativne%20spremembe%20za%20vzpostavitev%20nove%20vloge%20na%20trgu%20Aktivni%20odjemalec

On the one hand, the estimate of the entire potential for 2019 (6.6% of active consumers) is somewhat conservative since it should be taken into account that trends in the retail market have been settling in recent years[53] and that the flexibility market of active consumption (except for systemic services) is, in fact, only just being established. On the other hand, not all consumers who switch their supplier should be expected to have the possibility of becoming active consumers in the sense of the above definition. Due to regulatory changes and the development of new business models, we estimate that the market trends in supplier switches will intensify by 2030 and reach the level of "warm active markets"[54].

However, to achieve the long-term goals of the NECP and Slovenia's contribution to the commitments of the European Green Deal, a substantially higher engagement of active consumers will have to be ensured.

Taking into account the development milestones mentioned above and the projected evolution of self-supply (see case study Assessment of self-supply trends and scenarios), the Energy Agency estimates that the share of active consumption could reach around 10% by 2030.
According to a CE Delft study[55], for example, such an estimate is very conservative for Slovenia since the study assumes that over 30% of household consumers will participate in different types of active consumption and generation in 2030 and over 70% in 2050.[56] Nonetheless, the Energy Agency estimates that even a more conservative projection of evolution indicates potentially achieving over 50% of active consumption in 2050, provided that the optimum development conditions are ensured though.
Figure 93 shows the indicative estimates mentioned above regarding the possible development of active consumption in the future, taking into account relevant statistical data until 2019.

FIGURE 93: ESTIMATED DEVELOPMENT OF THE NUMBER OF ACTIVE CONSUMERS OVER THE YEARS



Source: Energy Agency

Indicative estimates covering such a long period of time cannot take into account the influence of some emerging innovative technologies, which are still evolving today.[57] Such technologies can accelerate the development of active consumption or even suspend it, if it turns out that the goals can be achieved more efficiently in a different way.

By applying the appropriate innovative technologies, the development of the current system into a system of the future will ensure the consumer's complete engagement by 2050.[58] Effectively eliminating regulatory barriers, raising consumer awareness about their active role, developing new markets and their related business models based on exploiting the potential of digitisation and innovative technologies – these will be the key development factors of active consumption within the applicable strategic guidelines.

[53] The number of switches in some Slovenian geographic areas exceeds the Slovenian average significantly (see chapter Switching suppliers).
[54] Share of supplier switches between 8.5% and 14% – VaasaETT: World Energy Retail Market Rankings Report 2012.
[55] B. Kampman, J. Blommerde, M. Afman, The potential of energy citizens in the European Union, CE Delft, September 2016, http://bit.ly/energycitizenstudy
[56] The shares are calculated according to the number of all consumers in 2019.
[57] http://www3.weforum.org/docs/WEF_Top_10_Emerging_Technologies_2019_Report.pdf
[58] https://www.etip-snet.eu/etip-snet-vision-2050/

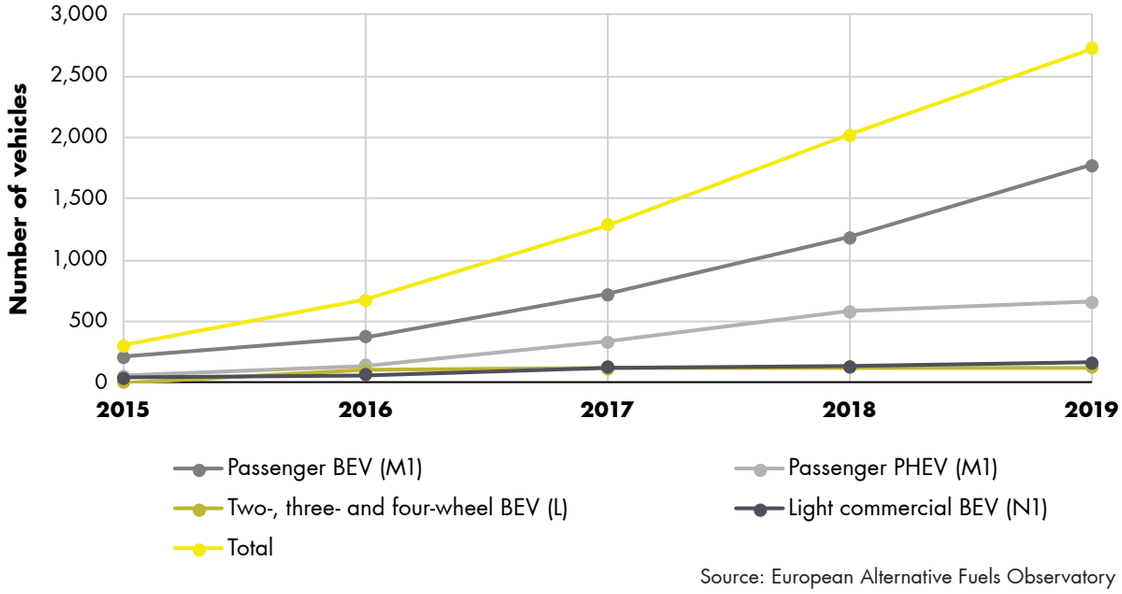
Electromobility

35% annual growth in the total number of electric vehicles

A more widespread use of electric vehicles in the future will affect the profile of electricity consumed in Slovenia. The Energy Agency supports the development of the recharging infrastructure with incentives for recharging infrastructure managers as part of its network charge tariffs earmarked for connecting recharging stations and using the network. As e-mobility booms, electric vehicles can be expected to join the evolving flexibility market with so-called smart recharging, where recharging parameters can be adjusted according to the needs of the vehicle's user as well as those of the power system.

The total number of electric vehicles in Slovenia rose by around 35% in 2019. The biggest contributor were battery electric vehicles (BEV) in the passenger vehicles category (M1). The annual increment of these vehicles is around 50%. The number of plug-in hybrids (PHEV) in the same category increased by around 14% a year. BEV and PHEV thus account for well below half a percent of passenger vehicles in Slovenia.[59] The number of light BEV, which include two-, three- and four-wheel vehicles (category L), has risen by around a mere 3% in the last year. In contrast, the number of light commercial BEV (category N1) grew by around 22%. A 46% annual growth in the total number of electric vehicles can be detected at EU level in comparison with the year before. Figure 94 shows the evolution of the number of electric vehicles in Slovenia by category over the years.

FIGURE 94: INCREASE IN THE NUMBER OF ELECTRIC VEHICLES IN SLOVENIA IN THE 2015–2019 PERIOD



Source: European Alternative Fuels Observatory

While the number of newly registered PHEV in the passenger vehicles and light BEV categories fell significantly in Slovenia compared to the previous year, the number of newly registered BEV increased by 23% in the passenger vehicles category and by 17% in the light commercial vehicles category. Slovenia thus recorded a was drop of around 4% in the total number of newly registered electric vehicles compared to the previous year. A different trend may be detected in the EU as the number of newly registered electric vehicles increased significantly in all categories, by a total of around 64% compared to 2018. Table 28 shows a more detailed comparison.

[59] According to the number of all passenger vehicles at 31 December 2019 (source: STAT).

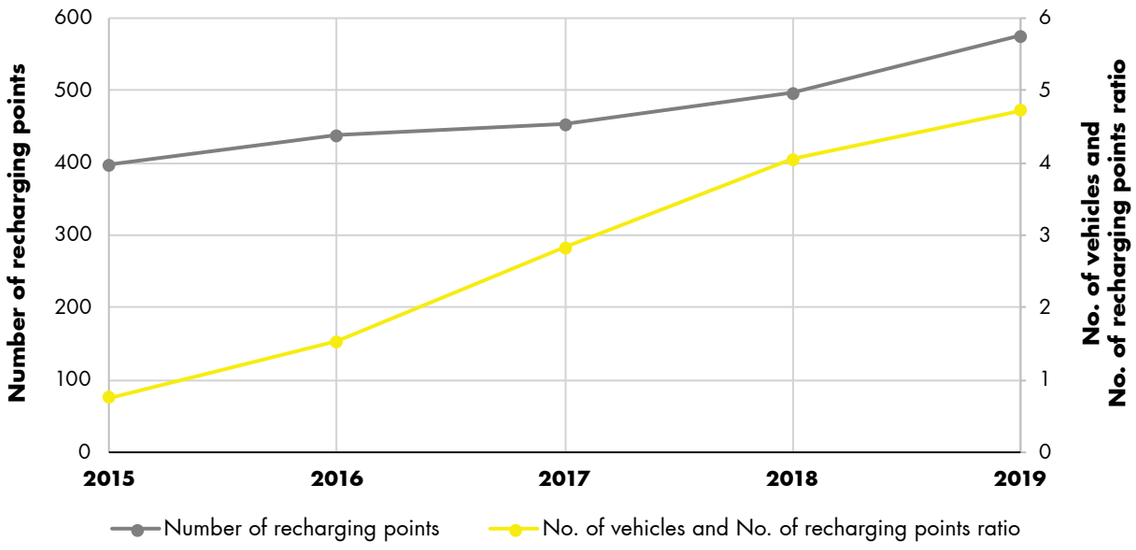
TABLE 28: NUMBER OF NEWLY REGISTERED ELECTRIC VEHICLES IN SLOVENIA AND THE EU IN 2018 AND 2019

		Slovenia			European Union		
		2018	2019	Ratio	2018	2019	Ratio
Passenger vehicles (M1)	**BEV**	470	578	123.0%	131,939	246,302	186.7%
	PHEV	224	81	36.2%	108,197	140,397	129.8%
Light vehicles (L)	**BEV**	6	3	50.0%	12,962	38,512	297.1%
	PHEV	0	0	/	0	0	/
Commercial vehicles (N1)	**BEV**	35	41	117.1%	19,076	20,722	108.6%
	PHEV	0	0	/	1	35	3,500.0%
	Total	**735**	**703**	**95.6%**	**272,175**	**445,968**	**163.9%**

Source: European Alternative Fuels Observatory

The number of recharging points for electric vehicles grew by almost 16%. The entire EU recorded an around 40% rise in the number of recharging points. Figure 95 shows the evolution of the number of recharging points and the corresponding ratio of the number of electric vehicles according to the number of recharging points over the years. The total number of electric vehicles includes the vehicles of all the categories mentioned above (M1, L and N1).

FIGURE 95: EVOLUTION OF THE NUMBER OF RECHARGING POINTS FOR ELECTRIC VEHICLES IN THE 2015–2019 PERIOD



Source: European Alternative Fuels Observatory

Therefore, based on publicly available sources[60], the Energy Agency has established that the increase in the use of electric vehicles has been continuing. The structure of the fleet of electric vehicles in Slovenia has been changing, which can also be attributed to the evolution of the market of these vehicles. The total number of recharging points per total number of electric vehicles in Slovenia still corresponds to the anticipated frameworks proposed by Directive 2014/94/EU on the deployment of alternative fuels infrastructure.

Additional financial incentives for the infrastructure for alternative fuels and e-mobility within the Integrated National Energy and Climate Plan will ensure a gradation of measures aimed at introducing electromobility in Slovenia, including the implementation of demonstration projects whose goal is to establish a recharging infrastructure for residents of multi-apartment buildings, and the adoption of regulations specifying the installation of filling stations in multifamily agglomerations and larger blocks of flats and skyscrapers. Private recharging of electric vehicles at home during night time is of the utmost importance for a general boom of e-mobility. The Slovenian Environmental Public Fund (Eco Fund) offered incentives[61] in 2019 to establish a smart recharging infrastructure for companies' vehicle fleets and employees' vehicles as well as public use. Recharging electric vehicles during the day is very important for the sake of effectively exploiting the maximum generation from RES, i.e. at a time when people are at their workplaces.

The number of recharging points per number of electric vehicles in Slovenia complies with EU legislation requirements

Reliability of electricity supply

Reliability of supply is defined using two basic characteristics–sufficiency and security. Sufficiency is an indicator of the system's ability to meet consumers' demand for electricity and power in all the anticipated operational conditions, i.e. taking into account planned and unplanned outages of the system's elements. Operational security is the system's ability to withstand a set of disturbances in a specific operational condition (e.g. short circuits in the network, outages of the system's elements and unexpected changes in consumption in relation to generation restrictions) so that consumers do not feel the consequences of a disturbance, which is eliminated without jeopardising the system's integrity.

The entry into force of network codes on system operation and electricity emergency and restoration laid down detailed rules on how TSOs and other relevant participants have to operate and cooperate to ensure the system's security. The adopted Clean Energy for All Europeans legislative package has set out a common framework of rules on how to prevent and manage electricity crises.

In the event of a crisis threatening the physical safety or security of persons, facilities and installations or power system integrity, the TSO may impose measures to reduce the energy supply to certain categories of consumers, determine the order of reductions, the method of using energy and obligatory energy generation. The measures are implemented by the TSO in cooperation with the DSO or just by the latter if the conditions for the introduction of the measures are limited to the distribution system. The method of implementation and the reasons for imposing the measures are set by the government by means of a decree, whereas a more detailed specification is made by system operators within the systemic operational instructions. To this end, in 2019 the TSO drew up a plan for the maintenance of the system and a plan for the restoration of the system.

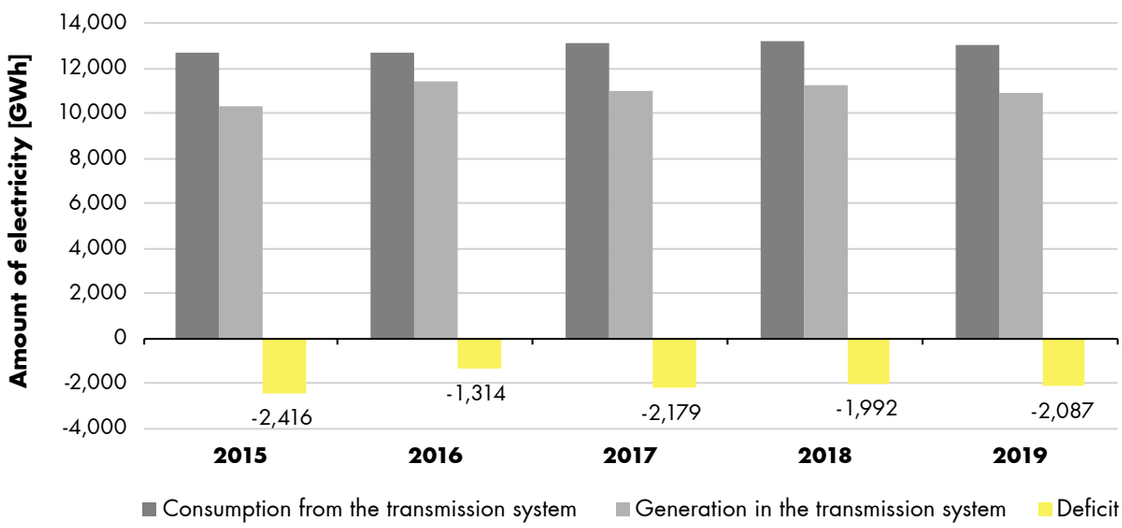
[60] European Alternative Fuels Observatory, https://eafo.eu/
[61] https://www.ekosklad.si/gospodarstvo/pridobite-spodbudo/seznam-spodbud/elektricne-polnilnice

Monitoring the balance between generation and consumption

After several years of upward trends, consumption of electricity from the transmission system decreased by around 1.5% in 2019 compared to the year before. Slightly higher fluctuations, mainly related to overhaul cycles in the nuclear power plant and to hydrological conditions, can be detected in electricity generation in the transmission system. Taking into account half of the capacity of the Krško NPP, electricity generation in the transmission system was almost 2.5% lower in 2019 than the year before, which was mostly due to substantially lower generation in hydropower and thermal power plants, while only the nuclear power plant delivered slightly more electricity to the transmission system than in 2018.

The consumption of electricity from the transmission system covered by national resources remains at a multiannual average

FIGURE 96: ELECTRICITY CONSUMPTION AND GENERATION IN THE SLOVENIAN TRANSMISSION SYSTEM WITHOUT TAKING INTO ACCOUNT LOSSES IN THE 2015–2019 PERIOD



Source: ELES

Monitoring investment in production capacities to ensure reliable supply

Due to siting difficulties, the construction of new production sources in the transmission system is very time-consuming

Besides taking into account the anticipated economic developments to estimate future electricity consumption in Slovenia, the requirements of the European Network of Transmission System Operators (ENTSO-E) from the ten-year EU development plan have been considered to the greatest extent possible. Electricity demand at the transmission level is mainly covered by sources connected to the transmission system. Therefore, in order to provide a forecast of the situation in the Slovenian power system that is as accurate as possible, those planned production sources whose construction is considered less likely should be excluded.

Table 29 shows the changes to Slovenian electricity producers envisaged in the Slovenian Network Development Plan 2019–2028. A positive value of capacity in the second column means that it is a new production facility or a renovation of an existing one, where an increased capacity is envisaged. A negative value means a shutdown or a reduction of the unit's installed capacity. The mark in the last column refers to the vision of development or the scenario anticipating the implementation of the investment. Scenario 1 is the most pessimistic and takes into account only the generation sources that are already under construction or have obtained planning permission, scenario 2 considers investments in generation units that can be realistically expected having regard to delays in the construction of new hydropower plants, and scenario 3 envisages the execution of all the announced investments, including Kozjak PSHPP and two hydropower plants on the Mura River. Scenario 4 is even more ambitious and foresees that Slovenia will achieve all the targets from the action plans regarding RES and energy efficiency by 2030. The set of planned production units has remained almost the same over the years, only their construction has been delayed.

The results of the TSO's analyses for the 2019–2028 period show a similar deficit of national production in all four scenarios, which can mostly be attributed to the operation of the available national production being uneconomical.

TABLE 29: CHANGES TO THE GENERATION FACILITIES IN THE TRANSMISSION SYSTEM BY 2028

Hydropower plants	Installed capacity (MW)	Anticipated year of change	Scenario
HPPs on the Drava River			
Kozjak PSHPP	420	2025	3, 4
HPPs on the Mura River			
Ceršak	20	2026	3, 4
Hrastje Mota	20	2024	3, 4
HPPs on the Sava River			
Mokrice	28	2022	2, 3, 4
Moste II	42	2024	3, 4
Suhadol	44	2026	3, 4
HPPs on the Soča River			
Učja	34	2025	3, 4
Trbovlje TPP			
PB I,II	-58	2023	
Brestanica TPP			
PB 1	-23	2022	
PB 2,3	-23	2027	
PB 7	50	2021	1, 2, 3, 4
Energetika Ljubljana			
Unit I, coal	-39	2021	
Unit II, coal	-39	2021	
Unit CCPPP	139	2021	1, 2, 3, 4

Source: ELES

Due to the suspension of the liquidation process of Trbovlje TPP, two gas units will continue to operate until the end of 2022 just to implement systemic services. Unit 4 of Šoštanj TPP also has an operating permit until the end of 2022 but it has not been running since 2018, when the more efficient Unit 5 was reintegrated into the power grid after an environmental rehabilitation had been completed. The final decision regarding the construction of the second unit of the Krško NPP has not been taken yet. In addition, its construction is scheduled after the time frame under review in this report.

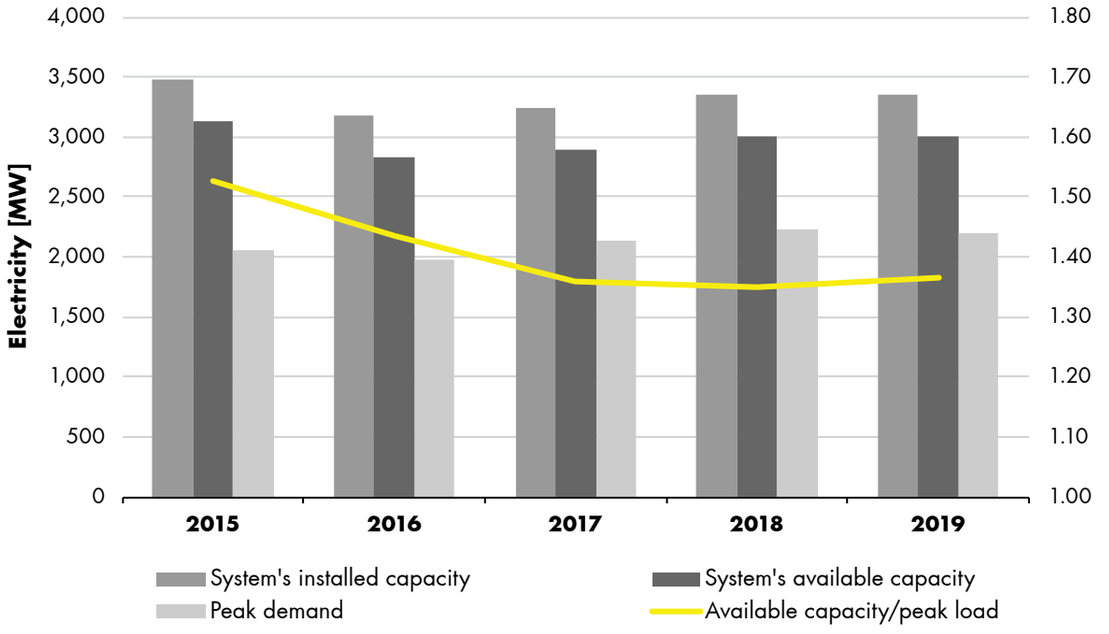
Measures to cover peak demand and shortages of electricity

The indicator of the sufficiency of production sources does not seem to be trending towards recovery

The ratio between the installed or available capacity of production sources and peak load is an indicator of the sufficiency of production sources. The system must have enough power at its disposal to cover demand and reserve power during normal operation and in the event of unforeseen circumstances. The ratio between the available capacity and the peak load in the transmission system improved only slightly in 2019, mainly due to a somewhat lower peak load, which was 2,198 MW without taking into account any losses in 2019. The difference between the installed capacity of the production facilities and the actual capacity available on the Slovenian market is accounted for by one half of the power from the Krško NPP, which belongs to Croatia.

In the 2016–2018 period, a massive surge in peak loads was detected. Before that, peak loads changed without any distinct trends and normally occurred during winter months and in the evenings. The peak load of 2019 took place on 23 January at noon, which coincides with a period of especially cold weather.

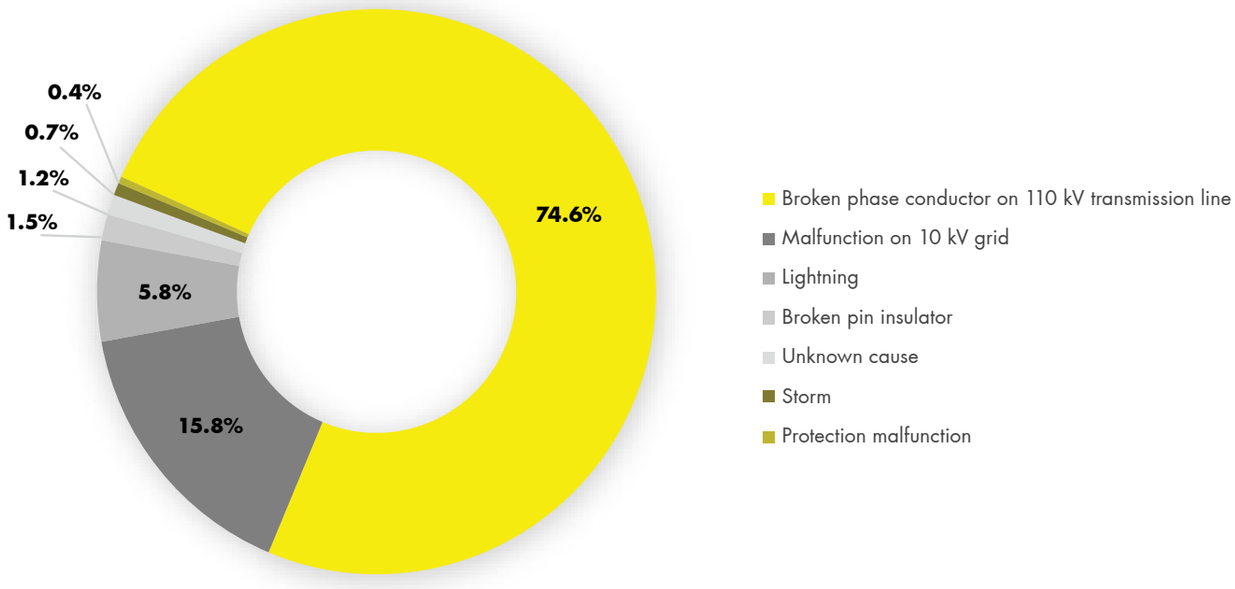
FIGURE 97: INSTALLED CAPACITIES OF PRODUCTION FACILITIES, CAPACITIES AVAILABLE FOR THE SLOVENIAN MARKET AND PEAK DEMAND, AND RATIO BETWEEN THE AVAILABLE CAPACITY AND PEAK LOAD IN THE TRANSMISSION SYSTEM IN THE 2015–2019 PERIOD



Source: ELES

The volume of electricity not supplied from the transmission system in 2019 was considerably higher than the year before and amounted to 154.67 MWh. Most of that, 115.4 MWh, is a result of an interruption caused by a broken phase conductor on a 110 kV transmission line. Electricity that is not supplied is calculated in accordance with the Act on the rules for monitoring the quality of electricity supply. Therefore, the actual volume of not supplied electricity may be lower than the one indicated since a significant share of consumers in the affected areas could be oversupplied by the medium-voltage network.

FIGURE 98: ELECTRICITY NOT SUPPLIED FROM THE TRANSMISSION SYSTEM ACCORDING TO THE CAUSE



Source: ELES

Regardless of the decrease in the consumption of electricity from the transmission system, national sources continued not covering the needs for electricity in 2019. Due to lower generation in hydropower plants and thermal power plants, the shortage of electricity was around the level recorded in recent years, as shown in Figure 97.

Despite that shortage, electricity supply was not at risk because Slovenia's transmission system is well-integrated with the power grids of neighbouring Austria, Italy and Croatia. Besides enabling the management of electricity transit flows, net transfer capacities at borders also ensure a reliable supply of the national market.

20% more
transferred natural gas

1798 new
consumers on natural gas distribution systems

1.9% higher
total consumption by domestic consumers

Natural gas – an important energy source in the transition to clean energy

The highest consumption of non-household consumers on the distribution systems so far

12.1% higher
consumption of CNG in transport

22.5% increase

in quantities on
the trading platform

The natural gas retail
market remains highly
concentrated

23%

increase in the number
business consumers of
natural gas switching supplier

Up to **6.3%**

lower network charges
for household consumers

88%

of natural gas imported
from Austria

NATURAL GAS

Supply and demand of natural gas

In 2019, 15,985 GWh of natural gas was transferred through the transmission system, which is almost 20% more than in the previous year. Of this, 9627 GWh was transferred for the supply of domestic consumers, 6320 GWh to other transmission systems, and the difference of 38 GWh represents imbalances of the system and own use of the transmission system. In comparison with the previous year, the transmission to other transmission systems increased by over 66%, but was, nevertheless, almost 38% lower than the average value of cross-border gas transmission over the last decade.

20%
more transferred natural gas

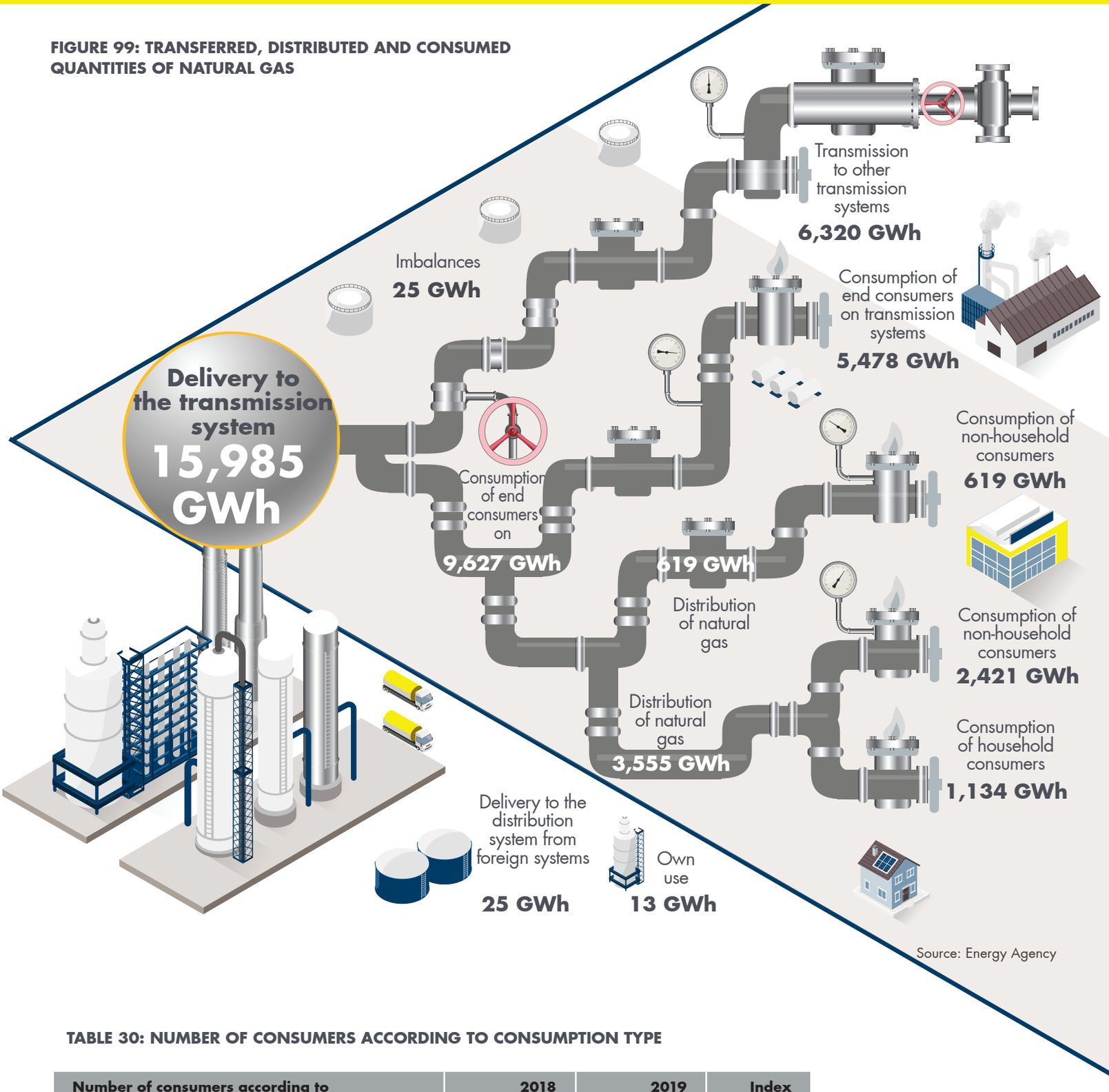
1.9%
higher total consumption by domestic consumers

Total consumption of domestic natural gas consumers was 1.9% higher than in 2018, with some consumer groups increasing and others decreasing. Non-household consumers connected to distribution systems consumed 2.3% more, while non-household consumers on the transmission system used more than 3% more natural gas. Customers supplied through closed distribution systems (CDS) consumed 2.7% less natural gas than in 2018. 1.9% less natural gas was distributed to household customers connected to distribution systems than in the previous year.

Consumption of individual groups of customers was influenced by various factors such as the change in the number of typical consumers, weather effects with annual temperature deficits, the competitiveness of natural gas prices compared to other energy products, favourable economic conditions, economic growth and other individual factors.

At the end of 2019, 135,391 end consumers were connected to the transmission system, distribution systems and CDSs. The number of consumers on CDSs significantly increased, since in 2019 consent was given to the CDS of natural gas for the geographically rounded area of the former Štore Ironworks.

FIGURE 99: TRANSFERRED, DISTRIBUTED AND CONSUMED QUANTITIES OF NATURAL GAS



Source: Energy Agency

TABLE 30: NUMBER OF CONSUMERS ACCORDING TO CONSUMPTION TYPE

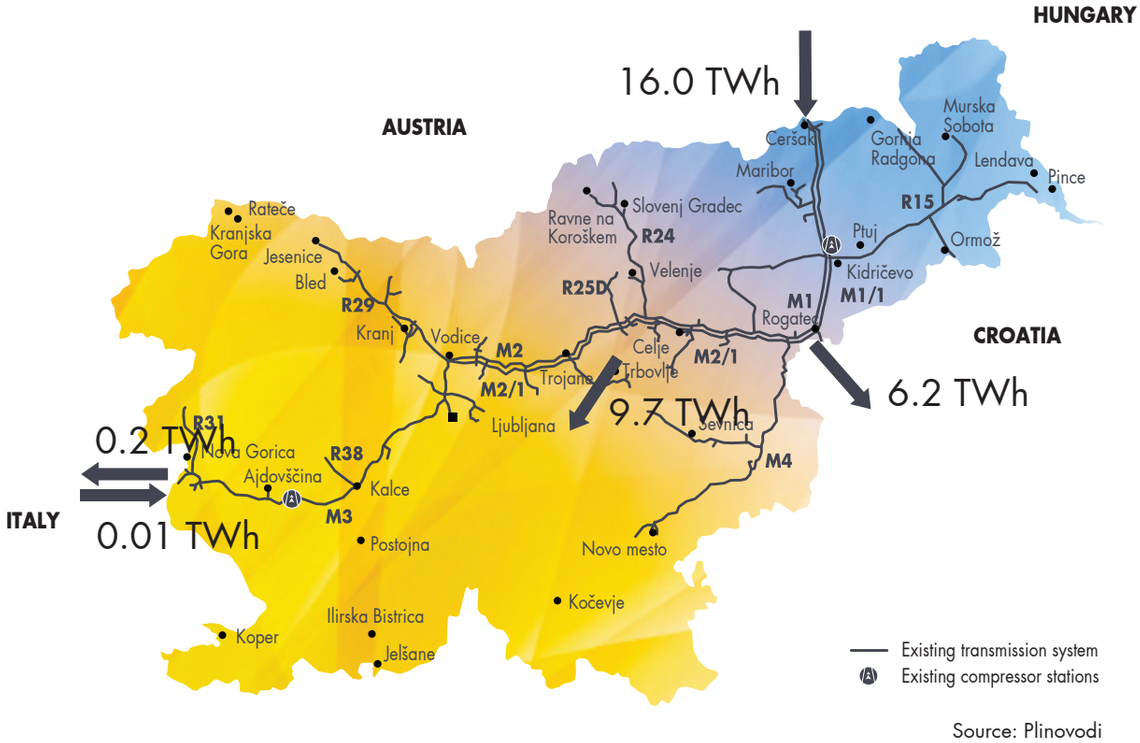
Number of consumers according to consumption type in 2018 and 2019	2018	2019	Index
Business consumers on the transmission system	139	141	101.44
Business consumers on the distribution systems	14,246	14,481	101.65
Business consumers on CDSs	29	45	155.17
Household consumers	120,228	120,724	100.41
Total	**134,642**	**135,391**	**100.56**

Source: Energy Agency

Transmission of natural gas

The transmission system is owned and operated by the transmission system operator Plinovodi, d.o.o. It consists of 964 kilometres of high-pressure pipelines with a nominal pressure above 16 bar and 211 kilometres of pipelines with a nominal pressure lower than 16 bar. The transmission network consists of 205 metering-regulation stations (MRS), 42 metering stations, seven reduction stations and compressor stations in Kidričevo and Ajdovščina. The transmission network is connected to the natural gas transmission networks of Austria (MRS Ceršak), Italy (MRS Šempeter pri Gorici) and Croatia (MRS Rogatec). A two-way transport of natural gas is possible at the border point with Italy, and since the beginning of 2019, a two-way transport of natural gas has been possible at the border point with Croatia. At the border point from Austria, the gas flow is possible only to Slovenia. Border points are also relevant points of the transmission system. The fourth relevant point is the exit point in the Republic of Slovenia. Gas trading on the wholesale market takes place at a virtual point.

FIGURE 100: NATURAL GAS TRANSMISSION SYSTEM AND TRANSFERRED QUANTITIES OF GAS AT ENTRY AND EXIT POINTS

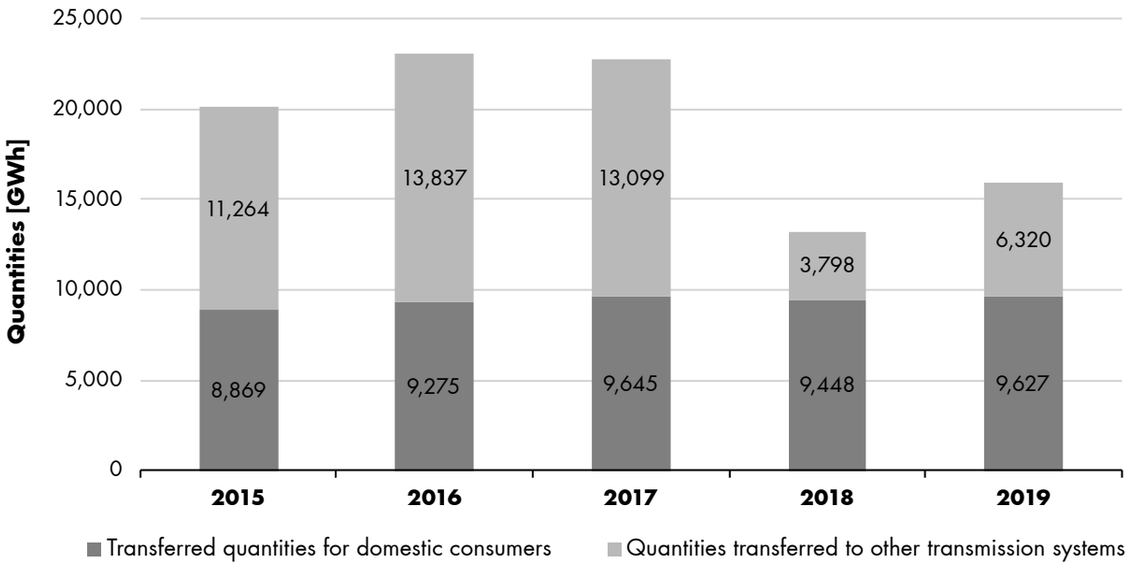


Source: Plinovodi

The consumption of Slovenian natural gas consumers in 2019 was 1.9% higher than in the previous year and at almost the same level as in 2017. Following a sharp decline in quantities transferred to other transmission systems in 2018, there was a 66% increase in the quantities transferred in 2019. Nevertheless, the quantities transferred in 2019 represented only 48% of the 2017 quantities. The marked drop in quantities transferred in 2018 was due to the diversion of natural gas flows to supply Croatia; this country started to be supplied by natural gas, which is mainly transported through Hungary.

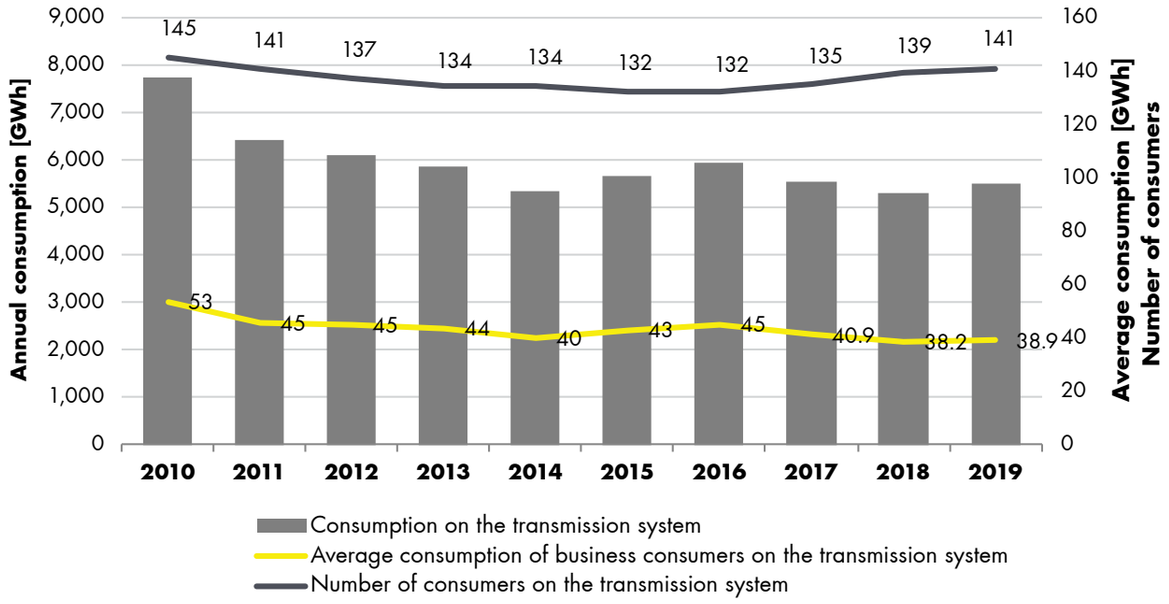
Re-growth of transferred quantities of gas to other transmission systems

FIGURE 101: TRANSFERRED QUANTITIES OF NATURAL GAS IN THE 2015–2019 PERIOD



Sources: Energy Agency, Plinovodi

FIGURE 102: TOTAL AND AVERAGE CONSUMPTION OF A BUSINESS CONSUMER, AND NUMBER OF CONSUMERS ON THE NATURAL GAS TRANSMISSION SYSTEM IN THE 2010–2019 PERIOD

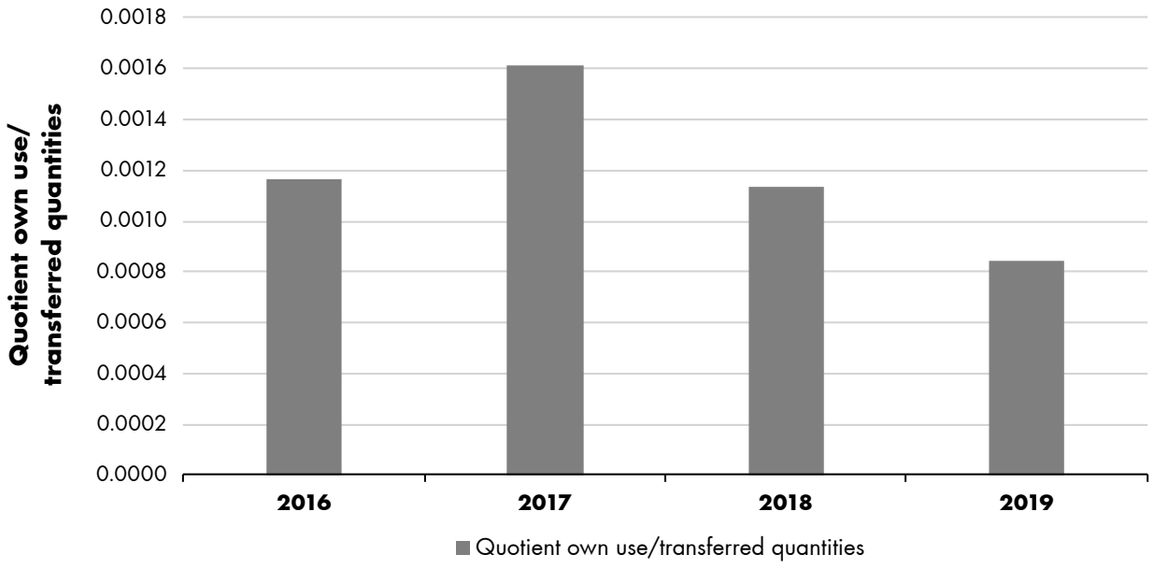


Sources: Energy Agency, Plinovodi

Seven new final customers were connected to the transmission system in 2019. Some end consumers have been deleted as a result of the cessation of activities and some have been acquired or redesigned by the ownership. The number of final customers thus amounted to 141, which is two more than the previous year.

The transmission system operator used 13.5GWh of natural gas for its own use or to power compressors in both compressor stations, which is 10% less than the previous year. The consumption of natural gas for own use in relation to the quantities of natural gas transferred was also reduced, indicating greater efficiency in the provision of natural gas transmission services.

FIGURE 103: RATIO BETWEEN THE QUANTITIES OF NATURAL GAS FOR OWN USE AND TRANSFERRED QUANTITIES IN THE 2016–2019 PERIOD



Source: Energy Agency

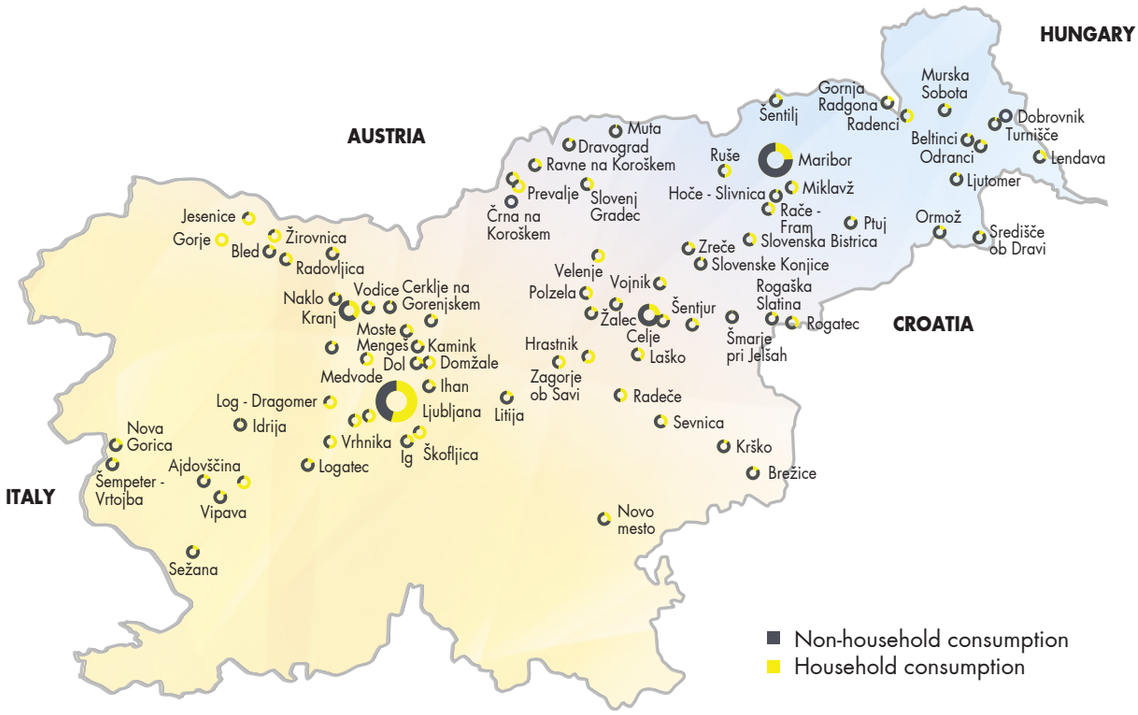
Distribution of natural gas

The distribution of natural gas is carried out as an optional local service of general economic interest of the distribution system operator to supply general consumption consumers in urban areas and settlements and as distribution to industrial and commercial customers in the CDS areas.

The following content and data, which do not explicitly indicate that they relate to CDS, describe distribution areas with an organised local service of general economic interest. In 2019, the distribution of natural gas as a service of general economic interest was carried out in 82 municipalities in most of Slovenia's urban areas, with the exception of Primorska. The distribution of natural gas began in Šmarje pri Jelšah. In Šentjernej and Škocjan, where concessions for the distribution of natural gas were granted in 2018, construction of distribution systems took place, and the start of the supply of the first customers is planned in 2020. In 2019, the distribution of natural gas as a service of general economic interest was carried out by 13 distribution system operators. In 67 municipalities this activity is organised with a concessional relationship between the concessionaire and the local community, in 14 it is carried out by public undertakings, and in one municipality the service of general economic interest is carried out in the form of an investment of public capital in the activity of private law entities. In Šenčur and Hrastnik, on the basis of the concession contracts concluded by the municipality, two distribution system operators operated a service of general economic interest. In some municipalities with a concession already granted for the distribution of natural gas, supplies have not yet been made possible because the distribution network has not yet been built or trained for use or because connection to the transmission system is not yet possible.

82 municipalities
have a distribution of natural gas in the form of a service of general economic interest

FIGURE 104: NATURAL GAS DISTRIBUTION SYSTEMS BY DISTRIBUTED QUANTITIES



Sources: DSOs, Energy Agency

3555 GWh of natural gas distributed, 3% more than the average of the five-year period

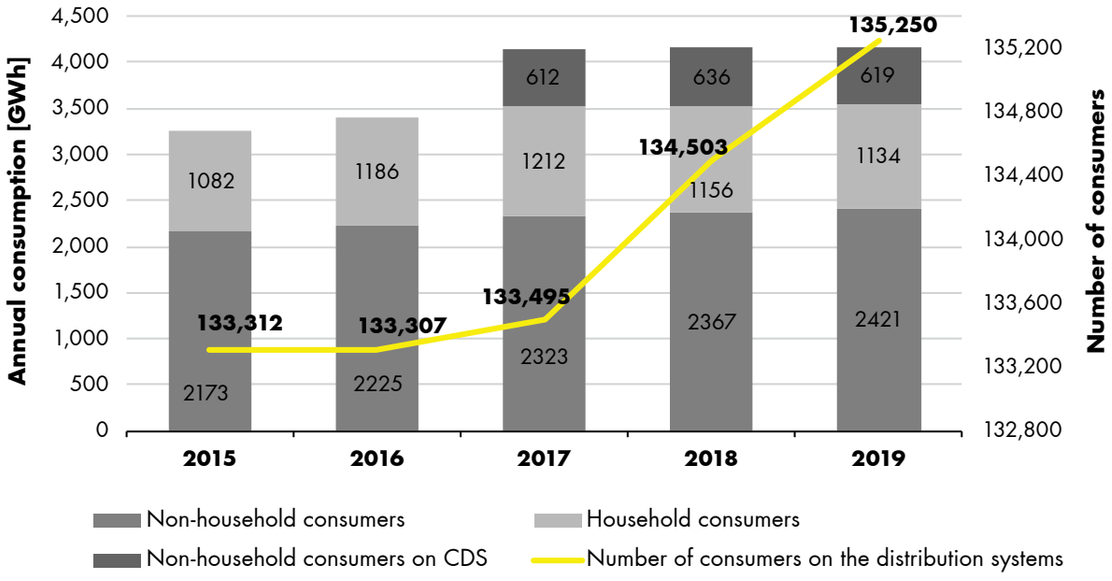
Distribution system operators distributed 3555 GWh of natural gas in 2019, which is almost one percentage point higher than in the previous year and less than 3% higher than the average of the five-year period 2015–2019. Household consumer consumption decreased for the second year in a row by around 2% compared to 2018. Non-household consumers used more than 2% more natural gas than the previous year. The number of household and non-household consumers increased for the third year in a row. According to the data collected, the number of non-household consumers increased by 1.6% and household consumers by 0.4%. Most new consumers were recorded in the CDK4 and CDK5 consumption groups, which have an annual consumption of natural gas between 15,001 and 50,000 kWh. A decline in the number of smaller household and non-household consumers in the consumption groups CDK1 to CDK3 with an annual consumption of less than 15,000 kWh was recorded again.

In 2019, 45 customers were registered in the four CDS areas, Jesenice, Kranj, Kidričevo and Štore, to whom 619 GWh of natural gas was distributed by CDS operators. Of these four areas, at the end of August 2019, new CDS status was acquired in the area of the former Štore Ironworks – CDS Štore. In these rounded distribution areas, the distribution of natural gas is not carried out as a service of general economic interest. Access to CDS is granted only to customers within the rounded geographical area of these systems.

619 GWh
of natural gas consumed in CDSs

The consumption of household and non-household consumers on the distribution systems and CDSs and their number by the consumer type and type of the system for a period of five years is shown in Figure 105.

FIGURE 105: CONSUMPTION OF CONSUMERS ON THE DISTRIBUTION SYSTEM AND CDS BY TYPE OF CONSUMERS AND NUMBER OF ACTIVE CONSUMERS IN THE 2015–2019 PERIOD



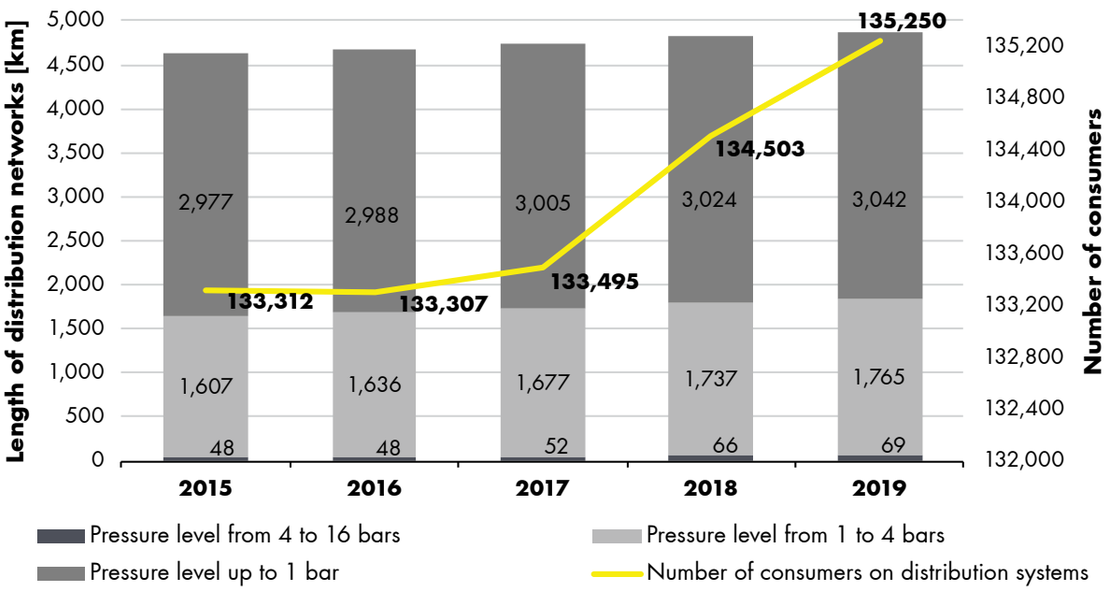
Sources: DSOs, Energy Agency

The length of the distribution network has increased slightly. At the end of 2019, the recorded total length of active lines in distribution systems and the CDS amounted to 4877 kilometres, one percentage point higher than in the previous year. Distribution lines and related infrastructure are mainly owned by DSOs.

In the four CDS areas, 12 kilometres of activated gas pipelines were recorded, of which 7.4 km of pressure level pipelines ranging from 4 to 16 bar, approximately 2.4 kilometres with a pressure level of 1 to 4 bar and 2.2 kilometres of gas pipelines with pressure level to 1 bar.

The length of distribution systems and CDS by pressure rates and extension of pipelines together with connections and growth in the number of consumers in the 2015–2019 period is shown 106.

FIGURE 106: LENGTH OF DISTRIBUTION NETWORKS AND CDSs, AND NUMBER OF ACTIVE CONSUMERS IN THE 2015–2019 PERIOD



Sources: DSOs, Energy Agency

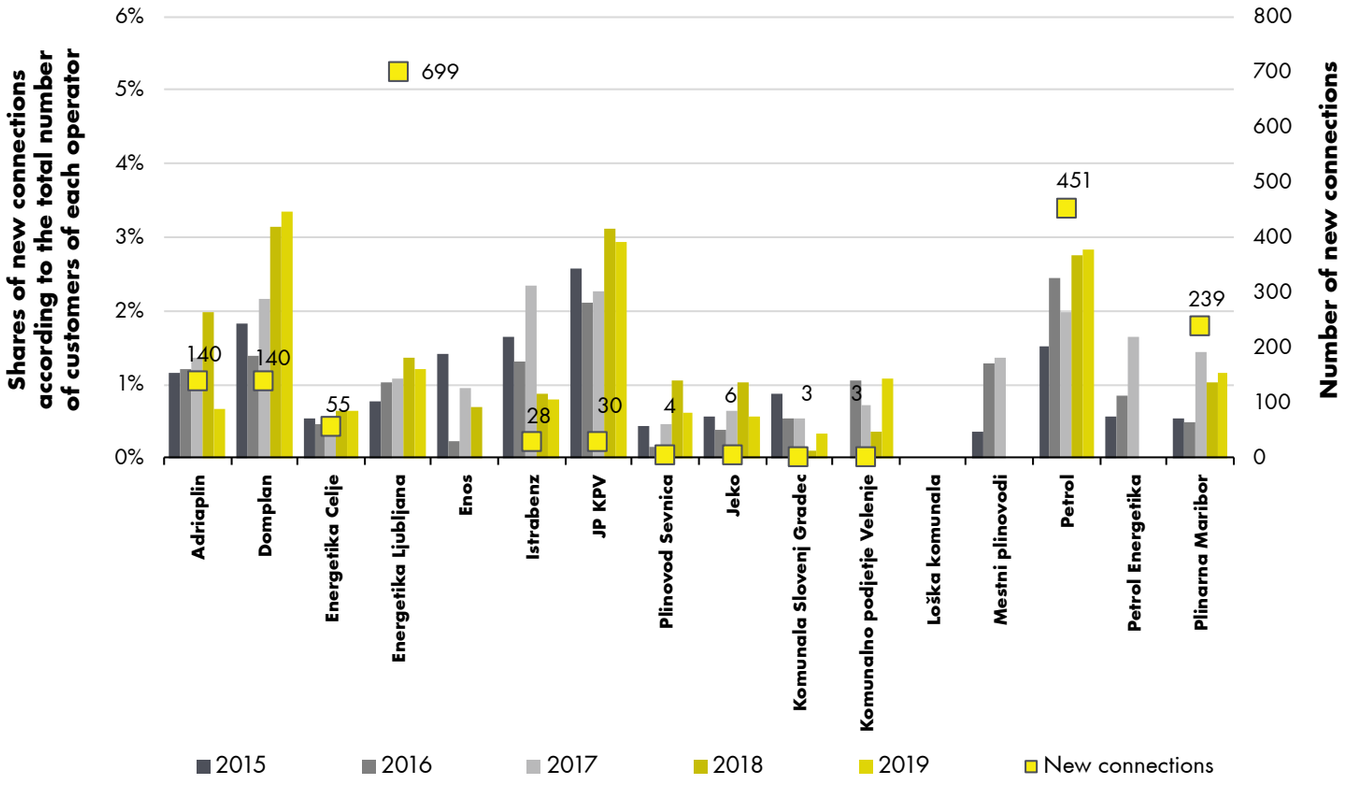
Natural gas distribution system operators connected 1798 new consumers. The number of new connections decreased by almost 15% compared to the previous year, but it was still 9% above the average of the period 2015–2019. The total number of consumers, connected to the distribution systems increased by 731, taking into account disconnections at the same time. At the end of 2019, 135,205 end consumers were connected to the distribution systems.

1798 new consumers on natural gas distribution systems

The increase in the number of connections can be attributed to a higher promotion of the supply of natural gas, and to the competitive prices offered for the supply of natural gas, as well as to the competitiveness of the overall supply costs of this energy product. The shares of new connections in relation to the total number of customers of each operator and the number of new connections to the distribution systems of each operator are shown in Figure 107. No new connections were recorded at the CDSs in 2019.

None of the distribution systems had a connected source of natural gas, biomethane or synthetic methane.

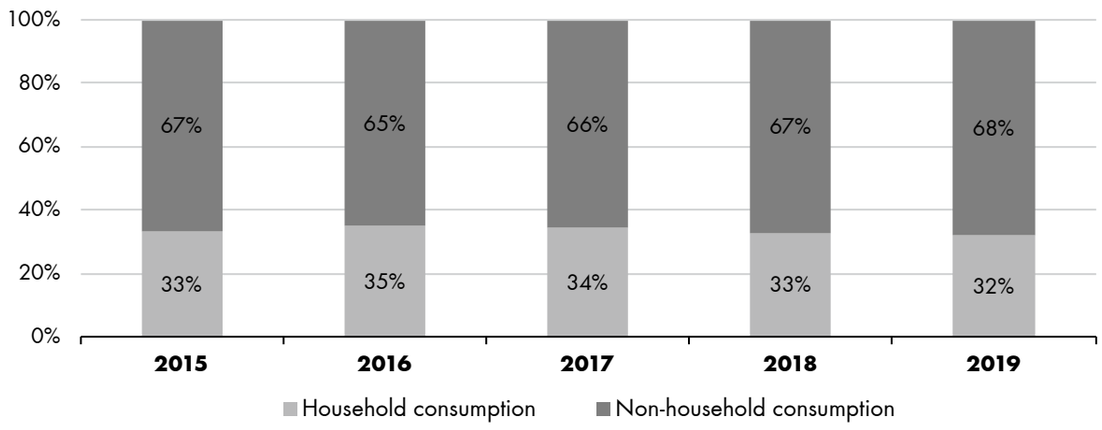
FIGURE 107: SHARE AND NUMBER OF NEW CONSUMERS ON THE DISTRIBUTION SYSTEMS IN THE 2015–2019 PERIOD



Sources: DSOs, Energy Agency

The structure of consumers did not change significantly. Household customers accounted for around 90% of all consumers on distribution systems. Furthermore, data on distributed quantities of natural gas in 2019 do not show a significant change in shares of household and non-household consumption. The share of household consumption decreased by one percentage point to 32%, while the remaining 68% was distributed to non-household customers.

FIGURE 108: SHARE OF CONSUMED NATURAL GAS FROM THE DISTRIBUTION SYSTEMS FOR HOUSEHOLD AND NON-HOUSEHOLD CONSUMERS IN THE 2015–2019 PERIOD



Sources: DSOs, Energy Agency

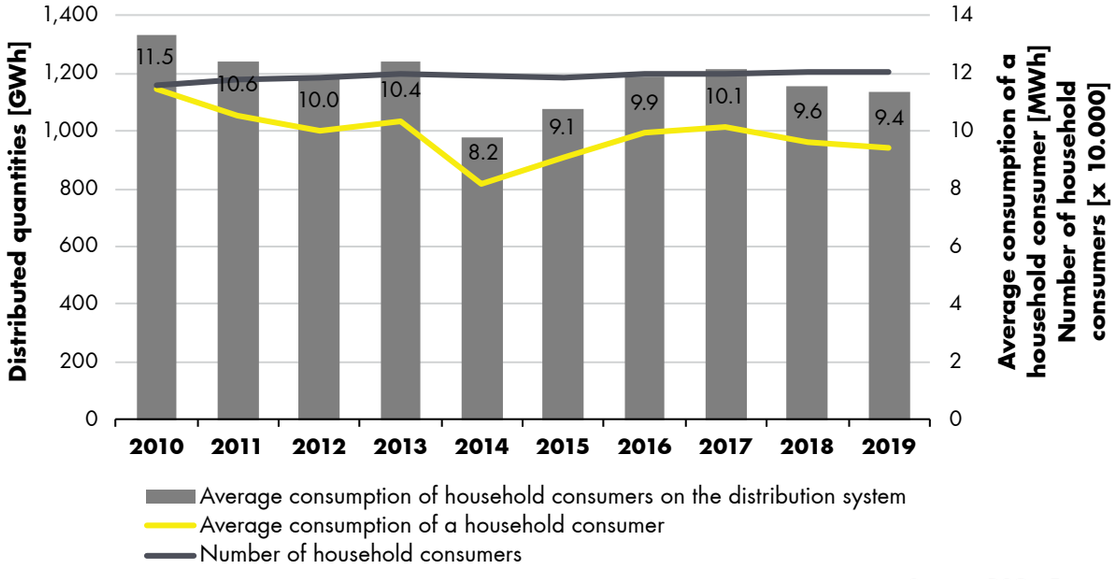
Household consumers use natural gas mainly for cooking, preparing hot sanitary water and heating. As in previous years, over 96% of all consumers consumed up to 50,000 kWh of natural gas per year in 2019. Over 90% of consumers on distribution systems had a consumption of less than 25,000 kWh of natural gas per year.

90% of consumers with annual consumption less than 25,000 kWh of natural gas

The share of consumers with annual natural gas consumption above 50,000 kWh was 3.8% of all consumers and their consumption accounted for 69% of total consumption of all consumers connected to distribution networks.

Average household consumer consumption decreased again. The causes of this can be attributed mainly to the influence of weather factors and the newly implemented energy-saving building renovation. The total and average consumption of natural gas by household consumers and the number of these consumers in each year of the period 2010–2019 is shown in Figure 109.

FIGURE 109: TOTAL AND AVERAGE CONSUMPTION OF HOUSEHOLD CONSUMERS ON THE DISTRIBUTION SYSTEM IN THE 2010–2019 PERIOD

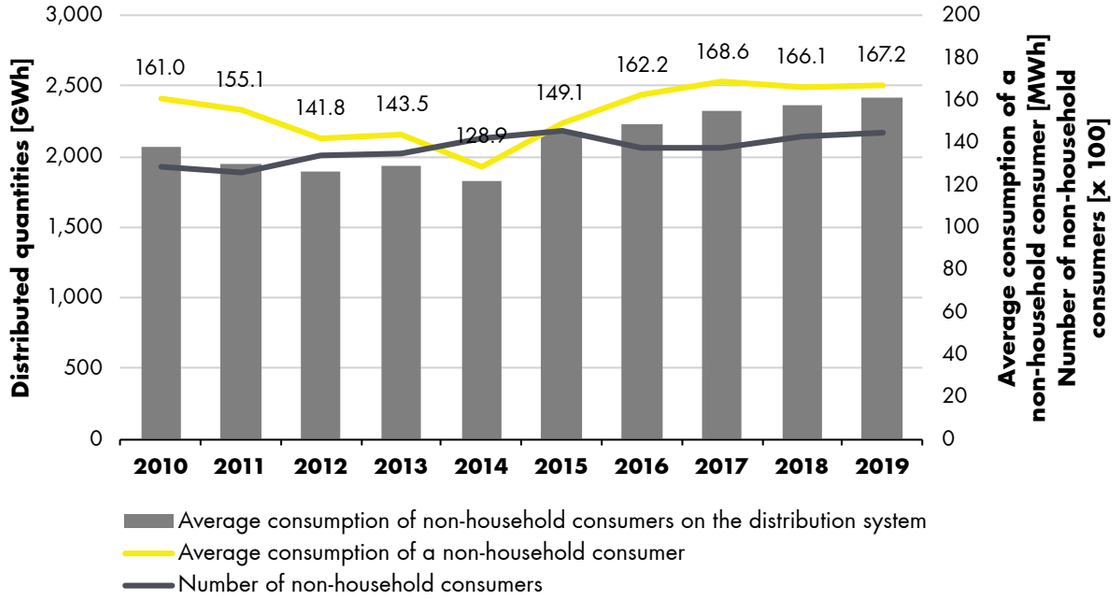


Sources: DSOs, Energy Agency

Non-household consumers also used natural gas for cooling, technological and production processes, and other activities. The number of non-household consumers increased by 1.6%, and the annual consumption of these consumers increased by almost 2.3%, thus achieving the highest consumption of non-household consumers in Slovenia so far, while the average consumption of these consumers in comparison with the previous year increased by almost 0.6%. Trends in consumption and the number of non-household consumers are shown in Figure 110.

The highest consumption of non-household consumers on the distribution systems so far

FIGURE 110: TOTAL AND AVERAGE CONSUMPTION OF NON-HOUSEHOLD CONSUMERS ON THE DISTRIBUTION SYSTEMS IN THE 2010–2019 PERIOD



Sources: DSOs, Energy Agency

CDSs did not supply household consumers. Average annual consumption of natural gas by consumers connected to CDSs was significantly higher compared to consumers on distribution systems. The average annual consumption of 14.3 GWh in CDS areas represented about 37% of the average consumer's consumption on the transmission system. Most of the consumption in CDS areas is dedicated to the technological and production processes of industrial customers, while the remaining part of the consumption is made up of smaller business customers.

Use of compressed and liquified natural gas and other gases from distribution systems

52.8 GWh
of used CNG in transport

Compressed natural gas in transport

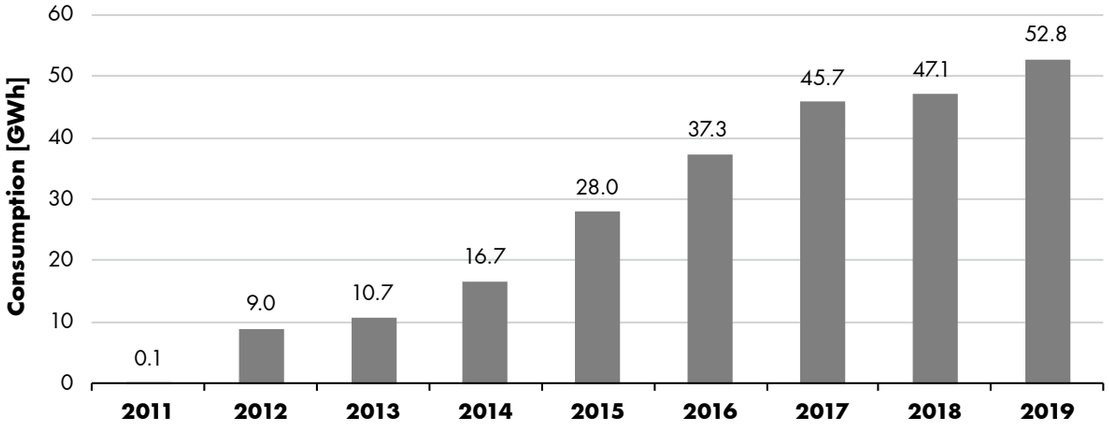
Compressed natural gas (CGN) in transport can be used for personal, delivery and goods vehicles, and public bus transport, especially for short and medium distances. In 2019, five public charging stations were available. In addition to the existing four, two of which are in Ljubljana and one each in Jesenice and Maribor, in January 2019 the opening of the fifth charging station in Celje took place. At the same time, public bus transport with vehicles using CNG was organised in Celje. The new charging station is intended for all categories of vehicles using this type of fuel.

Expanding the appropriate infrastructure of public charging stations is one of the key factors for increasing the number of users, so existing and potential new charging service providers are planning to extend the charging network to areas of all major cities with a gas network available. In order to reduce oil dependence and mitigate the negative impact of transport on the environment, the setting up of an alternative fuel infrastructure is envisaged. In line with the Regulation on alternative transport fuels, natural gas distribution system operators should jointly provide at least ten publicly available CNG supply points in major urban areas and at least four publicly available CZP supply points for CZP on the motorway network by the end of 2020. Given the fact that one year before the deadline for setting up the minimum number of public chargers, five public chargers are still missing in major cities and four on motorways, the planned targets are unlikely to be achieved.

The total consumption of CNG in transport increased by 5.7 GWh in 2019 compared to the previous year and the total annual consumption reached 52.8 GWh. Consumption growth has been recorded in all established supply areas. The increase in the consumption of CNG has helped to reduce pollutant emissions from transport, while at the same time users have been able to supply fuel at a more favourable price compared to conventional fuels. Taking into account the retail price per kilogram of CNG in Ljubljana, which remained unchanged in 2019 at EUR 0.92, users can achieve high cost-efficiency compared to conventional fuels. Annual consumption of CNG on Slovenian public charging stations is shown in Figure 111.

12.1% higher consumption
of CNG in transport

FIGURE 111: CONSUMPTION OF CNG IN TRANSPORT IN THE 2011–2019 PERIOD



Sources: Operators of CNG charging stations, Energy Agency

Liquefied natural gas

Liquefied natural gas (LNG) is used as an alternative fuel for goods vehicles, to provide a permanent supply of the natural gas distribution system in the area of the Municipality of Grosuplje, to which a natural gas transmission or distribution network has not yet been built, and for the temporary supply of gas systems in cases of interruption of transmission or distribution of natural gas due to breakdowns or maintenance works. The supply system from the temporary LNG storage in Grosuplje is expected to be in use until the construction of a part of the gas network which will enable this distribution system to be connected to the existing distribution system in Škofljica.

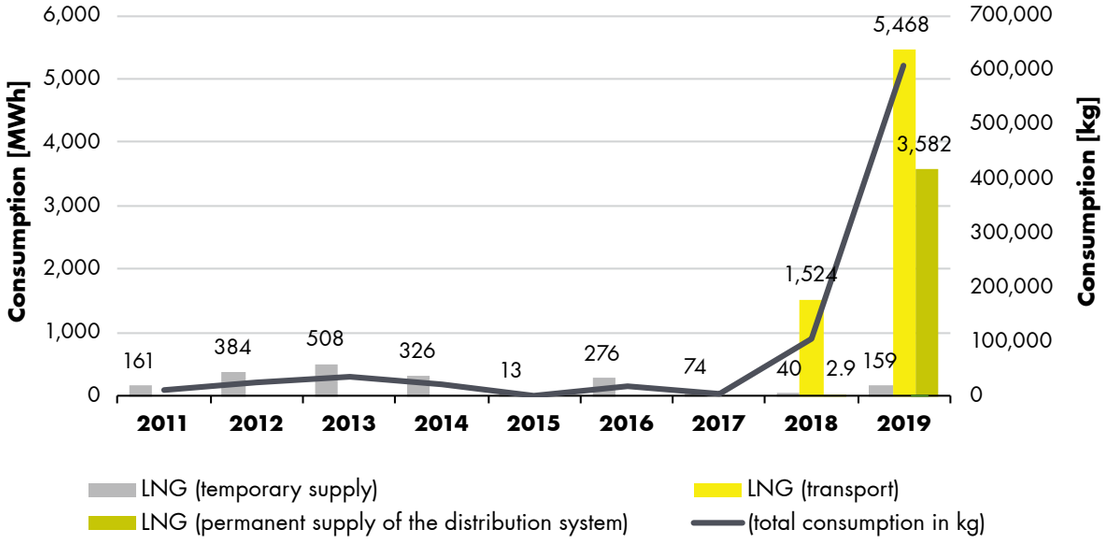
In transport, LNG is used as an alternative fuel for the supply of heavier road motor vehicles over long distances, and for shipping. In 2019, two public LNG charging stations operated in Sežana and Ljubljana, which enable the supply of alternative fuel to goods vehicles at very competitive prices. In the second year of operation of the charging stations, LNG sales increased by 258% and almost 90% of the quantities were sold in Sežana.

488% higher consumption of LNG

In Grosuplje permanent supply of LNG to the distribution system

The quantities of LNG sold in 2019 increased significantly compared to previous years, mainly due to higher LNG sales for goods vehicles and the permanent supply of the natural gas distribution system in the Grosuplje area, which was first operated throughout the year. Consumption of goods vehicles accounted for more than 59% of total LNG consumption, while the share of the distribution system's permanent supply represented 39% of total consumption, i.e. 3582 MWh. Total LNG consumption increased by 488% compared to 2018 and represented more than 17% of LNG sales. Quantities sold per year are shown in Figure 112.

FIGURE 112: CONSUMPTION OF LNG IN TRANSPORT IN THE 2011–2019 PERIOD



Source: Energy Agency

Other energy gases from distributions systems

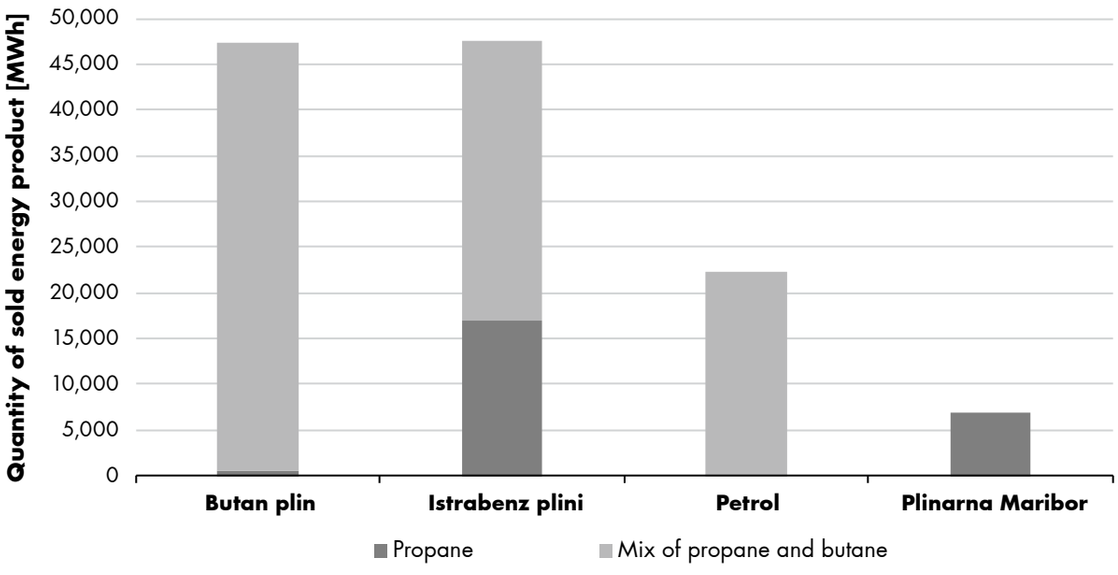
The distribution of other energy gases (energy gases used as energy products other than natural gas) from CDSs was carried out in 2019 by four registered distribution companies in Slovenia. Propane and a mixture of propane and butane were primarily distributed as energy gases. The activity of distributing other energy gases was carried out from 598 distribution systems in 123 Slovenian municipalities. In 113 municipalities, distributors from 554 distribution systems carried out the supply as a market activity, and in the remaining 44 distribution systems in ten municipalities as a service of general economic interest.

54% lower consumption of other energy gases

In 2019, 7555 customers were supplied from other energy gas distribution systems, which is 6.6% less than the year before, while the distributed energy value of gases reached 124.2 GWh, a decrease of 54.1% compared to the previous year. The main reason for significantly reduced distribution is the transition of consumers in Grosuplje and Idrija to the use of a new energy source, i.e. natural gas. The number of consumers connected to CDSs in individual municipalities ranged from 2 to 1410, while the average number of customers per distribution system was 12.6 customers.

The total length of distribution systems decreased by less than a quarter compared to 2018 and was 119.1 kilometres. This is due to the same reason as the reduction in distributed quantities. In Figure 113, distributors are shown according to the type and quantity of other energy gas sold.

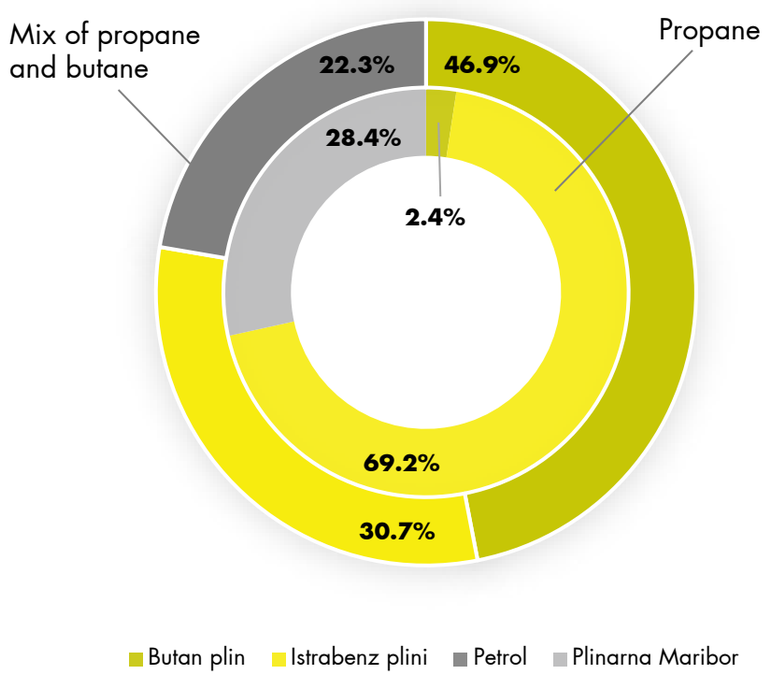
FIGURE 113: DISTRIBUTED QUANTITIES OF OTHER ENERGY GASES BY DISTRIBUTORS AND THE TYPE OF GAS



Source: Energy Agency

Market shares of distributors of other energy gases by type of energy gas in 2019 are shown in Figure 114.

FIGURE 114: MARKET SHARES OF DISTRIBUTORS OF OTHER ENERGY GASES



Source: Energy Agency

Regulation of network activities

Unbundling

In 2019, in Slovenia the service of general economic interest of gas TSO was performed by one entity, while the service of general economic interest of gas DSO was carried out by 13 entities as in the previous year. The gas TSO, the company Plinovodi, owns the assets with which it performs its activity, and it is certified and appointed as an independent transmission system operator. The owner of the TSO is the company Plinhold, the majority of which is owned by the Republic of Slovenia, with a share of 60.1%.

Distribution system operators are not legally separated, as there are not more than 100,000 customers connected to each distribution system. Given that other energy and market activities were carried out by distribution system operators, they prepared separate accounts in accordance with Article 235 of the EZ-1. System operators are required to prepare annual financial statements as required by the Companies Act for large companies. In the notes to the audited annual financial statements, natural gas undertakings have to disclose the criteria for business allocation. The adequacy of the criteria and the correctness of their application have to be audited annually by the auditor who makes a special report.

Technical functioning

Balancing services

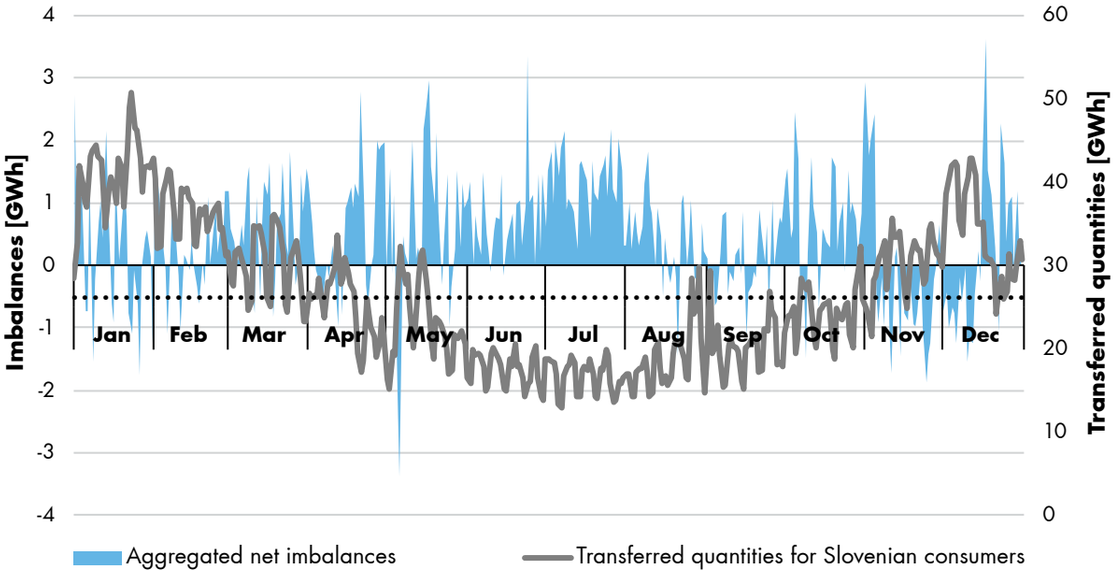
At the end of 2019, there were 15 active balancing groups leaders in Slovenia, of which ten were supplying gas to Slovenian consumers, that is one more than the year before.

Eight balancing group leaders were active in gas transport to neighbouring transmission systems, which is four less than in 2018.

Through the purchase and sale of natural gas on the trading platform and by means of an annual balancing contract, the transmission system operator has managed to balance the transmission system and carry out imbalance accounting. The entire transmission system is one balancing area; the imbalances are determined on a daily basis and calculated on a monthly basis for each gas day.

To balance positive imbalances, the TSO purchased 300 GWh of gas from the balancing group leaders (3.3% less than in 2018) and sold 173 GWh of gas (8% more than the year before) to balance negative imbalances. On the trading platform, for the purpose of balancing the transmission system, the TSO sold 232 GWh of gas, 45% more than the previous year, and purchased 32 GWh of gas, 43% less than in 2018.

FIGURE 115: AGGREGATED NET IMBALANCES OF BALANCING GROUP LEADERS AND TRANSFERRED QUANTITIES FOR SLOVENIAN CONSUMERS



Sources: Energy Agency, Plinovodi

As in the year before, imbalances of the balancing group leaders on average amounted to 5% of consumed quantities by Slovenian consumers of natural gas. Figure 115 shows that aggregated net imbalances of balancing group leaders were the highest in the period when natural gas consumption was the lowest, although the opposite would have been expected. Positive imbalances prevailed over a period of reduced consumption, indicating that many of the balancing group leaders have pre-arranged monthly, quarterly or annual gas purchase contracts and are, therefore, limited in the flexibility of purchasing according to the real needs of their customers.

Through trading on the trading platform and dynamic control of pressure conditions, the TSO managed to ensure normal operation of the transmission system without using a system balancing service for the transmission system for the second year in a row.

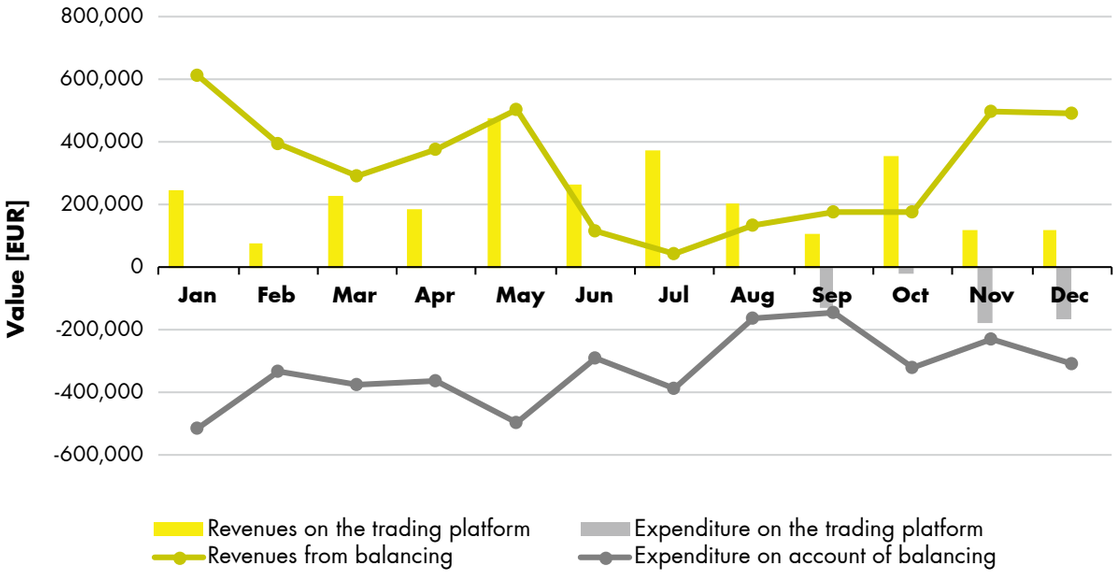
Trading on the trading platform was one third lower in 2019 than in the previous year and the trading for balancing was 22% lower. The prices at which gas was traded on the trading platform and daily imbalances were levied were also lower. The TSO is cost-neutral in calculating imbalances, buying and selling gas for balancing the transmission system and trading on a trading platform, which means that it distributes surpluses or deficits proportionately among the balancing groups leaders.

TABLE 31: REVENUES AND EXPENDITURE OF TSO ON THE TRADING PLATFORM AND SETTLEMENT OF DAILY IMBALANCES AND AVERAGE SALES/PURCHASE PRICE

Activity / service of the TSO		2018	2019
Trading platform	Revenues (million EUR)	3.2	2.7
	Average sales price (EUR/MWh)	19.8	11.9
	Expenditure (million EUR)	–1.6	–0.5
	Average purchase price (EUR/MWh)	28.0	15.7
Balancing	Revenues (million EUR)	4.9	3.8
	Average marginal purchase price - settlement of negative imbalances (EUR/MWh)	27.9	22.3
	Expenditure (million EUR)	–5.7	–3.9
	Average marginal sales price - settlement of positive imbalances (EUR/MWh)	18.5	11.6

Sources: Energy Agency, Plinovodi

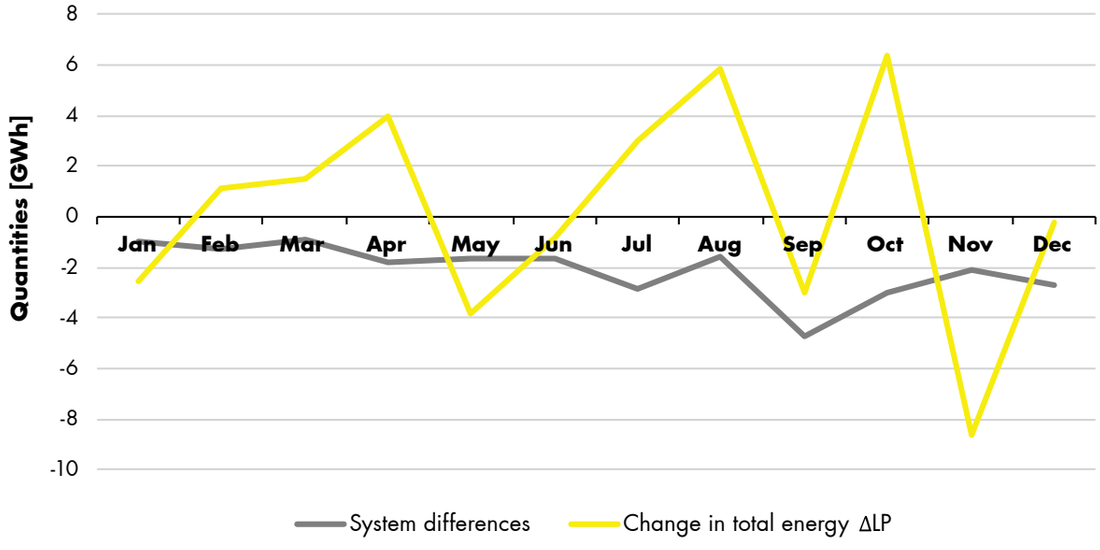
FIGURE 116: REVENUES AND EXPENDITURE OF TSO AT THE BALANCING MARKET



Sources: Energy Agency, Plinovodi

As of 1 January 2019, new rules came into force, which suspended imbalances. They are compensated by differences of the system, which also include losses in the transmission system. System differences are calculated values obtained from the system equation; this takes into account the quantities of gas delivered to the transmission system, the quantities of gas taken over from the transmission system, and the change in total energy ΔLP in the transmission system. The change in total energy ΔLP in the transmission system represents the difference expressed in energy units between the quantities of gas in the transmission system at the time of the measurement. Monthly values for 2019 are shown in Figure 117.

FIGURE 117: SYSTEM DIFFERENCES AND CHANGE IN TOTAL ENERGY ΔLP



Sources: Energy Agency, Plinovodi

Secondary market for transmission capacity

Trading on the secondary market took place to a very limited extent at the Ceršak entry point and the Rogatec exit point. Only two sub-lease contracts on capacity have been concluded.

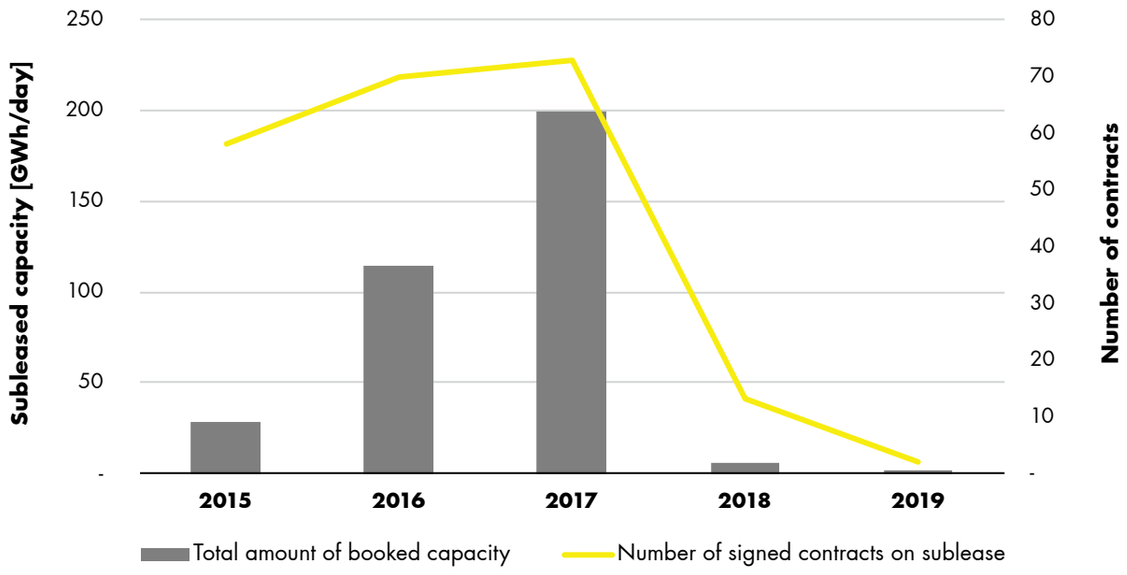
TABLE 32: TRADING OF TRANSMISSION CAPACITY IN THE SECONDARY MARKET

	Entry border points	Exit border points
Number of transmission capacity providers	1	1
Number of bids	1	1
Total amount of offered capacity in kWh/day	120,000	1,664,832
Number of enquirers for capacity	1	1
Number of demands	1	1
Total amount of enquired capacity in kWh/day	120,000	1,664,832
Number of providers that sold transmission capacity	1	1
Number of enquirers that booked transmission capacity	1	1
Number of signed contracts on sublease	1	1
Total amount of subleased capacity in kWh/day	**120,000**	**1,664,832**
Minimum booked capacity of signed contracts on sublease	120,000	1,664,832
Number of refused subleases	**0**	**0**

Sources: Energy Agency, Plinovodi

For trading on the secondary transmission capacity market, the break point was 2017, when most long-term transmission contracts expired. Significantly reduced capacity booking at border points, a growing trend towards booking short-term capacity and improved optimisation of capacity leases from transmission system users have also contributed to a reduction in the role of the secondary market.

FIGURE 118: TREND IN DEVELOPMENT OF THE SECONDARY CAPACITY MARKET IN THE 2015–2019 PERIOD



Sources: Energy Agency, Plinovodi

Planning of non-daily metered off-takes

Consumption points of end consumers on the transmission system and distribution systems that are expected to take over more than 800 MWh of natural gas per year must be equipped for daily metering of natural gas acquired, with operators having access to the daily measurement values.

For consumption points whose measuring devices do not provide daily metering, in 2019 the consumption of natural gas was determined for the first time on the basis of the methodology for prognosis of non-daily metered off-takes of users of the natural gas network, which determines the load profiles of customers according to the gas use purpose, the heating season and, in the case of temperature-dependent consumption points, the external temperature and the day of the week. Such metering points account for up to 99.7% of all consumption points on distribution systems, with the consumption of less than 53% of all distributed quantities through distribution systems.

The new methodology of determining the non-daily metered takeovers of natural gas users has replaced the current method of determining consumption based on statistical values of temperature deficits of each month of the year. Use of the new methodology makes it possible to process daily off-take forecasts with three within-day updates for non-daily metered consumption points connected to the natural gas distribution system.

On the basis of the prognosis methodology, a new way of determining consumption for each non-daily metered point according to the type of consumption is determined for the purpose of allocating quantities of gas by balance groups. For non-daily metered points which have been read by the operator or consumer during the prescribed term, these readings have been used in the determination of consumption or the monthly calculation of natural gas supply. The readings made by consumers were only taken into account in cases where they were within the tolerance control area of the intended consumption. More precise data provide better supervision and more effective imbalance charging of balance groups leaders.

The forecasting of the quantities of non-daily metered off-take in 2019 expressed the problem of the forecast preparer due to the fixed transition date between the temperature-independent period and the temperature-dependent period, which is why it is planned to update the methodology for forecasting non-daily metered off-takes of users of the natural gas network. Now, for each distribution system, the operator will be able to individually determine the date of transition between the temperature-independent and -dependent periods and vice versa.

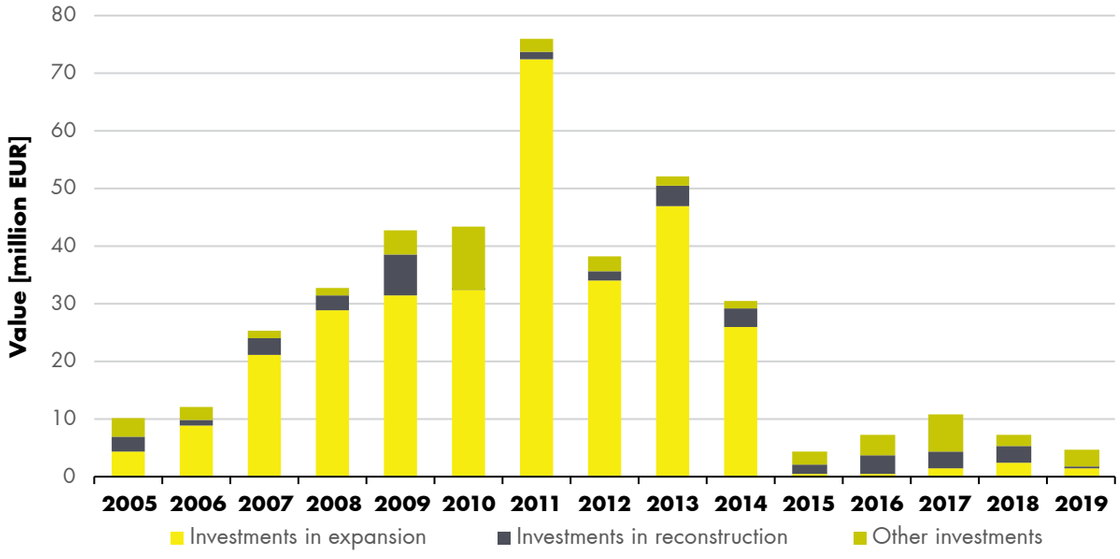
Multi-year development of the transmission network

Investments in the natural gas transmission system

In 2019, the TSO invested EUR 4.65 million in the transmission system, which is 35% less than the year before. Investment in expansion and reconstruction amounted to EUR 1.78 million, and other investments EUR 2.87 million. The vast majority of investment was covered by the depreciation of fixed assets, and only 2% by foreign sources.

EUR 4.65 million
investments in the transmission system

FIGURE 119: INVESTMENT IN THE NATURAL GAS TRANSMISSION SYSTEM IN THE 2005–2019 PERIOD



Sources: Energy Agency, Plinovodi

Important investment activities in 2019 included supplying gas to connectors for users on MRS Knauf, MRS Zalog, MRS Šmarje pri Jelšah and MS CNG Celje, further completion of the execution of works on the MRS Škofja Loka, and acquisition of the building permit and the start of construction of the MRS Dobruška vas. A Government Decree on the Detailed Plan of national importance for the R51c Kozarje-Vevče transmission pipeline was adopted. As part of two pipeline corridors (Austria-Slovenia-Croatia and Hungary-Slovenia-Italy), the TSO submitted six projects to the 2019 List of Projects of Common European Interest (PCI).

For 2020, the TSO is planning several infrastructure projects: Continuation of the construction of M5 Vodice–Jarše and R51 Jarše–TE–TOL (connection of a thermal energy plant), and continuation of the construction of MRS Zalog, MS Letališka, MRS Dobruška vas (Škocjan and Šentjernej) and MRS Titan. The preparation of documentation for a possible connection of the Slovenian transmission system with Hungary will also continue. This project is included in the list of Projects of Common Interest (PCI) drawn up by the European Commission every two years. Its latest version also includes the establishment of a gas corridor via Slovenia from Hungary to Italy and vice versa. The gas transport corridor between Austria and Croatia via Slovenia is also included in the list of projects of common interest, on an increased scale and in both directions. Both projects largely depend on the further development of the LNG market or the operation of LNG terminals.

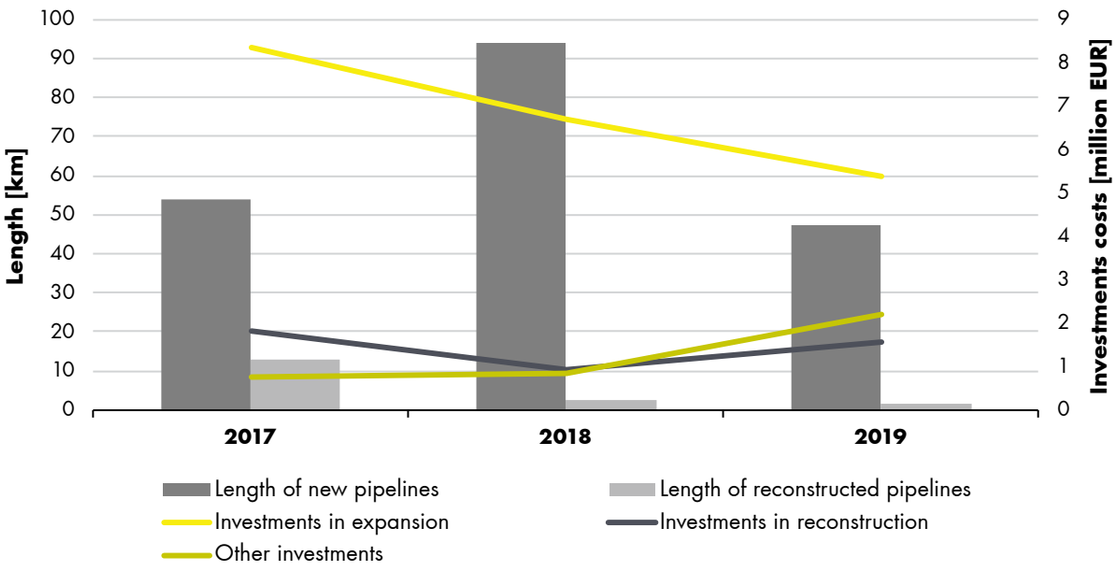
Investments in the natural gas distribution systems

DSOs built 47 kilometres of new pipelines, thereby increasing the total length of distribution pipelines by one per cent and amounting to 4873 kilometres at the end of 2019; 1.4 kilometres of pipelines was reconstructed.

The total value of investments in the distribution systems amounted to EUR 9.14 million. Investments in expansion equalled EUR 5.37 million, for reconstruction EUR 1.58 million, and other investments, which are not directly connected to building and reconstruction of distribution systems, EUR 2.19 million.

47 km
of new distribution pipelines

FIGURE 120: TREND OF BUILDING AND RECONSTRUCTING OF PIPELINES AND INVESTMENT COSTS IN THE 2017–2019 PERIOD



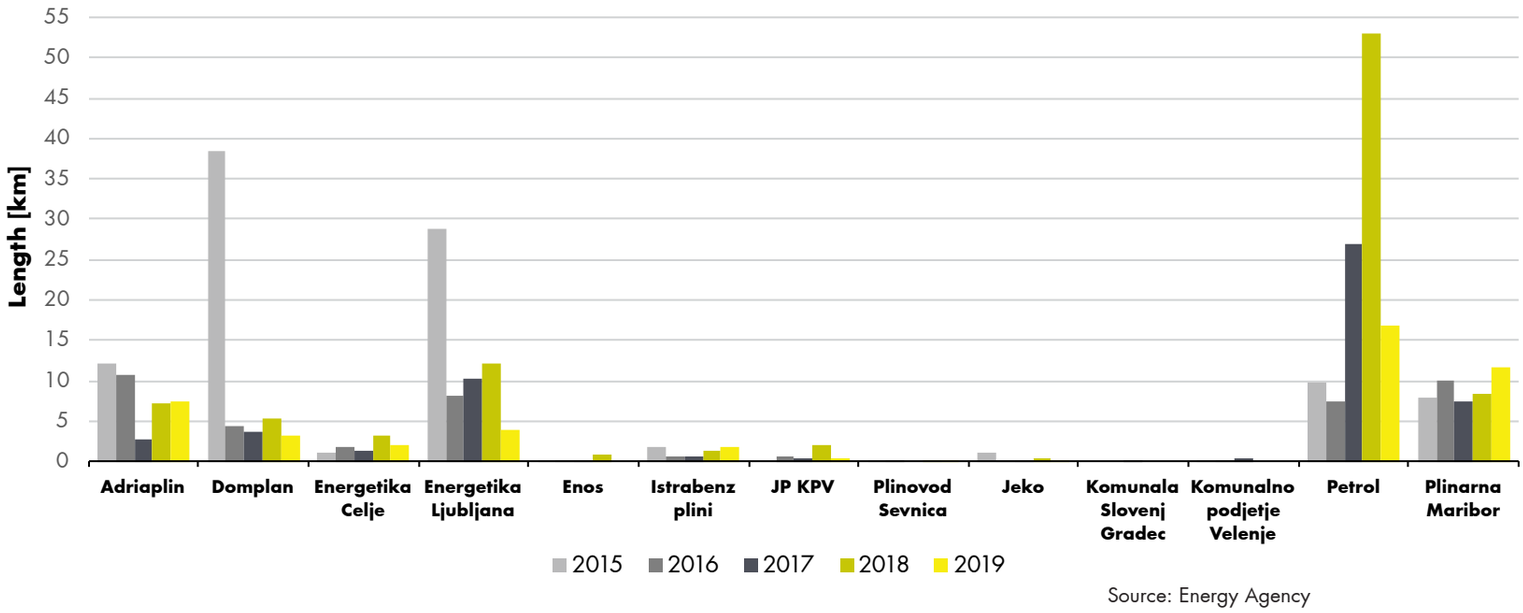
Source: Energy Agency

Figure 121 shows the intensity of the construction of new pipelines by individual DSO. In the last three years, the five most active operators have built a total of 92% of the new pipelines and the remaining eight operators have almost failed to expand their distribution systems, with only 8% of the new pipelines being built together.

In 2019, 5.4 kilometres of distribution network was built in the new Šmarje pri Jelšah distribution system. The same distribution system operator Petrol is also building new distribution systems in Šentjernej and Škocjan.

EUR 9.14 million
investments in distribution systems

FIGURE 121: LENGTH OF NEW DISTRIBUTION NETWORKS IN THE 2015–2019 PERIOD



Source: Energy Agency

Security and reliability of operation and quality of supply

21% more consents issued for connection to distribution systems

Compared to previous years, in 2019 the daily peak load on the transmission network was recorded in summer (21 August) and amounted to 3,036,289 kWh/h. The reason for the occurrence of peak load in summer is the diversion of gas flows to supply Croatia due to maintenance works on neighbouring natural gas transmission systems. Capacity at the border entry-exit points was sufficient as there was no contractual or physical congestion.

The transmission system operator has issued 19 connection consents, which is one more than a year earlier. Three physical connections to the transmission system were carried out for the second year in a row. The average duration of physical connection was 163 days and almost halved compared to the previous year. Compared to the previous year, the duration of the whole procedure was almost halved, together with the administrative procedure, which lasted on average 204 days.

Gas DSOs received 2688 requests for consent for connection and issued an equal number of consents. The number of approvals issued increased by almost 21% compared to the previous year. Operators connected 1798 consumption points in this year.

For 11 operators, the average time of connection of new customers to the distribution system was less than 20 days after the submission of the request for connection. The average duration was 30 days for one and 61 days for the other. For most operators, the physical connection to the network was carried out on average over a period of one to five days. One operator's data significantly deviated, where the physical connection process took an average of 58 days. The causes of such a deviation may very likely be attributed to inadequate recording of the time during the operation of the physical connection, which is beyond the operator's control (duration of processes related to the execution of the physical connection that are not in the operator's domain).

In 2019, none of the CDS operators connected a new customer.

Reliable and secure operation for smooth supply of customers has been ensured by the gas TSO and DSOs by carrying out regular and extraordinary maintenance work.

The TSO carried out 28 planned and 217 unplanned works on the transmission system. Due to the planned work, natural gas supply has been interrupted for a period of 56 hours.

A total of 1984 planned works were carried out on distribution systems. Their number decreased considerably for the second year in a row and the total duration of works increased by 3%. The implementation of the planned work resulted in 803 hours of interruption of natural gas supply for consumers. Three operators carried out the planned works without interruptions or supply termination, at two the total duration lasted only one hour, at two the total duration of supply termination lasted three and six hours respectively, and at the others the total time of interruptions lasted from 16 to 404 hours. The total time of all interruptions of 404 hours was recorded by the operator with the highest number of customers. The time of each interruption was at least one and a maximum of 52 hours. At eight out of ten operators with supply interruptions the time did not exceed six hours, five of them disconnected individual consumption points for a maximum of three hours.

There were 527 unplanned interventions on distribution systems and their number increased by 10% compared to the previous year. These interventions caused 107 interruptions of supply. The total time of unscheduled interruptions was 402 hours, which is more than a third less than the previous year. Four operators did not have such interruptions, at two the time of interruption lasted only an hour, at one seven hours, and at the remaining six the total time of unscheduled interruptions was between 17 and 162 hours.

On the distribution systems, 590 works were also carried out on demand and for the needs of third parties; the total duration of these works was 4749 hours.

The year 2019 was also marked by an accident at the part of the network of the still inactivated natural gas distribution system in Britof by Kranj, where on 3 December natural gas exploded in a water meter shaft, with six people being injured– four children and two adults. Gas leaks and subsequent explosions were caused by physical damage to the gas pipeline when construction works were carried out in the area of the pipeline.

In the areas of three out of four CDS operators, one planned episode of maintenance work was carried out, which did not lead to a supply disruption. The total duration of the planned works was 1934 hours, of which the total time of regular maintenance work was 645 hours, 1081 hours of supervisions, 175 hours of tests, and 33 hours of control measurements.

TABLE 33: PARAMETERS ON CONNECTION AND MAINTENANCE WORK IN THE 2017–2019 PERIOD

Gas operator	TSO			DSO		
	2017	2018	2019	2017	2018	2019
Connection-related services						
Number of approvals issued	17	18	19	2,082	2,226	2,688
Average duration of administrative procedure [days]	63	44	40	11	10	8
Maximum length of administrative procedure [days]	-	-	-	60	45	15
Minimum length of administrative procedure [days]	-	-	-	1	1	1
Number of connections performed	8	3	3	1,720	2,106	1,798
Average duration of the entire connection procedure [days]	155	355	204	26	21	16
Maximum length of the entire connection procedure [days]	-	-	-	104	79	61
Minimum length of the entire connection procedure [days]	-	-	-	4	4	2
Maintenance work on the system						
Number of planned works performed	12	12	28	5,118	2,962	1,984
Total duration of the planned work [hours]	105,728	102,144	102,600	95,206	117,528	121,088
Total duration of supply interruption due to planned work [hours]	0	116	56	1,360	672	803
Maximum duration of each scheduled interruption [hours]	0	35	12	96	60	52
Minimum duration of each schedule interruption [hours]	0	10	1	1	1	1
Number of unplanned interventions performed	267	302	217	436	479	527
Total duration of unplanned interventions [hours]	559	711	513	2,858	2,478	1,805
Number of supply interruptions due to unplanned interventions	-	1	-	111	103	107
Total duration of supply interruption due to unplanned interventions [hours]	-	13	-	10,696	639	402

Source: Energy Agency

Network charges for gas transmission and distribution systems

Setting the network charge

The Energy Agency carries out the regulation of natural gas transmission and distribution activities on the basis of the regulated network charges method. It ensures that the system operator is able to cover all the eligible costs of the regulatory period and the network charge deficit of previous years by setting network charges and other revenues, taking into account the surplus of the network charge in previous years.

Through regulation, the Energy Agency stimulates the cost-effectiveness of system operators, ensures their sustainable and stable business, a stable environment for investors/owners, and stable and predictable conditions for system users.

The regulated network charge method also imposes an obligation on system operators to consider the excess network charge as a dedicated resource to cover network charge deficits from previous years or eligible costs of the following years. At the same time, the regulated network charge method gives the system operator the right to take the network charge deficit into account when setting the network charge in subsequent years.

As of 1 January 2019, distribution system operators became subject to a three-year regulatory period until 31 December 2021. In 2018, the Energy Agency issued an Act on the methodology for determining the regulatory framework of the natural gas system operator. On the basis of this Act, distribution system operators established, with the prior agreement of the Energy Agency, the regulatory framework and the network tariffs for the period 2019–2021.

In 2018, in order to align the tariffs with Regulation 2017/460 establishing a network code on harmonised gas tariff structures with the prior agreement of the Energy Agency, the transmission system operator established the regulatory framework for a one-year regulatory period running from 1 January to 31 December 2019 and, in 2019, the regulatory framework for the biennial regulatory period, which runs from 1 January 2020 to 31 December 2021.

EUR 164.7 million

planned resources for the transmission system operation in the 2019–2021 period

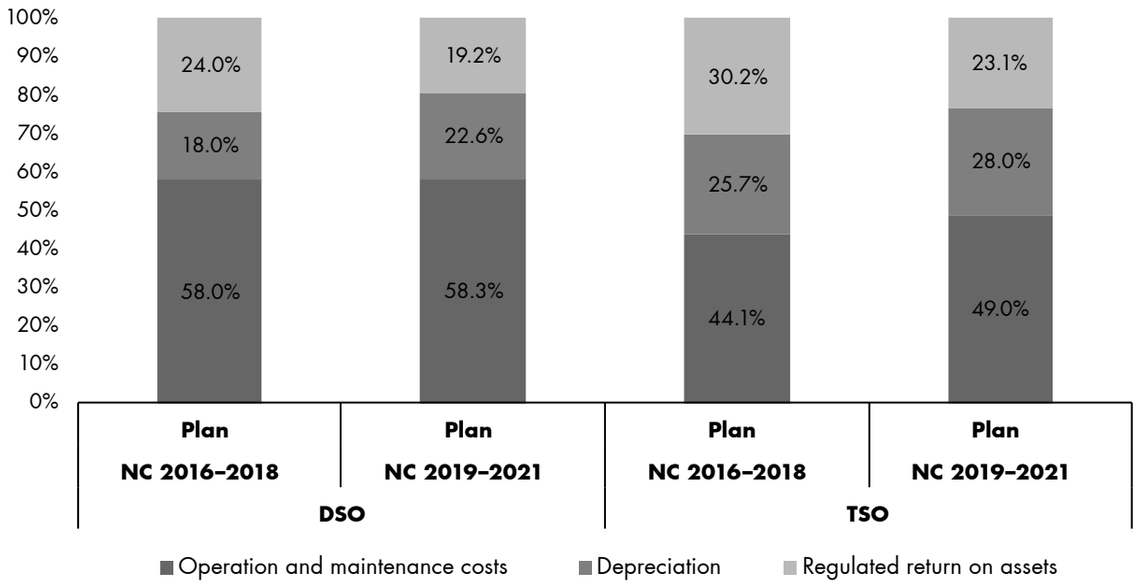
For that three-year period, the transmission system operator planned eligible costs of EUR 164.7 million, which is 9.4% less than for the previous three-year regulatory period. Distribution system operators planned a total of EUR 155.7 million of eligible costs over the regulatory period 2019–2021, which is 4.7% less than in the previous three-year regulatory period.

A comparison of planned eligible costs structures by regulatory periods in Figure 122 shows that for distribution system operators the planned operating and maintenance costs in the structure of eligible costs did not change significantly with respect to the 2016–2018 regulatory period, and the share of the planned depreciation costs over the regulatory period 2019–2021 increased slightly due to a reduction in the share of the planned regulated return on assets. For the transmission system operator, the share of planned operating, maintenance and depreciation costs increased in the regulatory period 2019–2021 compared to the previous regulatory period, which is also largely due to a reduction in the share of the planned regulated return on assets. The lower share of the planned regulated return on assets in the 2019–2021 regulatory period compared to the 2016–2018 regulatory period is mainly due to the lower value of the planned regulatory asset base to which the regulated return on assets is recognised and to set a lower rate of return for the system operators.

EUR 155.7 million

planned resources for the operation of the distribution systems in the 2019–2021 period

FIGURE 122: THE STRUCTURE OF PLANNED ELIGIBLE COSTS OF SYSTEM OPERATORS



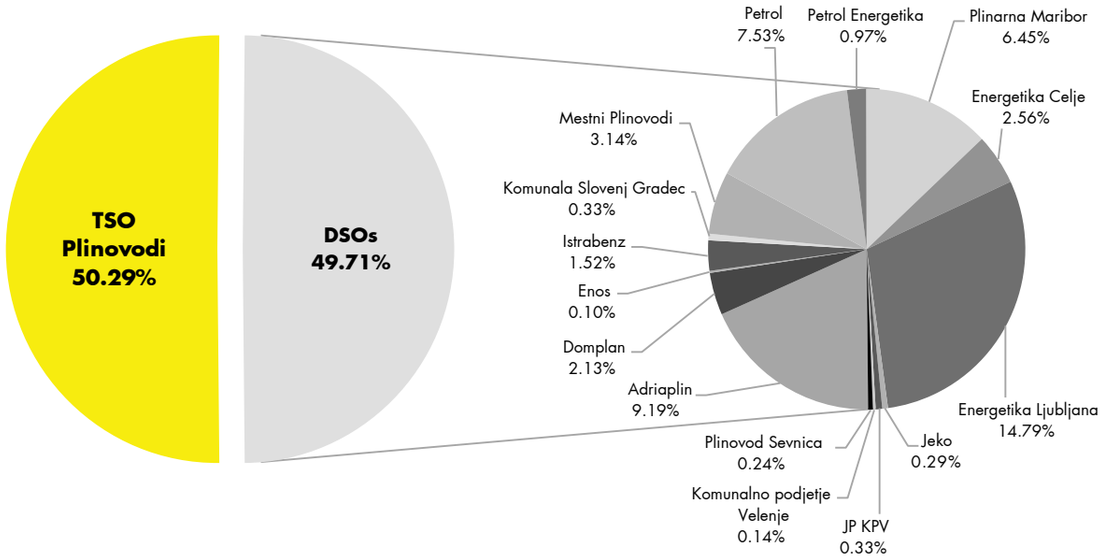
Source: Energy Agency

In 2019, system operators identified recognised eligible costs and recognised resources to cover them on the basis of the criteria for determining eligible costs and the resources for their coverage, which was the last year of the 2016–2018 regulatory period.

The key findings of the implementation of the regulatory framework in the regulatory period 2016–2018 for the activities of natural gas distribution and transmission are presented in the following text.

In total, EUR 324.9 million of eligible costs were recognised for both activities throughout the regulatory period 2016–2018, of which EUR 163.4 million for the transmission operator's activity and EUR 161.5 million for distribution system operators. Figure 123 shows the structure of recognised eligible costs.

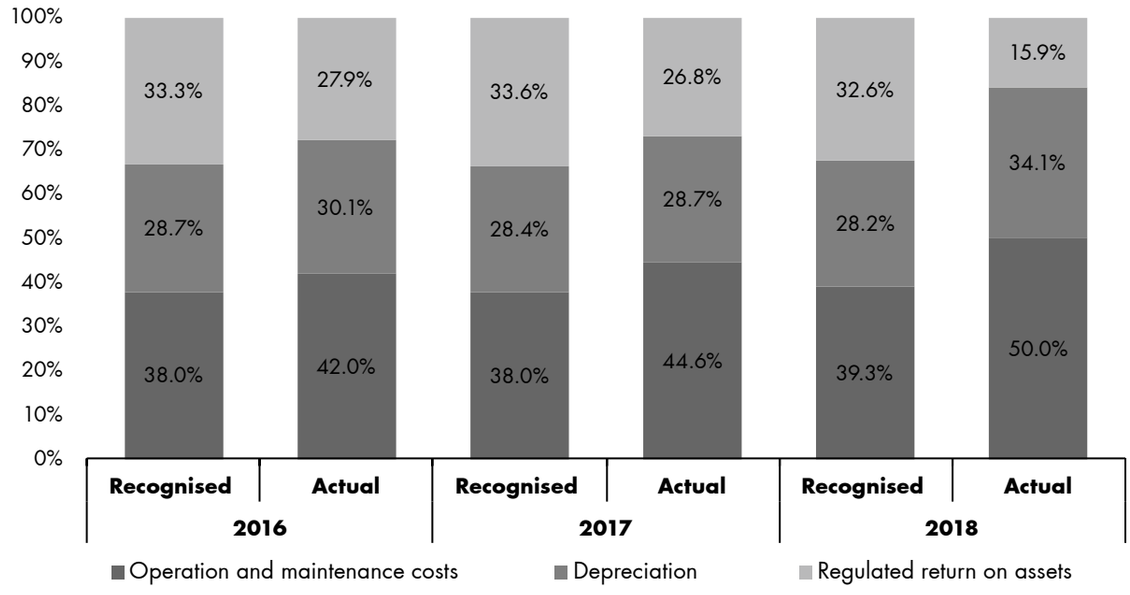
FIGURE 123: THE STRUCTURE OF STRUCTURE OF RECOGNISED ELIGIBLE COSTS OF SYSTEM OPERATORS IN THE 2016–2018 REGULATORY PERIOD



Source: Energy Agency

A comparison of the structures of recognised and actual eligible costs of the transmission system operator in Figure 124 shows that there were significant differences in operating and maintenance costs and regulated return on assets in individual years of the 2016–2018 regulatory period.

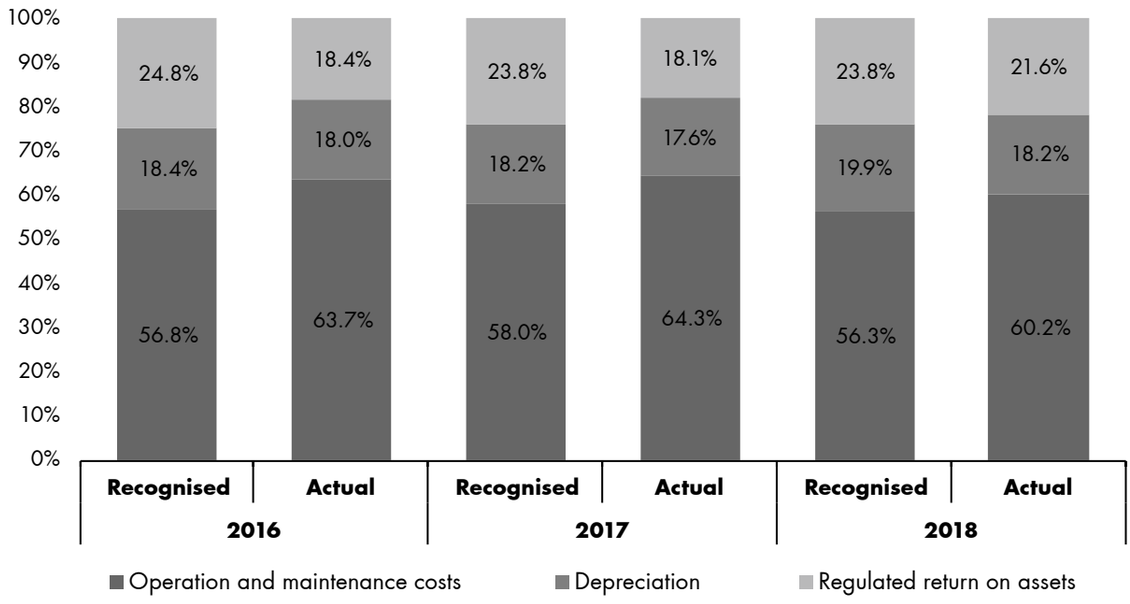
FIGURE 124: THE STRUCTURE OF ELIGIBLE COSTS OF THE TSO IN THE 2016–2018 PERIOD



Source: Energy Agency

Figure 125 shows the structure of recognised and actual eligible costs for the natural gas distribution activity, calculated as the sum of the eligible costs of all distribution system operators in Slovenia. A comparison of the structures of recognised and actual eligible costs for individual years of the regulatory period 2016–2018 shows that companies had a lower return than was recognised by economic regulation. However, a comparison of the structures of recognised and actual eligible costs between the years of the regulatory period 2016–2018 shows that there are no significant differences between the observed years.

FIGURE 125: THE STRUCTURE OF ELIGIBLE COSTS OF DSOs IN THE 2016–2018 PERIOD



Source: Energy Agency

The level of realised return on assets, in addition to cost effectiveness in the area of operating and maintenance costs, is also influenced by incentives, changes in resources to cover eligible costs, and the recording of identified surpluses and network charges deficits in previous years and the current year.

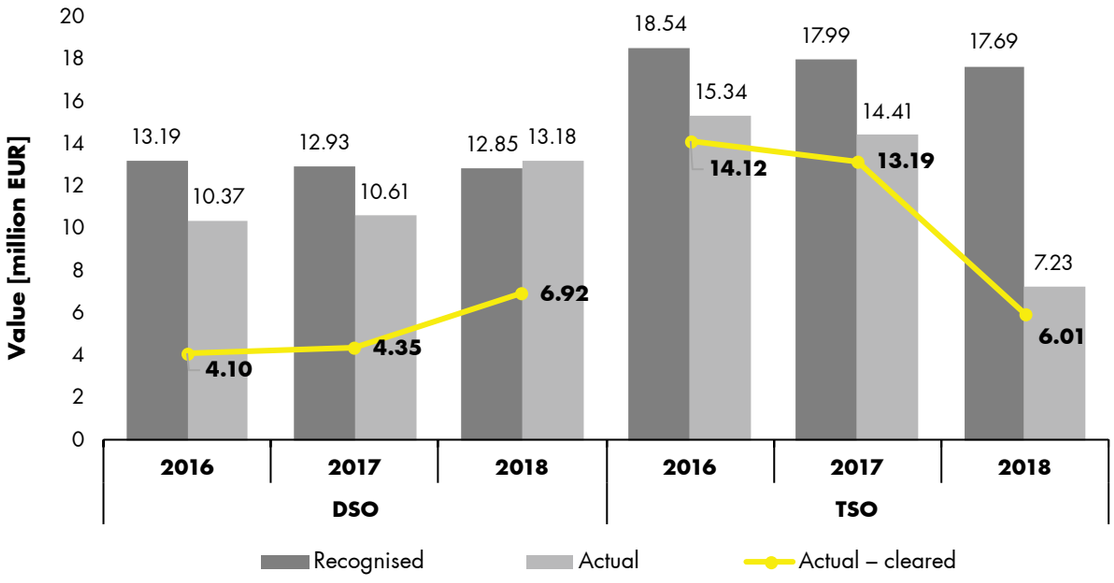
Figure 126 shows a comparison of the recognised regulated return on assets of system operators, the actual return and the realised return without the effects of covering network deficits of previous years.

Over all three years, the transmission system operator has realised a lower return on assets than was recognised by the regulation.

A comparison of the recognised regulated return on assets and the actual return of the distribution system operators also shows that in 2016 and 2017 the actual return was lower than the recognised return. In 2018, however, the actual return exceeded the recognised regulated return on assets. This is due to the coverage of network charge deficits of previous years, which led distribution system operators to realise more revenues and increase the actual return in the regulatory period 2016–2018.

Figure 126 also shows the actual return without the impact of coverage of network charge deficits in previous years. The comparison shows that in all years of the regulatory period 2016–2018, the net actual return was even lower than the actual return.

FIGURE 126: REGULATED RETURN ON ASSETS OF THE SYSTEM OPERATORS



Source: Energy Agency

The resources to cover eligible costs consist of the network charge, other revenues and the surplus of the network charge of previous years. System operators which realised network charge deficits in previous years covered this deficit with a network charge in the regulatory period 2016–2018.

In the process of identifying derogations from the regulatory framework in the 2016–2018 period, system operators had established recognised sources to cover eligible costs for the regulatory period 2016–2018.

EUR 22.5 million
network charge deficit in the 2016–2018 period will be covered by system operators with the network charge in the next regulatory periods

For the transmission system operator and distribution system operators, the resources to cover eligible costs amounted to a total of EUR 302.4 million over the regulatory period 2016–2018, i.e. for the transmission system operator's activity EUR 150.6 million and for distribution system operators EUR 151.8 million. Part of these resources to cover eligible costs has been used to cover the network charge deficits of previous years, for the transmission system operator EUR 3.6 million and for distribution system operators EUR 18.8 million.

The eligible costs of the transmission system operator amounted to EUR 163.4 million and distribution system operators EUR 161.5 million. The difference between recognised eligible costs and recognised sources to cover eligible costs of EUR 22.5 million represents a network charge deficit that system operators will cover in subsequent regulatory periods. Of this, the network charge for the transmission system operator amounts to EUR 12.8 million, and for distribution system operators EUR 9.7 million.

The network charge for the natural gas transmission system

The network charge for the natural gas transmission system consists of a network charge for a single entry or exit point, a network charge for own use, and a network charge for metering.

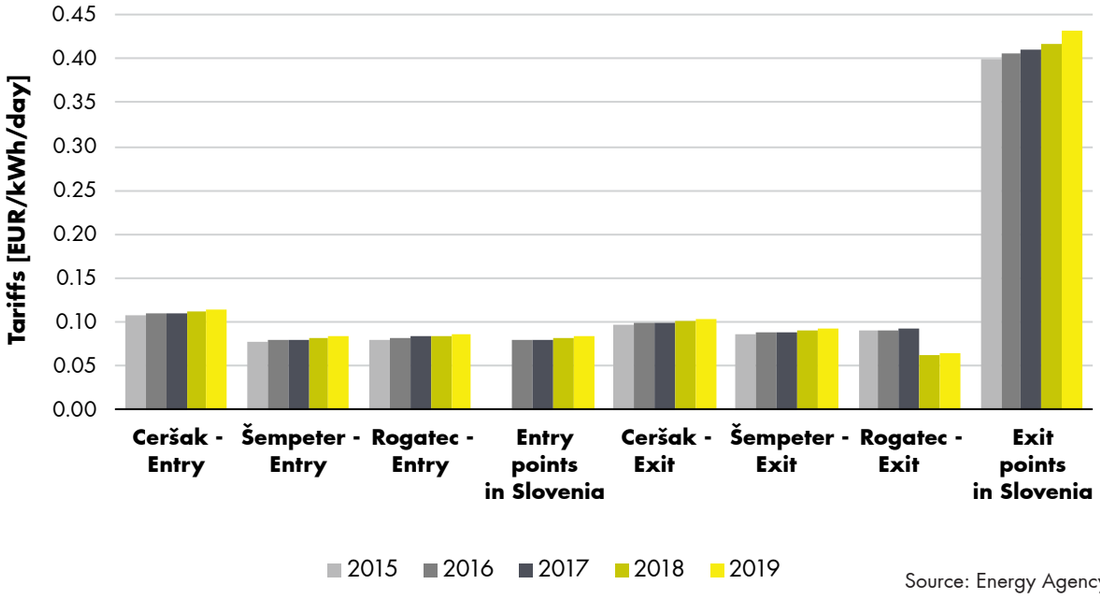
The network charge for entry or exit points is determined according to the booked capacity and the network charge tariff. Connecting or border entry or exit points are booked by transmission system users via the PRISMA online reservation platform as an annual, quarterly, monthly, daily or intra-day standard capacity product. If the standard capacity product for firm capacity has been sold at an auction premium, is sold out or not offered, interruptible capacity may also be offered.

System users who book capacity within Slovenia can book an annual, monthly, daily standard performance product and a standard day-ahead capacity product. The network charge tariffs published in the Official Journal of the Republic of Slovenia reflect the price of the annual guaranteed capacity, and therefore, in the case of booking of a short-term capacity product, the multiplier of each product is also taken into account.

Transmission system users who book exit capacity are also charged for the network charge for use and the network charge for metering. The network charge for own use depends on the amount of natural gas transferred at each exit point, and the network charge for metering depends on the size of the measuring device and the number of pressure reductions.

In order to align the tariffs with Regulation 2017/460 establishing a network code on harmonised gas tariff structures, in 2018, a month before the annual capacity auctions, network tariffs for 2019 were determined.

FIGURE 127: MOVEMENT OF THE NETWORK CHARGE TARIFFS FOR THE ENTRY AND EXIT POINTS OF THE TRANSMISSION SYSTEM DURING THE 2015–2019 PERIOD



Source: Energy Agency

In May 2019, one month before the annual capacity auction took place, network tariffs for the 2020–2021regulatory period were determined. The network charge tariff headings were determined only after the publication of a reasoned decision by the Energy Agency referred to in Article 27 of Regulation 2017/460, which was carried out following consultations and on the basis of ACER's findings. For the purposes of determining the transmission tariffs the matrix method applying the eligible costs of the individual parts of the transmission system is used. Using the matrix method, reference prices are established for each entry and exit point of the transmission system, taking into account the replacement value and peak load of individual parts of the transmission system.

CASE STUDY: Setting reference prices for the natural gas transmission system after the implementation of the network code

Prices for the use of the interconnection points within the EU transmission systems are determined on the basis of the entry-exit method, i.e. a system of uniform tariffs for each entry or exit point for all system users.

Regulation 2017/460 establishes a network code laying down rules on harmonised gas tariff structures, including rules on the application of the reference price methodology, the relevant consultation and publication requirements, and the calculation of reserved prices for standard capacity products. Reference prices for 2020 should be set for the first time in accordance with the network code. This case study shows the reference prices for entry and exit points of the Slovenian transmission system and the neighbouring transmission systems to which our transmission system is connected, before and after the entry into force of Regulation 2017/460.

Reference prices are set in Slovenia as network tariffs for entry and exit points for each year or tariff period of the regulatory period. For the purposes of determining the network charge tariffs, the matrix methodology has been used since 2013 whereby the network charge tariffs are determined in such a way as to reflect the eligible costs of individual parts of the transmission system.

The determination of reference prices, the data used and the results of the calculations are illustrated in the gas transmission system of March 2019, which is published on the Energy Agency's website[62].

Network charge tariffs for 2020 differ the most from the 2019 tariffs for Rogatec on the border with Croatia and the least for Šempeter on the border with Italy. In determining the network charge tariffs only the eligible costs belonging to the part of the transmission system to which each entry or exit point relates are taken into account. For example, the costs relating to regional gas pipelines are not attributed to the interconnection points and are intended for the transport of gas only to final consumers within Slovenia. The reasoned opinion demonstrates that, on the basis of the data of the replacement value of the assets, it was established that the replacement value of the assets for the section of the Rogatec MMRS (a point from which natural gas can be transferred on the Slovenian transmission system westwards or towards the Croatian transmission system – border point with Croatia) is only 1.41% of the total replacement value.

This means that the network charge tariff for Rogatec exit point should be determined to cover 1.41% of the total eligible costs. Reference prices have been established by taking into account the peak loads of the transmission system and using the optimisation process.

Reference prices for the Slovenian transmission system differ due to different levels of eligible costs attributed to each segment of the transmission system. These reference prices would have been different even if the Energy Agency had chosen e.g. the postage stamp methodology or distance-based method instead of the matrix methodology. Regulation 2017/460 does not prescribe which methodology must be used, only that the consultation must make a comparison of those reference prices with the indicative prices established by a distance-based methodology.

The comparison of reference prices on the basis of the matrix methodology and the distance-based methodology is shown in the already mentioned reasoned decision of the Agency.

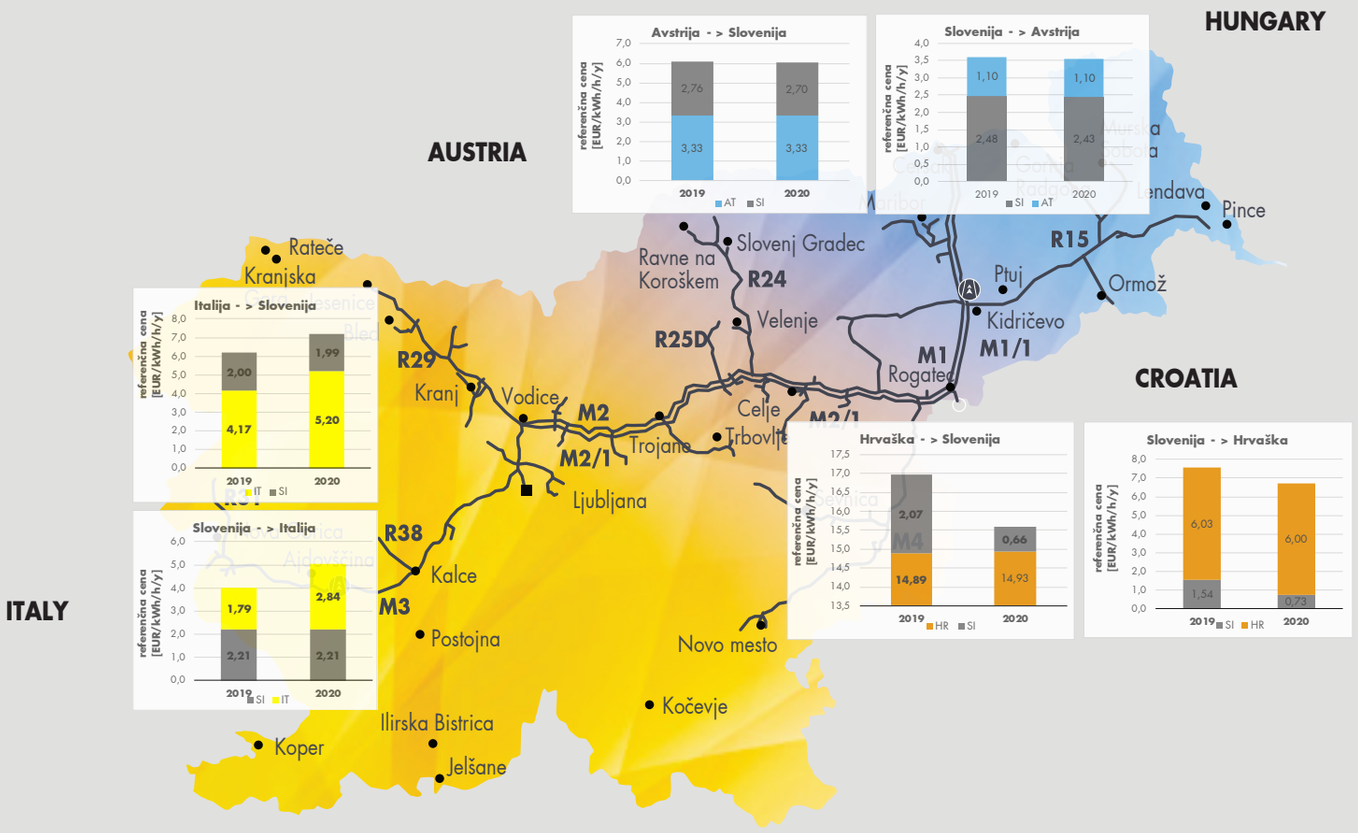
While Slovenia uses a matrix methodology to establish reference prices, Austria uses the distance-based methodology to the virtual point, Croatia the postage stamp methodology, and Italy the distance-based methodology. Each country attributes a different share of the eligible costs to each entry or exit point, and countries also set prices for the use of the regional network or network used to transport gas to domestic users in different ways. Regulation 2017/460 is without prejudice to the determination of eligible costs and therefore it is not possible to compare the amount of allowable revenues representing the anticipated revenue from the use of transmission and non-transmission services between countries.

The reference prices set for the first time for 2020 under this Regulation do not constitute a harmonised price, but only the consultation and demonstration process are harmonised. In April 2020, ACER produced the first report on the role of transmission tariffs and the application of reference pricing methodologies in EU Member States. The findings of the report are expected to serve as a basis for further studies, recommendations and possibly a revision of the transmission-tariff-setting regulatory framework.

[62] Reasoned Opinion of the Energy Agency laying down the reference price methodology for the gas transmission system

Figure 128 shows the reference prices at each entry or exit point established for the Slovenian and other natural gas transmission systems for the years 2019 and 2020. A transmission system user wishing to bring natural gas to Slovenia must pay for the use of the neighbouring transmission system as the price for booking the exit point of the connected transmission system and the entry tariff of the network charge for entry into Slovenia. If gas is transferred from Slovenia to another country, the user pays the exit tariff of the network charge and the price for booking the entry point of the neighbouring transmission system.

FIGURE 128: REFERENCE PRICES AT BORDER POINTS OF THE SLOVENIAN TRANSMISSION SYSTEM



Sources: Energy Agency, ACER, Plinovodi

Prices for booking individual points in 2019 were determined before the implementation of Regulation 2017/460, while prices for booking in 2020 constitute reference prices determined in accordance with the Regulation. There is a significant decrease in the reference price for the Slovenian side of the Rogatec border and the increase of the reference price for the Italian side of the Šempeter border. The Austrian reference prices are the same for 2019 and 2020, as Austria has not yet completed the consultation process under the Regulation.

Slovenia will carry out the next consultation on reference prices in 2021, when the regulatory framework and the network charge tariffs for the next regulatory period will be established.

The network charges for the natural gas distribution systems

The network charge for the natural gas distribution system consists of a distribution network charge and a network charge for metering.

The network charge tariffs are determined by the distribution system operator uniformly for all areas where it distributes natural gas. Only in specific cases may network charge tariffs be different for different areas of service.

The network charge for distribution is paid by the users of the distribution system according to the distributed quantity of natural gas, which forms the variable part of the distribution tariff, and according to the booked capacity, which reflects the fixed part of the network charge. In the case of smaller customers, this is calculated in the form of a monthly flat rate and, in the case of larger customers, in the amount of connected power or booked capacity.

The network charge for metering depends on the size and type of measuring device and the ownership or management of that device.

The network charge tariffs for 2019 were set in 2018, when the regulatory framework for 2019–2021 was approved. In 82 municipalities, 17 legal Acts on determining network charge tariffs for the distribution network were used.

On the distribution system user's account, distribution system operators must separately indicate the amount for the distribution of natural gas and the amount for metering.

In 2019, for many consumers with an estimated annual consumption up to 50,000 kWh, who numerically represent over 96% of all consumers on distribution systems, changed significantly the amount of network charges for distribution compared to the previous year. The changes were the result of planned costs and new provisions of the network charge accounting methodology issued by the Energy Agency in 2018 and used for the first time in planning the network charges for the regulatory period 2019–2021.

For consumers with the lowest consumption in the CDK1 group, the methodology established a cap on the maximum share of the fixed part of the network charge that the distribution system operator is allowed to charge in relation to the total amount of the network charge. For the same consumer group, a safeguard clause has been introduced in the determination of the network charge tariffs, which limits the possibility of planning disproportionately high values of tariffs. As from 1 January 2019, the CDK2 to CDK15 consumer groups are subject to the provision that at least 20% of the total annual distribution network charge must be charged with the fixed part of the distribution tariff. For these consumer groups, the planning of tariffs also limited excessive increases in the annual network charge for the transitions from the lower to the higher consumer group previously applicable to individual distribution system operators. The accounting methodology now allows for a maximum increase of 5% of the annual network charge when comparing the annual amount of the network fee for distributed quantities to the last integer value of the lower consumer group and the annual amount of the network charge for distributed quantities equal to the first integer value of the next consumer group.

The movement of the amount of the network charge for the distribution for MWh of consumed natural gas by typical household consumers and medium-sized industrial consumers over the individual years of the period 2015–2019 for seven operators distributing natural gas in ten major municipalities are shown in the following Figures. In these municipalities, about 75% of all consumers connected to distribution systems are supplied with natural gas. These operators are responsible for distribution in 65 other municipalities, which means that the network charges shown are valid in 75 municipalities and for less than 96% of all consumers on distribution systems.

Up to **6.3% lower network charges** for household consumers

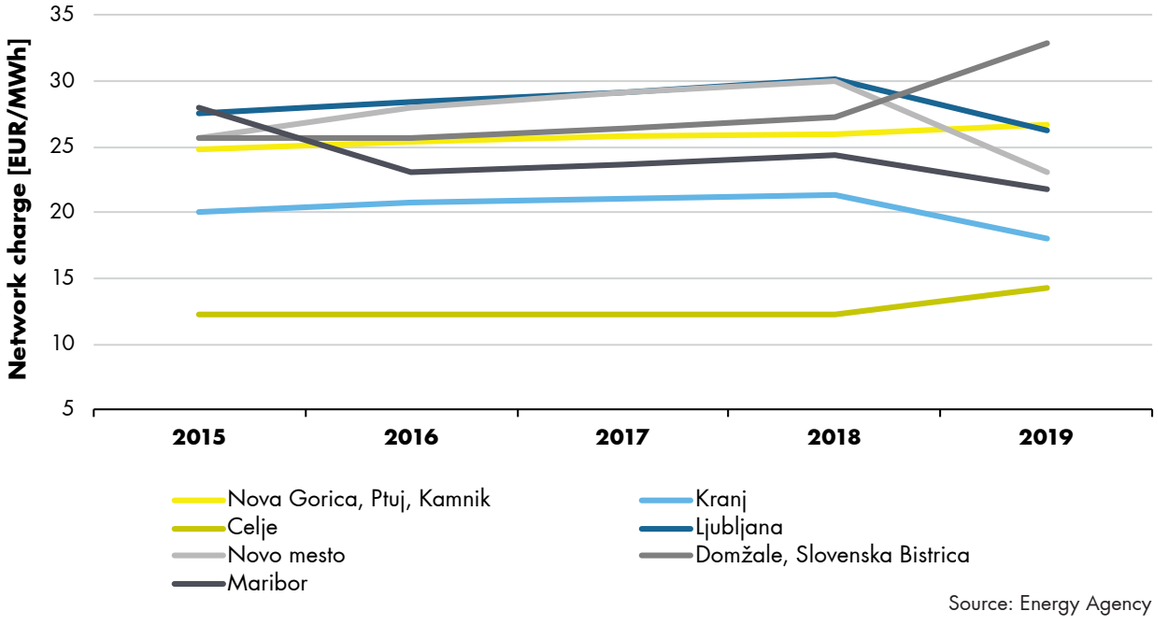
In these areas, for typical smaller household consumers (group D1 with annual consumption of 3765 kWh) the network charge increased in 58 municipalities compared to the previous year and decreased in 19 municipalities. For average large household consumers (group D2 with an annual consumption of 10 MWh) and medium-sized household consumers (group D2 with an annual consumption of 32 MWh) the network charge increased in 30 municipalities and decreased in 47.

For large household consumers (group D3 with an annual consumption of 215 MWh) the annual network charge in 2019 increased slightly in 28 municipalities compared to the previous year, while in the remaining 49 municipalities the network charge decreased.

The average changes of annual network charges over the years 2014–2019 for typical household group D1 with annual consumption of 3765 kWh) range from –4 to +6.4%. For average household consumers (group D2 with an annual consumption of 10 MWh) and medium-sized household consumers (group D2 with an annual consumption of 32 MWh) values varied from –6.3 to +1.9% over the same period. For large household consumers (group D3 with an annual consumption of 215 MWh) values varied annually from –3.1 to +4%.

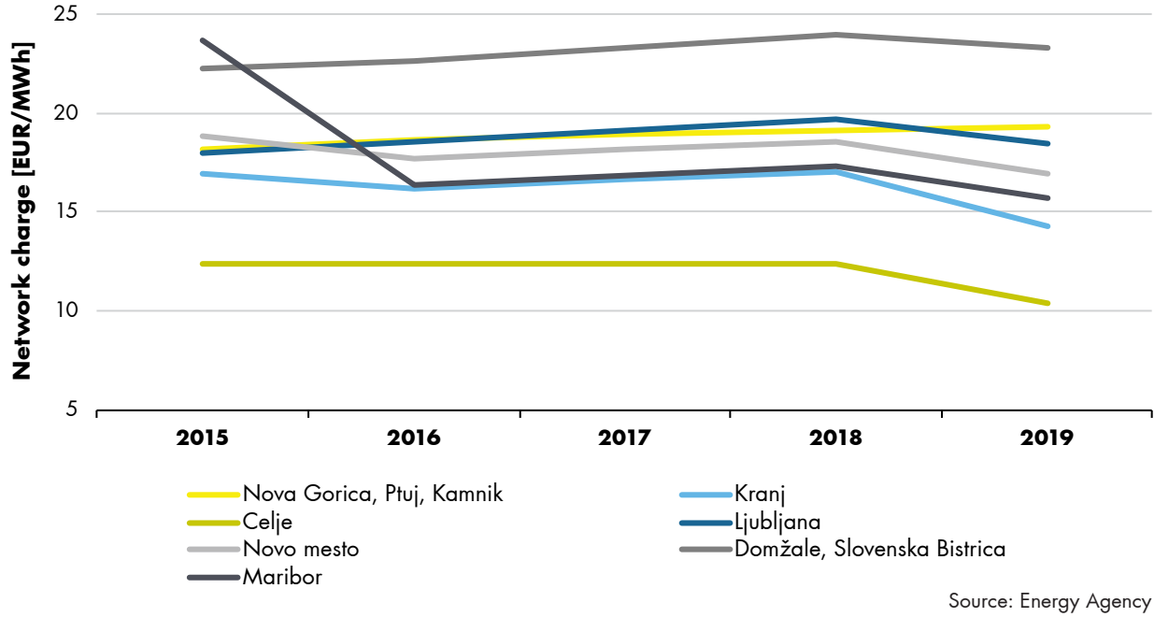
In individual cases, the annual amounts for the network charge were even significantly lower than five years ago.

FIGURE 129: DISTRIBUTION NETWORK CHARGE FOR SMALL HOUSEHOLD CONSUMERS – D1 (3765 kWh) IN THE 2015–2019 PERIOD



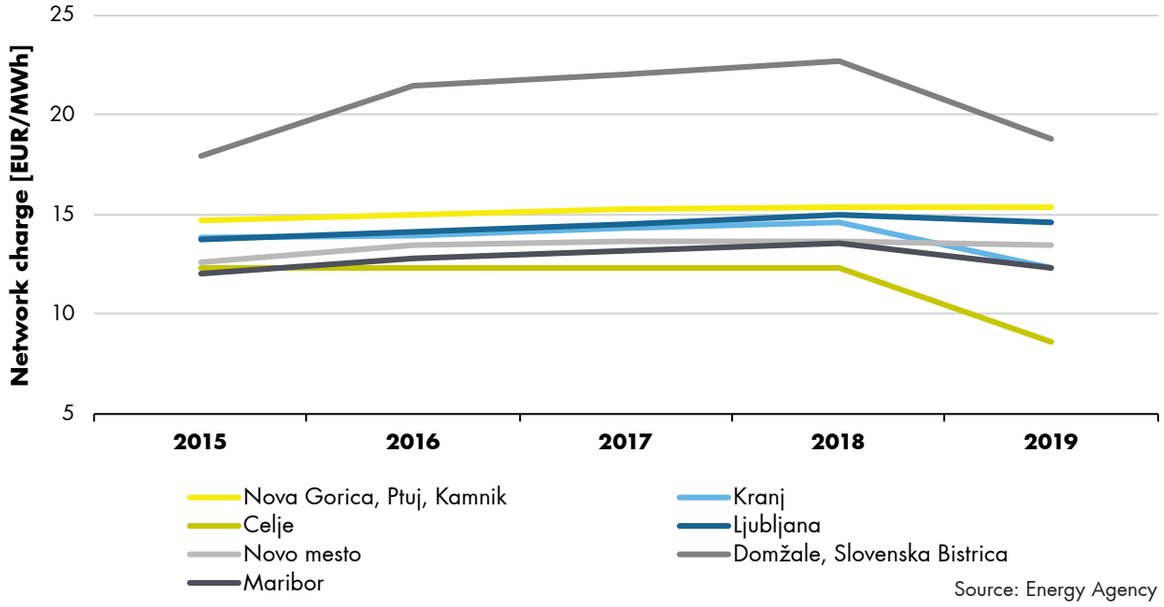
Source: Energy Agency

FIGURE 130: DISTRIBUTION NETWORK CHARGE FOR MEDIUM-SIZED HOUSEHOLD CONSUMERS – D2 (10 MWh) IN THE 2015–2019 PERIOD



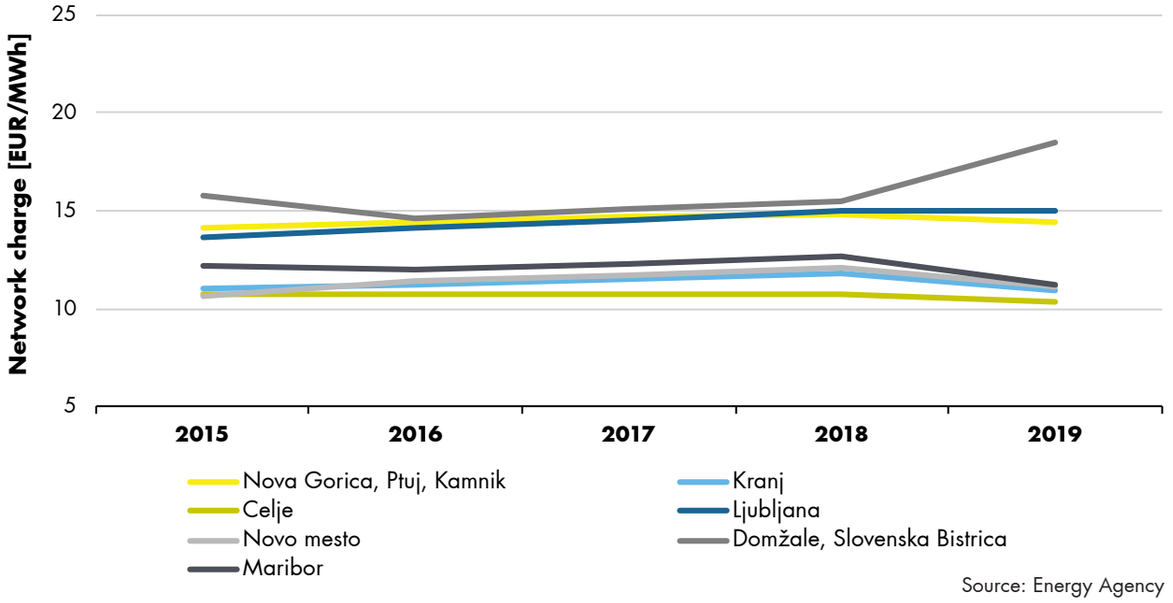
Source: Energy Agency

FIGURE 131: DISTRIBUTION NETWORK CHARGE FOR MEDIUM-SIZED HOUSEHOLD CONSUMERS – D2 (32 MWh) IN THE 2015–2019 PERIOD



Source: Energy Agency

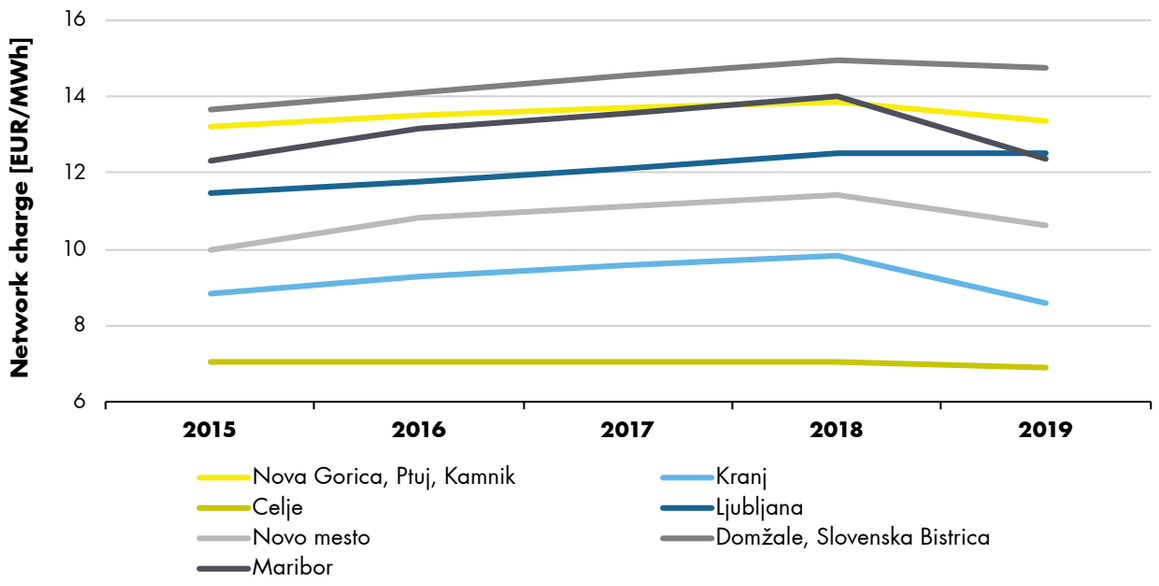
FIGURE 132: DISTRIBUTION NETWORK CHARGE FOR LARGE HOUSEHOLD CONSUMERS – D3 (215 MWh) IN THE 2015–2019 PERIOD



Source: Energy Agency

For medium-sized industrial consumers (group I3 with an annual consumption of 8608 MWh), the average annual network charge fell by 11.4% in 67 municipalities, remained unchanged in eight and increased in two. The average annual growth in network charges for these consumers over the last five-year period was between 0.7% and 2.3% by individual operator. At two operators, consumers paid a lower network charge than five years ago. The differences in the amount of the annual network charge in individual municipalities reflect the different consumer structures and their demand, as well as the age and extent of distribution systems.

FIGURE 133: DISTRIBUTION NETWORK CHARGE FOR MEDIUM-SIZED INDUSTRIAL CONSUMERS – I3 (8608 MWh) IN THE 2015–2019 PERIOD



Source: Energy Agency

Capacity at border points

Capacities at border points were allocated on the basis of market-based methods through the online reservation platform PRISMA. Auctions of guaranteed and interruptible capacities have been carried out. There were 64,357 auctions published, which is 26% more than the previous year. Individual and bundled capacities were offered at auctions. The number of successful auctions of guaranteed capacity in 2019 was 821, which is more than twice as high as the previous year. There was a considerable increase in the number of successful day-ahead and intraday auctions at the most interesting entry point, Ceršak and the Rogatec exit point. Of all auctions, 71% were bundled capacity auctions. There were 16 successful auctions of interruptible capacity, all for individual capacities. A total of 1.3% of all auctions were successful. There were no auctions for incremental capacity.

Double increase in successful day-ahead and intraday auctions

TABLE 34: NUMBER OF SUCCESSFUL AUCTIONS OF FIRM CAPACITY

Auction type	Ceršak, entry	Rogatec, entry	Rogatec, exit	Šempeter, entry	Šempeter, exit
Annual	2	0	1	0	0
Quarterly	9	0	2	0	0
Monthly	18	0	9	0	0
Day-ahead	377	0	120	13	17
Intraday	150	0	73	0	30
Bundled	317	0	205	13	47
Individual capacity	239	0	0	0	0

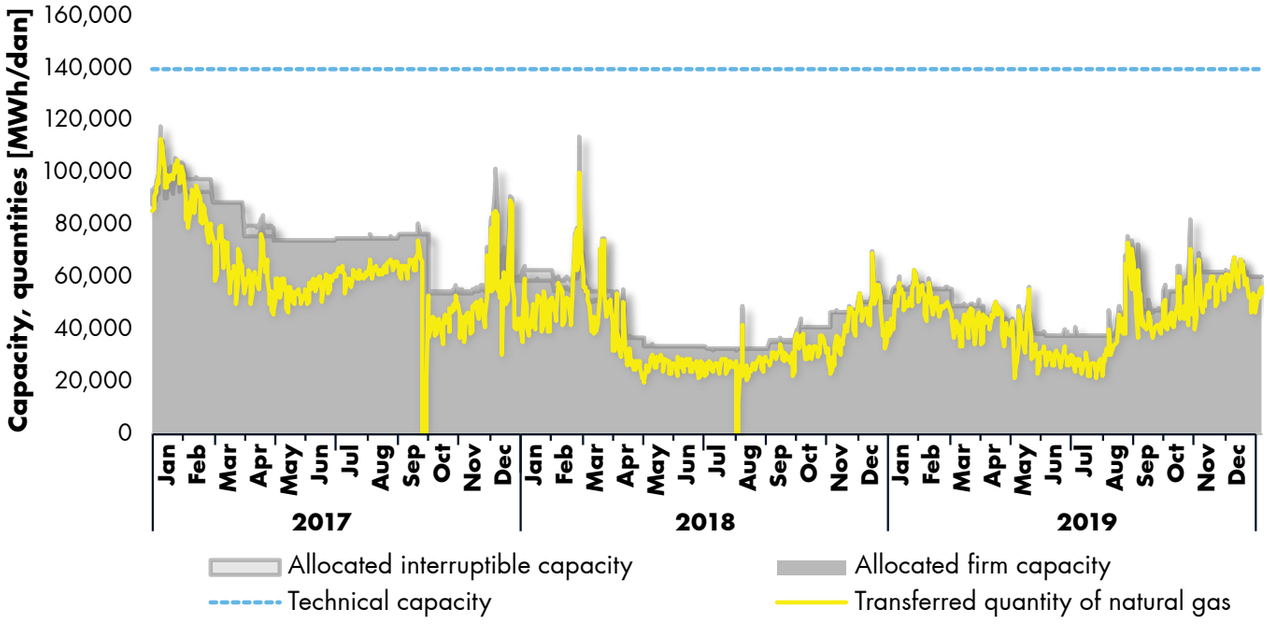
Sources: Energy Agency, Plinovodi

In cooperation with the Hungarian TSO, the TSO carried out a demand request for booking capacity at the planned Pince interconnection point. They received three non-binding offers for capacity booking in the direction of Hungary-Italy (Pince-Šempeter). Non-binding offers were submitted for the booking of capacity between the gas years 2019/2020 and 2033/2034 in the range from 2190 to 34,130 GWh/year for entry capacity at the Pince entry point. Non-binding capacity offers for 21,380 GWh/year between the gas years 2019/2020 and 2028/2029 have been submitted for the Šempeter exit point. The TSOs of Slovenia and Hungary also produced a joint report on the bids received and held a joint public hearing.

The technical capacity at interconnection points did not change in the 2017–2019 period and shorter periods of technical capacity reduction occurred only during transmission system maintenance work.

Following a marked reduction in capacity booking at the largest Slovenian border point of entry, Ceršak (as a result of an increase in the supply of gas to Croatia via Hungary), a partial improvement occurred in 2019. Capacity was booked 13% more than in the previous year, and compared to 2017 there was still 34% less capacity in 2019. In line with the booking of capacity, transport quantities increased by 20% in 2019 compared to the previous year, reaching 70% of the quantities transported in 2017.

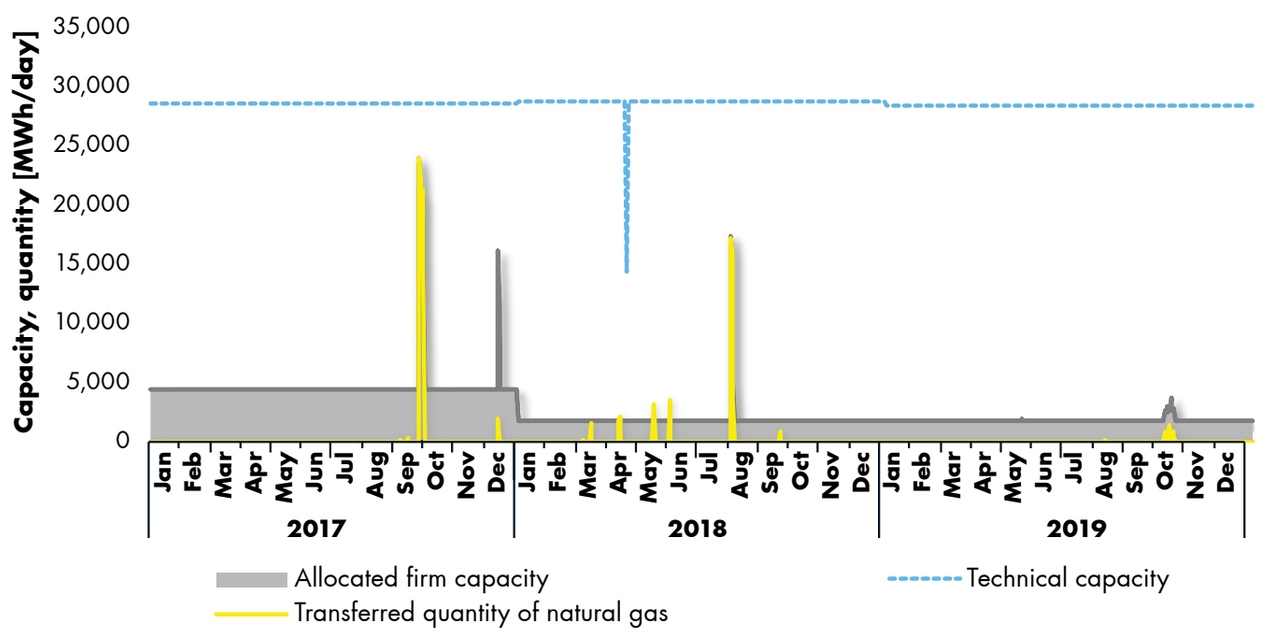
FIGURE 134: DYNAMICS OF DAILY TRANSFERRED QUANTITIES OF NATURAL GAS, TECHNICAL CAPACITY, ALLOCATED FIRM AND INTERRUPTIBLE CAPACITY AT THE CERŠAK ENTRY POINT IN THE 2017–2019 PERIOD



Sources: Energy Agency, Plinovodi

At the Šempeter entry point, the amount of booked capacity in 2019 remained unchanged. The 11-day increase in booking took place in the first half of October, when the maintenance work on the Austrian transmission system resulted in partial reduction of technical capacity on the Austrian side of the Murfeld/Ceršak border point.

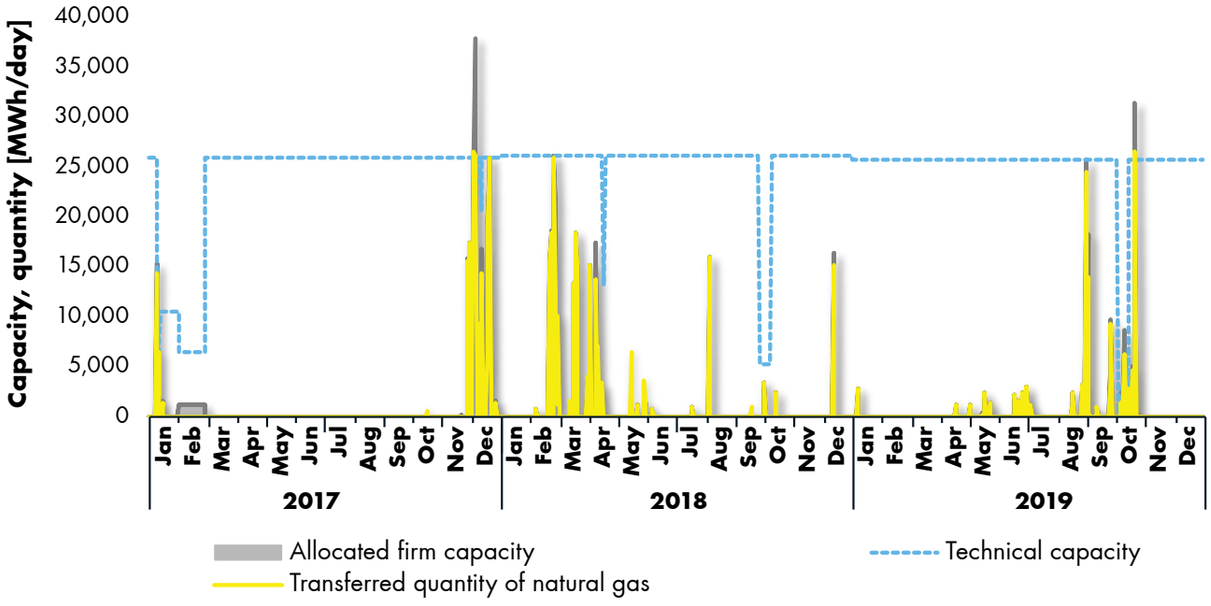
FIGURE 135: DYNAMICS OF DAILY TRANSFERRED QUANTITIES OF NATURAL GAS, TECHNICAL CAPACITY, ALLOCATED FIRM AND INTERRUPTIBLE CAPACITY AT THE ŠEMPETER ENTRY POINT IN THE 2017–2019 PERIOD



Sources: Energy Agency, Plinovodi

Some more transmission of gas was carried out at the Šempeter exit point, where 100% of the technical capacity was booked and utilised for a few days in September and October. In October, the TSO implemented a five-day full reduction of technical capacity and a six-day reduction of 90% of technical capacity. The measure was implemented to ensure the safety and reliability of the transmission system by reducing the technical capacity to 41% of the technical capacity from 4 to 10 October on the Austrian side of the Murfeld/Ceršak border point.

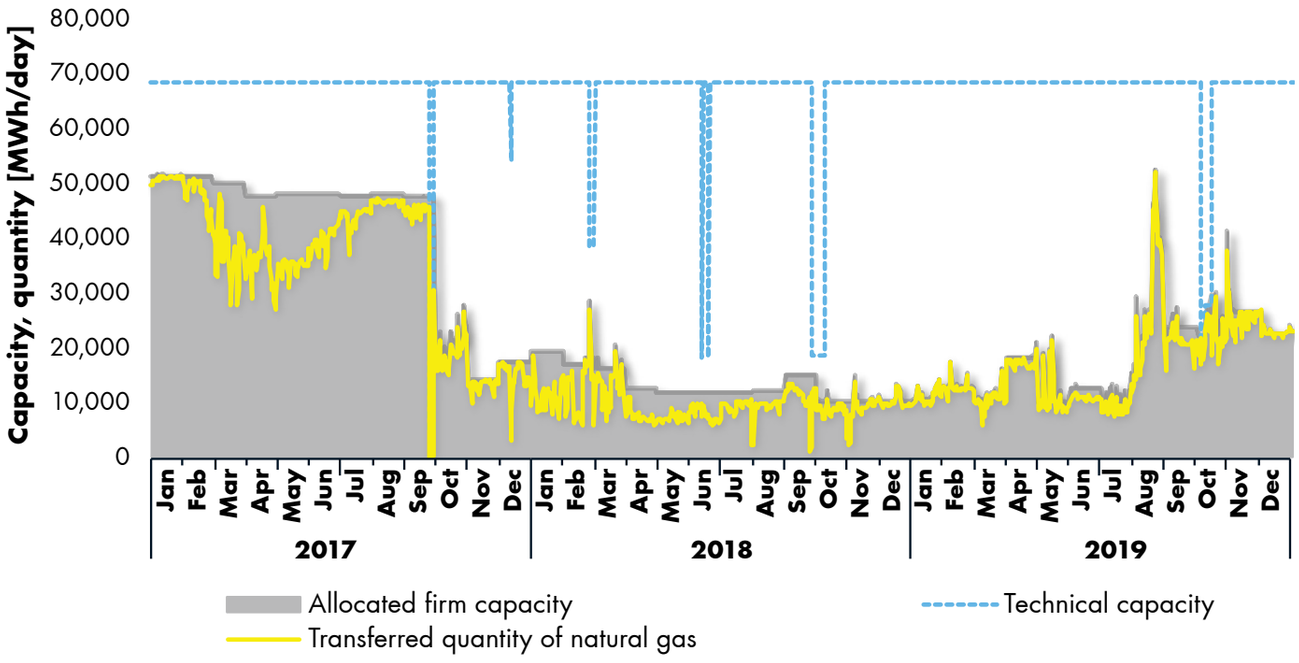
FIGURE 136: DYNAMICS OF DAILY TRANSFERRED QUANTITIES OF NATURAL GAS, TECHNICAL CAPACITY, ALLOCATED FIRM AND INTERRUPTIBLE CAPACITY AT THE ŠEMPETER EXIT POINT IN THE 2017–2019 PERIOD



Sources: Energy Agency, Plinovodi

Similar to the Ceršak entry point, there was an increase in capacity booking at the Rogatec exit point in 2019. Compared to 2018, 35% more capacity was booked, which is still only 44% of the 2017 capacity booking. There was an even greater improvement in the quantities transported, which increased by 73% compared to 2018 and reached 48% of the 2017 value. The measure of partial technical capacity reduction due to the reduction of technical capacity in the Austrian transmission system was also implemented by the transmission system operator at this border point in October.

FIGURE 137: DYNAMICS OF DAILY TRANSFERRED QUANTITIES OF NATURAL GAS, TECHNICAL CAPACITY, ALLOCATED FIRM AND INTERRUPTIBLE CAPACITY AT THE ROGATEC EXIT POINT IN THE 2017–2019 PERIOD



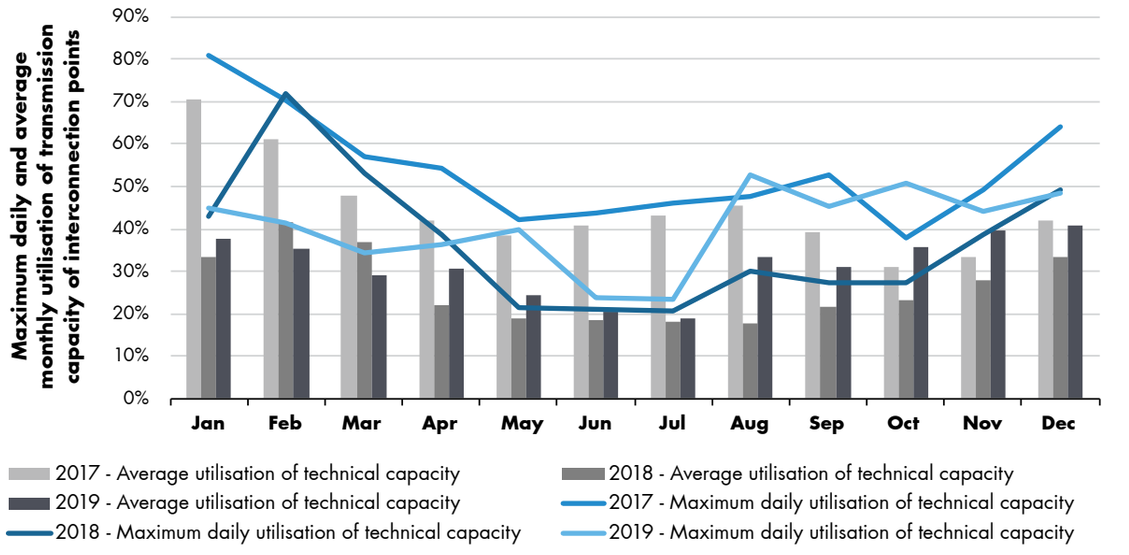
Sources: Energy Agency, Plinovodi

There were no activities on the entry side of the Rogatec border point in 2019, and at the Ceršak exit point no capacity is available, as no physical return flow from Slovenia to Austria is possible.

The maximum daily utilisation of the technical capacity of the Ceršak entry point, which was 53%, was achieved in August, unlike in previous years, when it was reached in the winter months. This was due to the maintenance work and the ten days of total reduction of technical capacity at the Mosonmagyarovar border point between Austria and Hungary. As a result, natural gas to supply Croatia was largely transported via the Slovenian transmission system.

The average monthly technical capacity occupancy rate at the Ceršak border entry point was 31%, which is five percentage points less than the previous year.

FIGURE 138: MAXIMUM DAILY AND AVERAGE MONTHLY UTILISATION OF CAPACITY OF BORDER ENTRY POINT CERŠAK IN THE 2017–2019 PERIOD

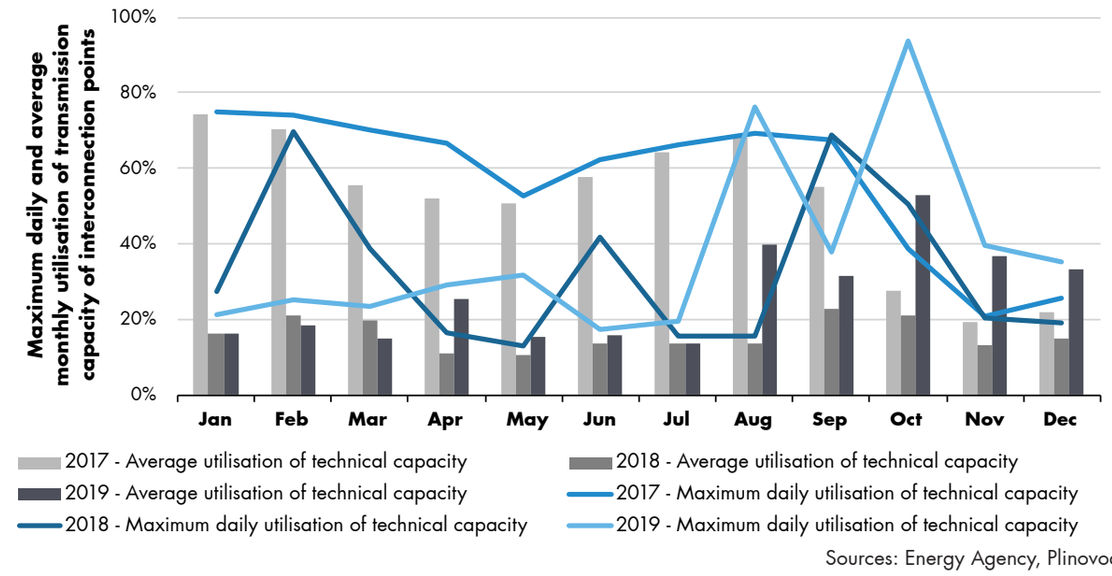


Sources: Energy Agency, Plinovodi

The maximum daily utilization of the technical capacity of the Rogatec exit point was 94% and was reached in October, when the TSO limited technical capacity to one third and 41% of normal technical capacity for 11 days. This measure resulted from the partial reduction of technical capacity on the Austrian transmission system due to maintenance work. In these days, on average capacity was booked at 98% of the technical capacity, while the average daily technical capacity utilisation was 87%. At this exit point, the average monthly technical capacity utilisation rate was 25%, which is four percentage points more than the previous year.

Due to maintenance work, maximum daily utilisation of technical capacity in August 2019

FIGURE 139: MAXIMUM DAILY AND AVERAGE MONTHLY UTILISATION OF CAPACITY OF ROGATEC BORDER EXIT POINT IN THE 2017–2019 PERIOD



Sources: Energy Agency, Plinovodi

Compliance with legislation

In accordance with Directive 2009/73/EC, the Energy Agency must comply with and implement all relevant legally binding decisions of ACER and the European Commission and ensure compliance with the guidelines referred to in this Directive or Regulation 715/2009 when taking decisions.

The Energy Agency gave its approval to the transmission system operator's ten-year development plan of the transmission network for the period 2019–2028 and assessed the consistency of the composition of the Supervisory Board of the transmission system operator.

In 2019, activities were carried out to determine the tariffs for the natural gas transmission system in accordance with Commission Regulation (EU) 2017/460 of 13 March 2017 establishing a network code on harmonised gas tariff structures (Regulation 2017/46). As early as 2018, consultations were held on the establishment of multipliers, seasonal factors and discounts, as well as regular consultation on the setting of reference prices. The ACER opinion was also received that year and a reasoned opinion by the Energy Agency to set reference prices for the natural gas transmission system was prepared and published in 2019. The network charge tariffs for the 2020–2021 regulatory period, which were created only after the reasoned opinion was published, are therefore determined in accordance with Regulation (EU) 2017/460.

Regulation 2017/460 also requires the publication of information before the annual auction of annual capacity and information before the start of the tariff period. The requested information was published by the transmission system operator on its website.

In the area of security of gas supply, a national risk assessment has been carried out in line with the requirements of Regulation 2017/1938, which provides an overview of the sources of risks and the consequences that could be caused by various events with varying probability. In carrying out the risk assessment, a change in the definition of protected customers has also been taken into account.

In 2019, the Energy Agency drafted new acts to regulate preventive and emergency measures and started a public hearing. The two acts meet most of the requirements of Regulation 2017/1938, which lays down both the content and the structure of the two acts. A new feature is that the Acts contain chapters or annexes relating to regions that are harmonised in the risk groups to which Slovenia belongs.

The Energy Agency was responsible for ensuring compliance with Regulation 715/2009 and the guidelines adopted pursuant to this Regulation and supervised the compliance of natural gas undertakings with obligations arising from other relevant European legislation. In particular, it monitored the correctness of the publication of the data on the transmission system operator's websites, concluding that the publications were largely in line with the legislation and minor shortcomings were addressed. No specific infringements of European legislation have been identified by the Energy Agency, so it did not impose measures or penalties on natural gas undertakings in 2019.

Promoting competition

As part of its ongoing monitoring, the Energy Agency monitors developments in the field of pricing (impact factors on prices, price developments, the impact of liquidity on prices, etc.), transparency and integrity of the market (e.g. access to price information, implementation of the wholesale energy market integrity and transparency regulation) and market efficiency (openness and competition). Public publication of the results of market monitoring, in addition to other measures taken by the Energy Agency, contributes to strengthening the market and provides a high-quality energy supply service to end customers of natural gas at an optimal price. In the continuation the key indicators used to evaluate the competitiveness, transparency and integrity of the markets concerned are presented.

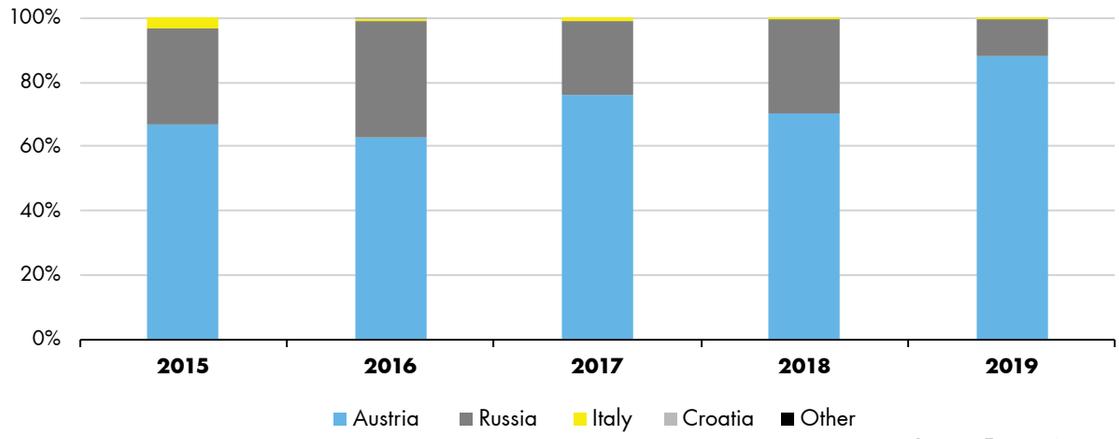
Wholesale market

88% of natural gas imported from Austria

This chapter focuses on the assessment of market performance on the basis of selected indicators showing the degree of competition and the functioning of the natural gas market. The range of indicators is adapted to the size, structure and level of development of the Slovenian natural gas market. The specificity is certainly the import dependency, so in addition to national markets, foreign markets from which the largest quantities of natural gas are supplied to Slovenia must be monitored.

Slovenia does not have its own sources of natural gas, natural gas storages, or LNG terminals. Therefore, on the Slovenian wholesale market there is only gas which is imported by merchants from neighbouring countries through transmission systems. The Slovenian wholesale market can be supplied with gas from Austria, Italy and Croatia. Figure 140 shows that Slovenian traders or suppliers still make the largest use of the connection with Austria among the options described, where they also purchase the largest quantities of gas at the gas hub in Baumgarten and Austrian storage sites. In 2019, 88% of the total imported natural gas was imported from Austria. The remaining part was imported from Russia, while the market with Italy, from where they initially imported gas from Algeria, was completely stalled, with only 0.23% of natural gas imported from Italy.

FIGURE 140: SOURCES OF NATURAL GAS IN THE 2015–2019 PERIOD



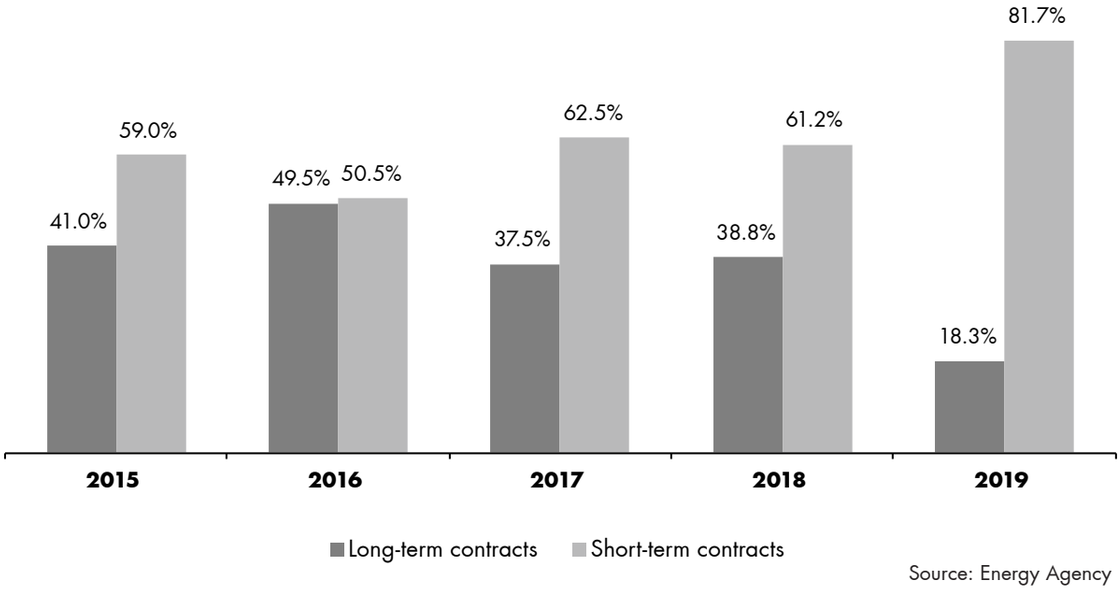
Source: Energy Agency

Market liberalisation led to a reduction in the number of long-term contracts, which were normally concluded directly with Russian gas producers. They have been replaced with short-term contracts concluded at gas hubs, stock exchanges and other points within the EU. The dynamics of increasing short-term contracts for the purchase of natural gas are shown in Figure 141. In 2019, 81.7% of natural gas was purchased by short-term contracts with maturity of less than one year. This is a major change compared to 2016, since at that time the share of natural gas purchased on the basis of short-term contracts was almost equal to the share of natural gas purchased on the basis of long-term contracts.

The maturity of contracts or the relationship between short-term and long-term contracts may have an impact on the security of supply, as in the event of a gas shortage there could be a supply shortage, if not all the necessary quantities can be bought in the spot markets.

81.7% of natural gas from short-term contracts

FIGURE 141: STRUCTURE OF IMPORTED GAS IN RELATION TO MATURITY OF CONTRACTS



Source: Energy Agency

The quantities of natural gas traded on the Slovenian wholesale market include only those sold by traders to other traders or suppliers. They exclude quantities imported to supply customers on the retail market where the supplier is also the importer of natural gas for the retail market. This methodology allows us to determine market shares and the Herfindahl-Hirschman Index (HHI) of the Slovenian wholesale market. The calculated values are presented in Table 35. The largest market share, almost 80%, was again held by Geoplin in 2019, and 13.5% by Petrol. Taking into account the market shares in the retail market, it can be concluded that the largest suppliers in the retail market provide gas on their own on foreign markets, while smaller suppliers buy gas from importers. The concentration of the market measured with HHI shows a very high degree of concentration on the Slovenian wholesale market. The value of the index greatly exceeds the limit delimiting the medium from the high concentration level.

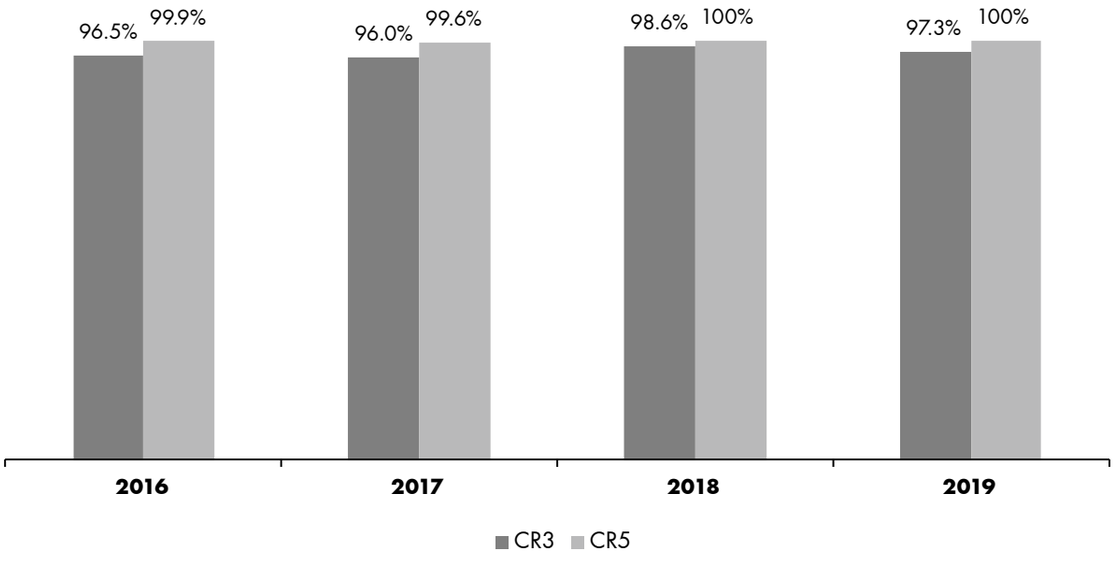
TABLE 35: MARKET SHARES AND THE HHI OF THE NATURAL GAS MARKET

Company	Market Share
Geoplin	79.36%
Petrol	13.50%
Energetika Ljubljana	4.42%
Plinarna Maribor	2.64%
E.ON	0.05%
Adriaplin	0.03%
Total	**100%**
HHI of the wholesale market	**6,507**

Source: Energy Agency

The high concentration level is also shown by the CR3 and CR5 indices shown in Figure 142. The CR3 index gives the three largest market shares and the CR5 index of the five largest suppliers. The three largest suppliers controlled 97.3% of the wholesale market in 2019, while the five largest suppliers controlled the entire Slovenian market.

FIGURE 142: WHOLESALE GAS MARKET CONCENTRATION



Source: Energy Agency

Market transparency

Regulation REMIT, Regulation 1348/2014 and the EZ-1 provide a comprehensive legal framework to ensure price transparency on the natural gas and electricity wholesale market. This subject is addressed in more detail in the chapter about electricity market transparency.

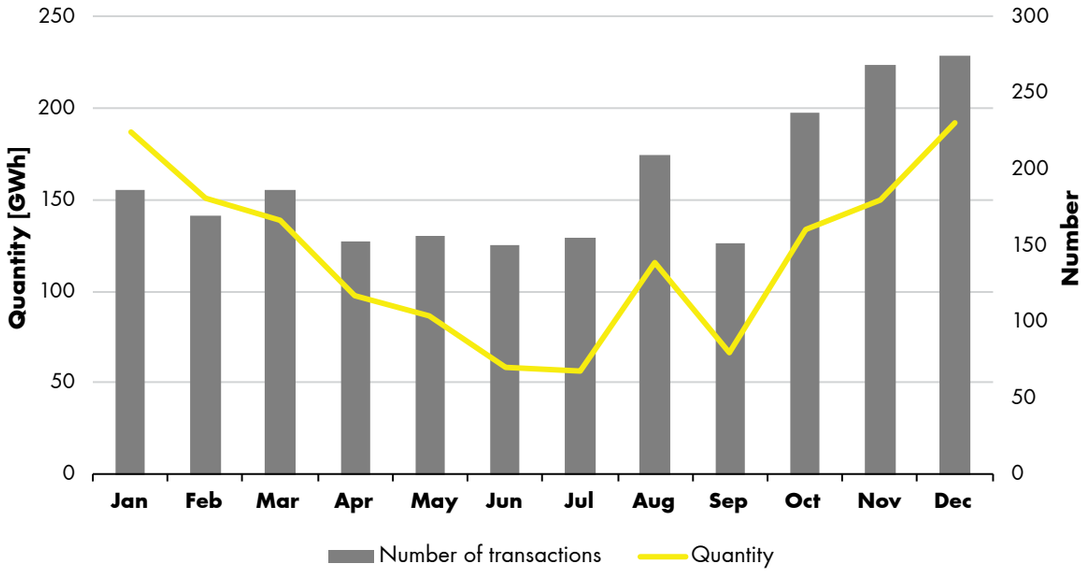
Market effectiveness

In the context of market effectiveness, the Energy Agency monitors the functioning of the virtual point managed by Plinovodi. The virtual point is intended to carry out natural gas transactions, the functioning of a trading platform for imbalance settlement of balance group leaders and the provision of bulletin board services.

As Figure 143 shows, most transactions were carried out during the last quarter in 2019 and the volume exchanged was almost identical in the first and last quarter. Free market trading is increasingly popular among market participants, as we have reported record achievements in trading in recent years. In 2019, two were recorded. At the monthly level, the highest exchanged volume from 2018 (December 2018 –150.9 GWh, in December 2019–191.7 GWh) was exceeded, and in 2019 there was also a record of 1431.5 GWh, compared to 2018 exchanged 1133.8 GWh of natural gas. Of all transactions, 2287 were executed on a day-ahead basis and the remaining seven were carried out for intraday products.

Record exchange of **1431.5 GWh** of natural gas on the free market

FIGURE 143: TRADING IN THE VIRTUAL POINT (FREE MARKET)



Source: Plinovodi

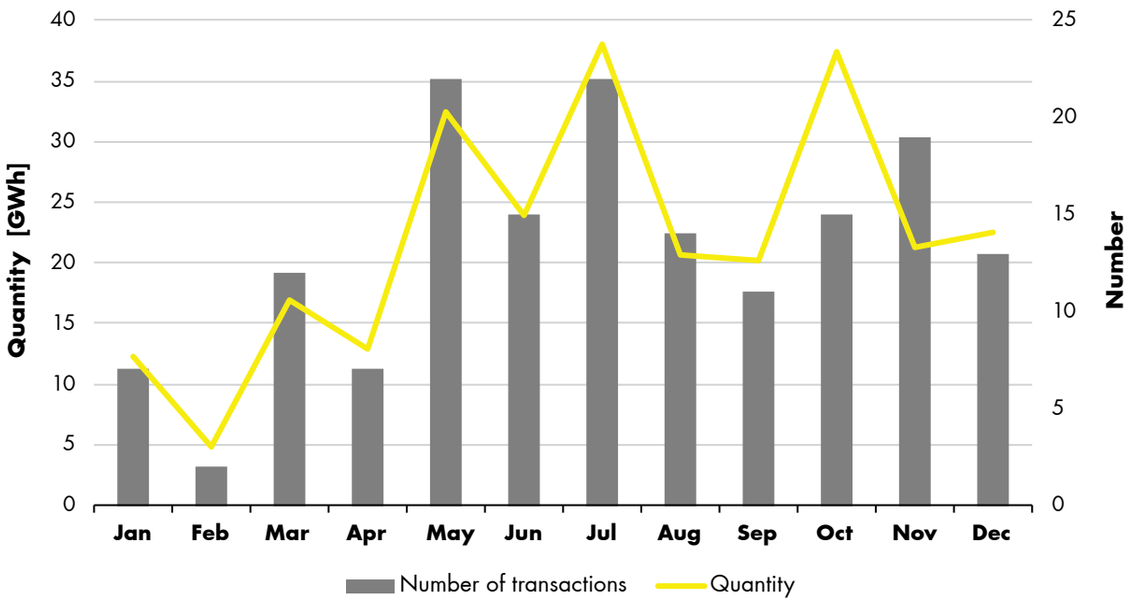
The trading platform also operates as a virtual point service. This allows the leaders of balance groups to trade both intraday and day-ahead gas quantities for balancing purposes. On a trading platform, the TSO trades gas quantities on an equal footing with other participants for the purpose of balancing the transmission system. If, at the end of the billing day, trading on a trading platform is unable to successfully balance the quantities in the transmission system, the operator may use a system balancing service for the transmission system based on an annual contract with the most favourable bidder selected.

On the basis of transactions carried out on the trading platform, 263.3 GWh of natural gas was purchased or sold for balancing the transmission system. Compared to 2018, this figure represents an increase of 22.5%. In total, there were 159 trades in 2019, of which 87 were carried out for balancing with a short-term standardised product within day, and 72 for balancing on the basis of a short-term standardised day-ahead product. The leaders of balance groups on the trading platform did not carry out transactions for balancing.

The quantities of natural gas exchanged and the number of transactions carried out on the trading platform for 2019 per month are shown in Figure 144.

22.5% increase in quantities on the trading platform

FIGURE 144: TRADING ON A TRADING PLATFORM (BALANCING MARKET)

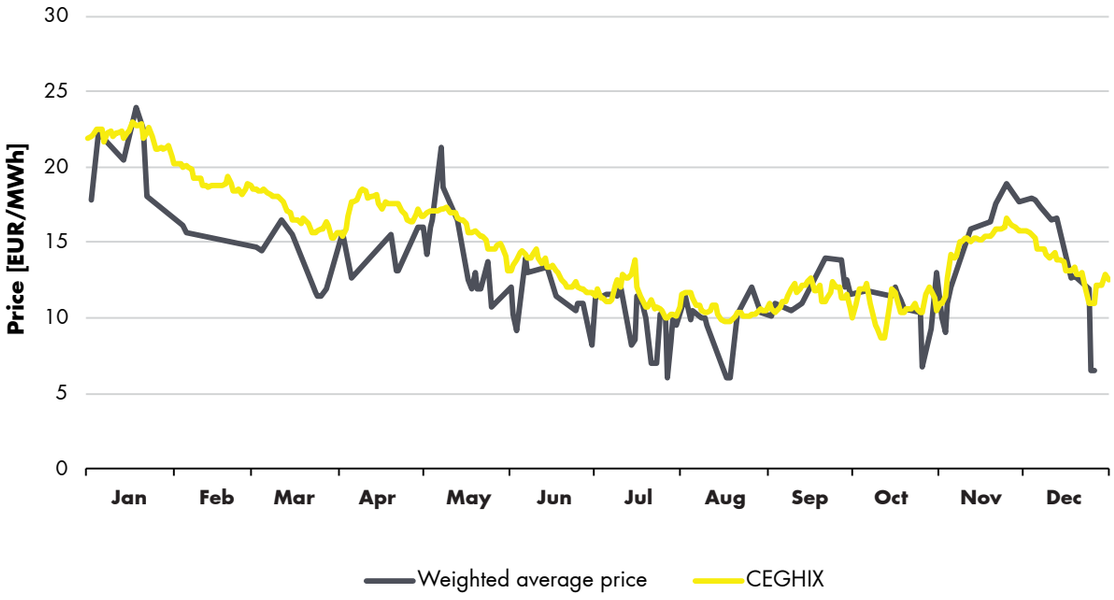


Source: Plinovodi

For each transaction carried out on a trading platform, the price at which natural gas was purchased or sold is recorded. The index of the average price achieved on the trading platform is determined by balancing these prices with the quantities exchanged. The index is set on a daily basis and is, therefore, comparable to the daily CEGHIX gas hub CEGHIX index in Vienna. The comparison of the weighted average price with CEGHIX is shown in Figure 145. There is a strong correlation between the two indices, as most of the gas is still imported from Austria. On the trading platform, the level of liquidity is lower, which is reflected strongly on non-trading days. It is, therefore, not possible to establish a weighted average price index for these days. The value of the weighted average price on non-trade days for the purpose of correlation (Figure 145) is determined by using the linear interpolation method.

Price of natural gas on the trading platform in correlation with the CEGHIX exchange index

FIGURE 145: WEIGHTED AVERAGE PRICE ON THE TRADING PLATFORM (BALANCING MARKET) AND VALUES OF CEGHIX



Sources: Plinovodi, CEGH

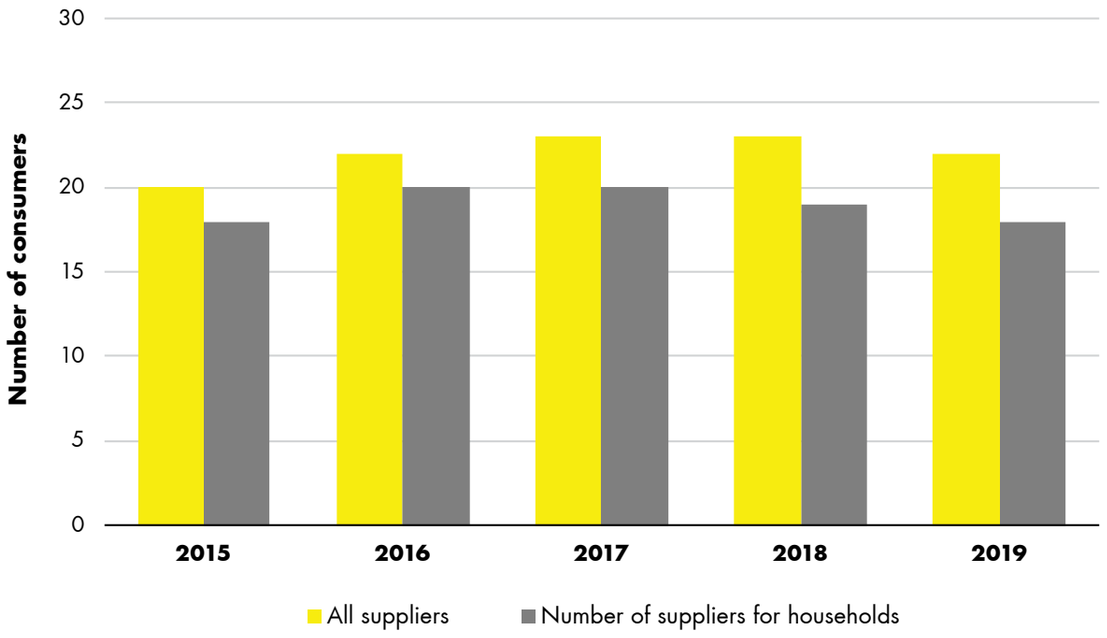
In addition to free market trading and trading platforms, the virtual point includes a set of bulletin boards. This enables members of the virtual points to publish offers and demands for quantities of natural gas in Slovenia's transmission system transparently. Published announcements do not contain prices. In 2019, 54 offers and ten enquiries were placed on the bulletin board. The average announced supply capacity was 99,815 kWh/h and the average demand capacity was 90,000 kWh/h. All the quantities announced were published by the TSO.

The retail market

In 2019, 22[63] natural gas suppliers were active in the retail market in Slovenia, which, on the basis of concluded supply contracts, supplied natural gas to household and business consumers connected to the distribution and transmission systems. Two suppliers ceased the activity of supplying natural gas and one supplier re-entered the retail market in natural gas for business consumers. Consumers can choose between offers from all suppliers offering natural gas in their local community. Natural gas suppliers are also present on the market and supply gas to consumers only in local communities where, within the same company, they also carry out the activity of distribution of natural gas. Customers shall pay for the natural gas delivered on a monthly basis on the basis of the actual quantity measured by the relevant meters or, in the absence of the operator with the measuring device reading, on the basis of the load profiles.

[63] The Energy Agency considered as suppliers those companies that are members of the balance group or balance subgroup.

FIGURE 146: NUMBER OF SUPPLIERS ON THE RETAIL MARKET IN SLOVENIA IN THE 2015–2019 PERIOD



Source: Energy Agency

The variety and abundance[64] of offers was low. More than one third of all bids are regular bids, and promotional or package offers were occasionally offered only by certain suppliers. Promotional and package offers may be limited to a specific consumer range and, as a general rule, shall contain contractual penalties if the customer terminates the contract early.

Natural gas prices in the retail market

The Energy Agency actively monitors prices in the retail market on the basis of public data and market data from household and small business consumers, which are obtained from suppliers in the framework of benchmarking services of the single contact point.

Gas prices in supply offers depend mainly on the business decisions of each supplier and on the purchasing conditions provided by suppliers during trading. The level of purchase price paid by the supplier is influenced by several factors. Thus, natural gas prices depend on the characteristics of gas purchase contracts, developments in oil and petroleum prices, developments in foreign currency exchange rates, weather effects, international stock markets and competition on the market.

Retail price index

In the context of monitoring the market concerned, the Energy Agency determines the retail price index (RPI). RPI is based on the cheapest, affordable offer available to all consumers on the market, which allows consumers to switch supplier at any time without any contractual penalty.

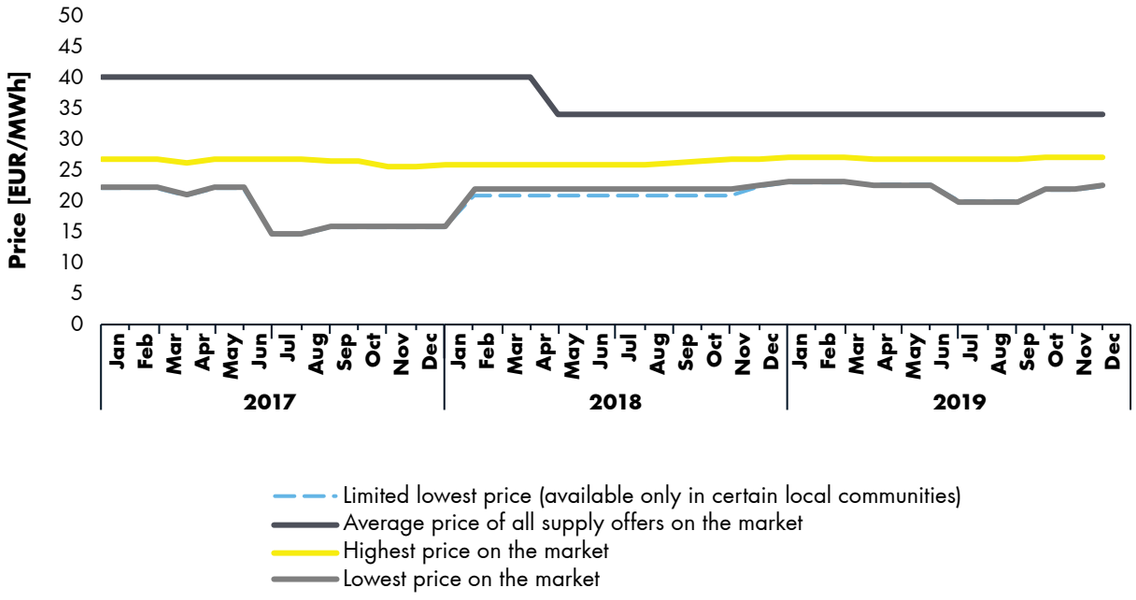
Figure 147 shows the trend in the following prices for a typical household consumer:

- limited lowest price (available only in certain local communities),
- the lowest price on the market,
- the average price of all offers on the market, and
- the highest market price.

[64] Supply of natural gas without special conditions as regards time binding or contractual penalties pursuant to Article 36(33) of the EZ-1.

In the first half of 2019, natural gas prices did not change significantly and at the beginning of July, the lowest market price decreased by more than 10% to 20 EUR/MWh. There are several reasons, but the most important is the price decrease in the neighbouring wholesale gas markets, in particular in Austria[65]. At the end of 2019, prices on wholesale markets again increased slightly, which consequently also affected supply prices on retail markets. The lowest market price thus increased again at the end of 2019, reaching a value of 22.60 EUR/MWh.

FIGURE 147: RETAIL PRICE INDEX AND SOME TYPICAL NATURAL GAS PRICES WITHOUT NETWORK CHARGE, DUTIES, AND VAT IN THE 2017–2019 PERIOD



Source: Energy Agency

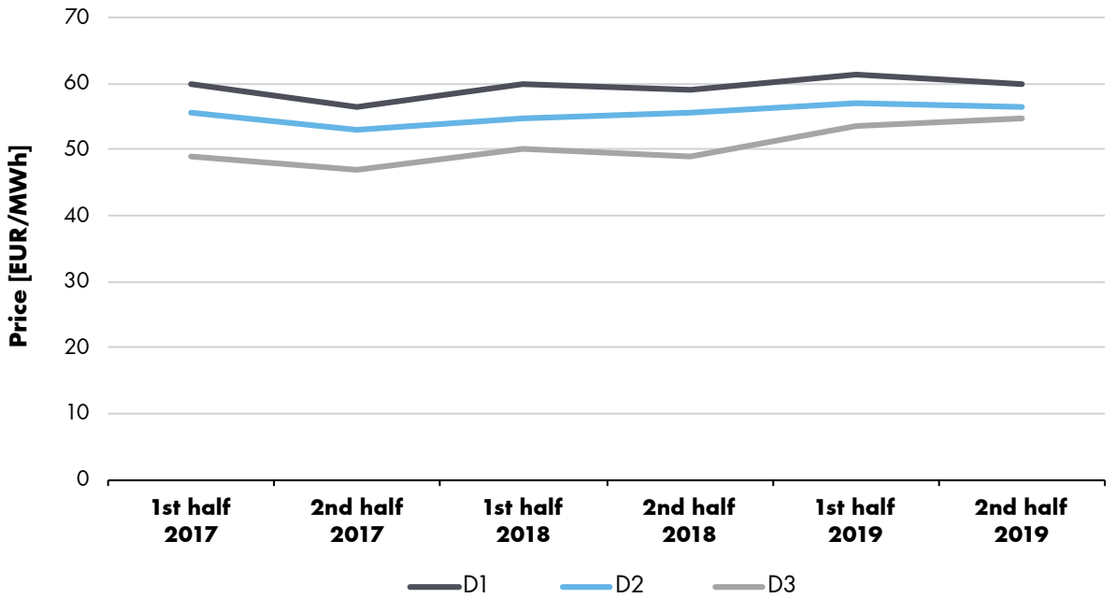
In the first half of 2019, there were no significant changes in the prices of suppliers' offers. In the second half of the year, there was more activity on the market, with some suppliers offering cheaper offers on the market, leading to a decrease in RPIs (Figure 147). From January to May and July, the lowest price available in all local communities was offered by E.ON, in June, August and September GEN-I, and from October to the end of the year, Energetika Celje. These suppliers offer natural gas to consumers in all local communities, so they also set the level of a limited minimum price offered only in certain local communities. The highest market price had maintained the same value since May 2018 and the average bid price did not change significantly in 2019.

Final prices of natural gas

Figure 148 shows the evolution of the price of natural gas, including all taxes and levies for household consumers over the period 2017–2019. Compared to 2018, prices increased for all consumer groups. The highest price increases were recorded for group D3 (12%), while the increase in prices in groups D1 and D2 was less than 2%.

[65] In the second half of 2019, day-ahead market prices of natural gas fell significantly (by more than 30%) to less than 10 EUR/MWh.

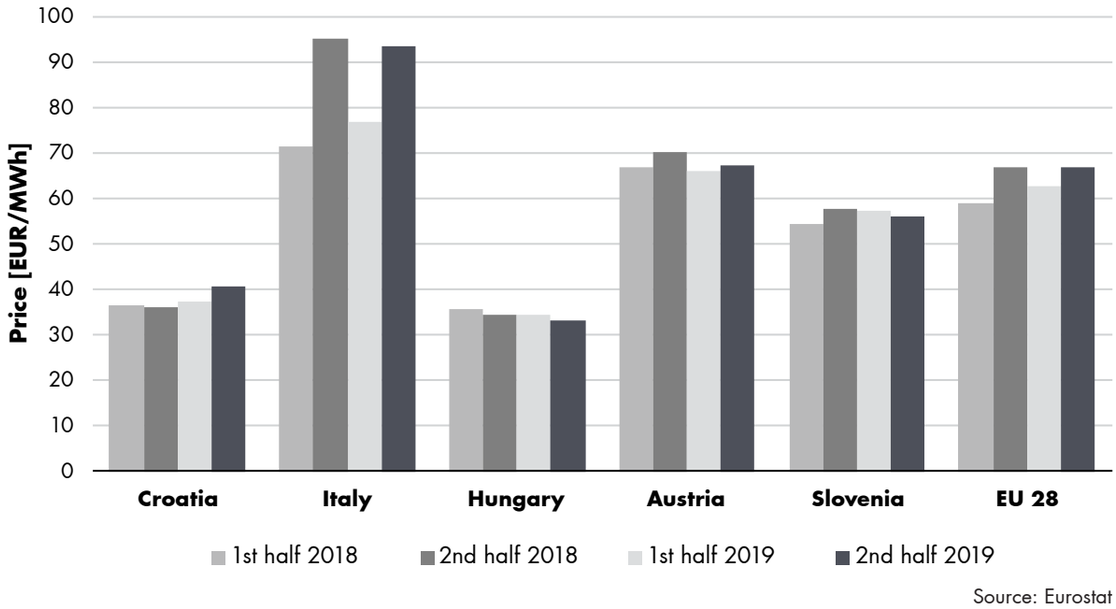
FIGURE 148: FINAL PRICES OF NATURAL GAS FOR HOUSEHOLD CONSUMERS IN SLOVENIA INCLUDING TAXES AND LEVIES IN THE 2017–2019 PERIOD



Sources: STAT

Figure 149 shows the evolution of final gas prices with all taxes and levies in 2018 and 2019 for typical domestic gas consumers D2 in Slovenia and neighbouring countries. Final prices of natural gas in Slovenia remain below the EU average, while the lowest prices among observed countries are in Hungary. The biggest decrease in natural gas prices is recorded in Austria, where the price of gas decreased by almost 4% compared to 2018.

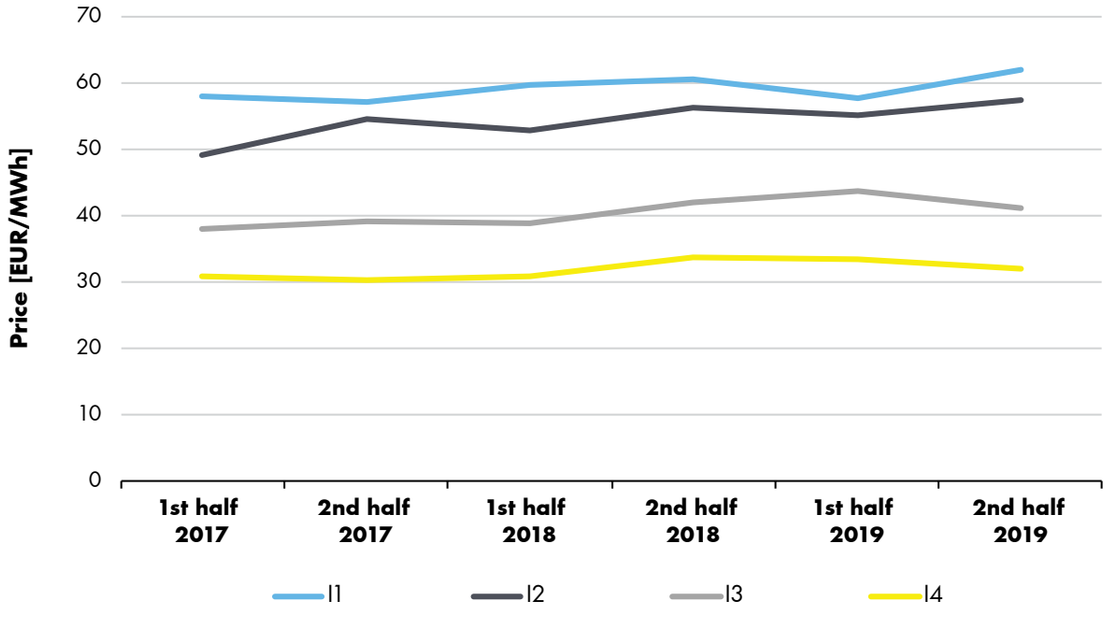
FIGURE 149: FINAL PRICES OF NATURAL GAS FOR TYPICAL HOUSEHOLD CONSUMER D2 INCLUDING TAXES AND LEVIES IN SLOVENIA AND IN NEIGHBOURING COUNTRIES IN 2018 AND 2019



Source: Eurostat

Figure 150 shows the evolution of the price of natural gas, including all taxes and levies for business consumers, over the period 2017–2019. Compared to 2018, prices fell in consumer groups I3 and I4 and increased in groups I1 and I2. Prices fell the most for the consumer group I4 (–4.9%) and increased the most for the consumer group I1 (+ 2.3%).

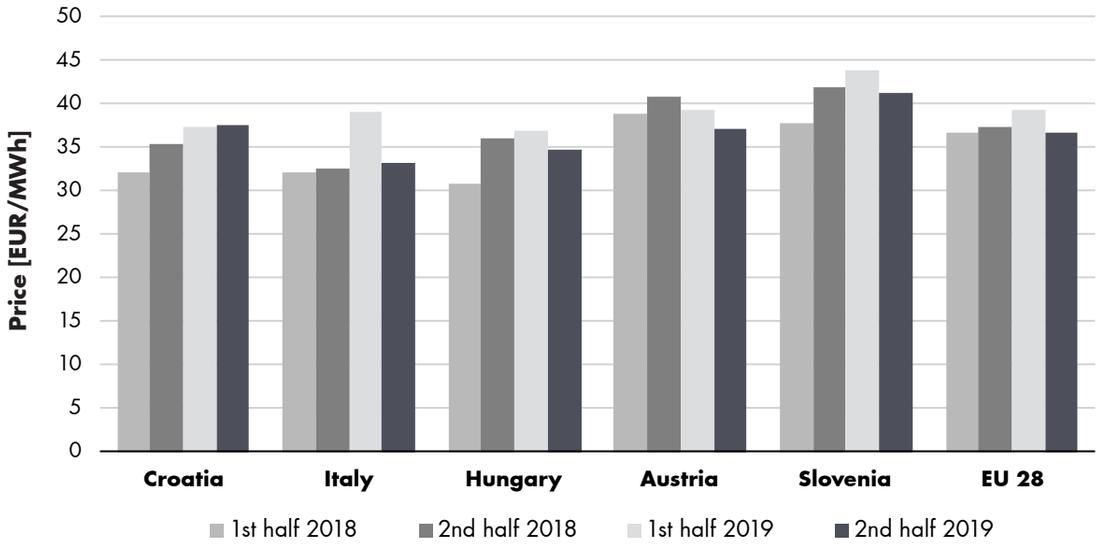
FIGURE 150: FIGURE 150: FINAL PRICES OF NATURAL GAS FOR BUSINESS CONSUMERS IN SLOVENIA INCLUDING TAXES AND LEVIES IN THE 2017–2019 PERIOD



Source: STAT

Figure 151 shows the evolution of natural gas prices with all taxes and levies in 2018 and 2019 for typical I3 customers of natural gas in Slovenia and neighbouring countries. The final price of natural gas in Slovenia has fallen slightly, but remains above the EU average. In this part of the market too, the largest decrease in final gas prices is recorded in Austria, where the price of gas decreased by almost 9% compared to 2018.

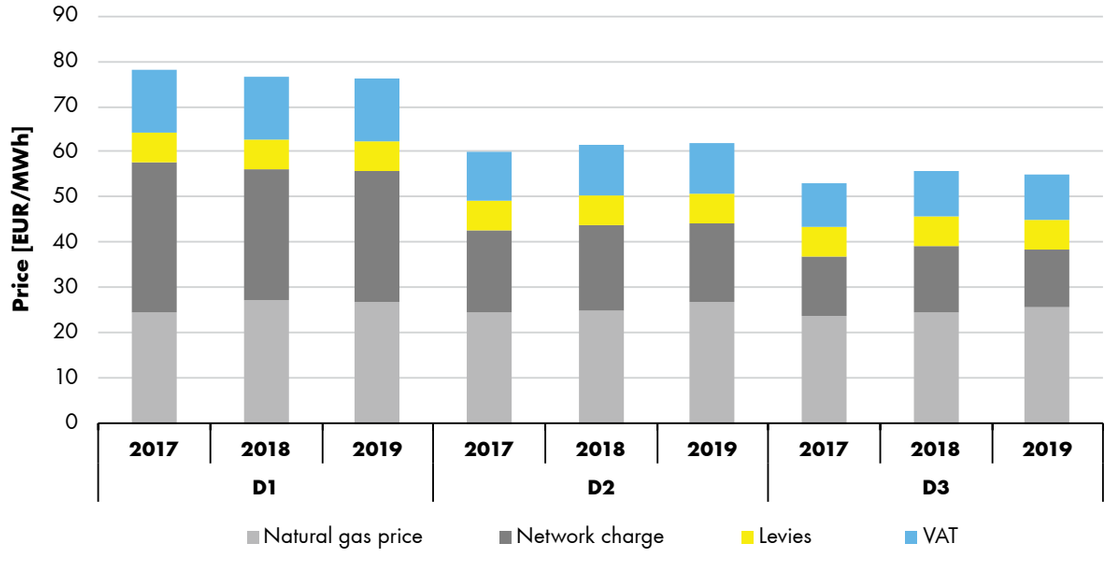
FIGURE 151: FINAL PRICES OF NATURAL GAS FOR TYPICAL BUSINESS CONSUMER I3 INCLUDING TAXES AND LEVIES IN SLOVENIA AND IN NEIGHBOURING COUNTRIES IN 2018 AND 2019



Sources: Eurostat

Figures 152 and 153 show the structure of the final price for typical household and business consumers connected to distribution systems in the 2017–2019 period.

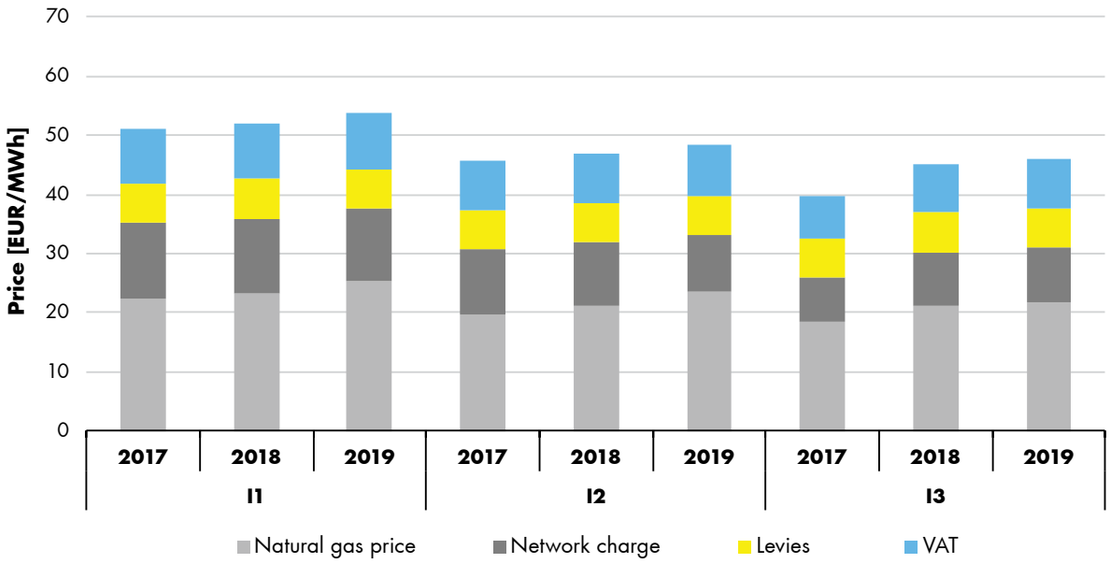
FIGURE 152: STRUCTURE OF THE FINAL NATURAL GAS PRICE FOR HOUSEHOLD CONSUMERS IN THE 2017–2019 PERIOD



Source: Suppliers' data

The shares of individual components in the final price of natural gas for household consumers did not change significantly during the observed period. The final gas price decreased slightly for consumer groups D1 and D3 and increased by group D2. In the latter case, the price of gas increased, which, despite the decrease in the network charge, led to an increase in the final price.

FIGURE 153: STRUCTURE OF THE FINAL NATURAL GAS PRICE FOR BUSINESS CONSUMERS IN THE 2017–2019 PERIOD



Source: Suppliers' data

For business consumers, the energy price has a dominant influence in the structure of the final price. In all consumer groups, the final price increased despite a decrease in network charges for certain groups (I1 and I2). The most noticeable increase is in the consumer group I1 due to the increase in gas prices. Final prices for natural gas have risen despite natural gas prices on wholesale markets (lower prices in Austria). For more information, see the chapter Retail Price Index.

Market transparency

Financial transparency of suppliers and transparency of bill

As part of market monitoring, the Energy Agency analyses the annual reports of suppliers and sample bills of suppliers and prepares appropriate internal reports for decision-making purposes. The transparency of bills is systemically regulated on the basis of the EZ-1 and the current Act on the methodology for network charges for the natural gas distribution system. The bill for natural gas supplied thus shows separately the quantities of natural gas consumed, the network charge (amount for distribution and the amount for measurements) and the energy efficiency contribution, the RES and CHP contribution, the environmental levy (CO2 tax), excise duty and VAT.

Based on its analysis of the situation, the Energy Agency considers that the overarching legislation continued in 2019 to ensure a sufficiently high level of transparency.

Obligation to design a regular offer and publication of supply offers

Suppliers must, as a minimum, provide household consumers and small business consumers with transparent information on their offers for the supply of natural gas and the related applicable price lists, as well as the general contract terms and conditions for the supply service, by publishing them on their website. Until the EZ-1 Amending Act in summer 2019, suppliers were also obliged to design and publish a supply offer on the basis of regular prices, provided that they met the conditions of the definition of regular price lists[65].

The Energy Agency's activities for providing transparency

The Energy Agency regularly monitors the functioning of the natural gas retail market, whereby monitoring the number and characteristics of the supply offers published, with an emphasis on swift action in case of identified conflicting practices. Information on current offers and any changes in the characteristics of these offers are transmitted monthly by the liable entities to the Energy Agency, which use them in the framework of the single contact point to inform all interested parties. In order to ensure transparency in the natural gas retail market, comparative e-services are available to users on the Energy Agency's website, among which the online application for comparison of natural gas supply costs. The application allows the calculation and comparison of the costs for the supply of natural gas for an individual type of consumption profile on the basis of offers entered by suppliers in the online application.

The Energy Agency also provides an e-service, Check the Invoice, by which users can verify the correctness of the issued gas bill according to the selected offer and client profile. The calculation at the monthly level is shown separately by statutory components. For most of 2019, the comparison of costs in the publicly available part of the comparative services was limited to supply services on the basis of regular price lists. This means that users did not have uniform access to all price lists and offers and had to search for this information from individual sources or suppliers. However, users have the possibility of quickly accessing all price lists of each supplier through a list of suppliers and their online links in the context of an application for comparison of natural gas supply costs. The analysis of interest in the comparative services of the Energy Agency, once again allowed to compare the overall supply on the market, shows no change in the negative trend of use (more in the case study[66]).

Market effectiveness

The Energy Agency monitors the efficiency and competitiveness of the retail natural gas market on the basis of continuous collection of data sent by reporting entities (suppliers). During this period, according to suppliers, 9.52 TWh of natural gas was supplied to all consumers.

Market shares and HHI of the natural gas retail market

Supply of natural gas to all consumers

Table 36 shows market shares of suppliers to all end consumers on the natural gas retail market in Slovenia.

[66] The regular price list is the price list for a particular type of customer (household or small business consumers) and applies to all consumers who conclude a supply contract with the supplier, with the exception of special offers or bundled offers, and includes at least 50% and at least 250 consumers from each supplier.
[67] Case study: Preliminary assessment of the effects of eliminating the regulatory restrictions of the Energy Agency's comparative services

TABLE 36: MARKET SHARES AND HHI OF SUPPLIERS TO ALL END CONSUMERS IN THE NATURAL GAS RETAIL MARKET

Suppliers	Delivered energy (GWh)	Market share
Geoplin	4,306,187	45.2%
GEN-I	1,059,277	11.1%
Adriaplin	916,845	9.6%
Energetika Ljubljana	884,628	9.3%
Petrol	839,540	8.8%
Plinarna Maribor	637,196	6.7%
ECE	167,699	1.8%
Talum	144,414	1.5%
Energetika Celje	130,211	1.4%
Other small suppliers[67]	433,259	4.6%
Total	**9,519,256**	**100.0%**
HHI of the retail market		**2,483**

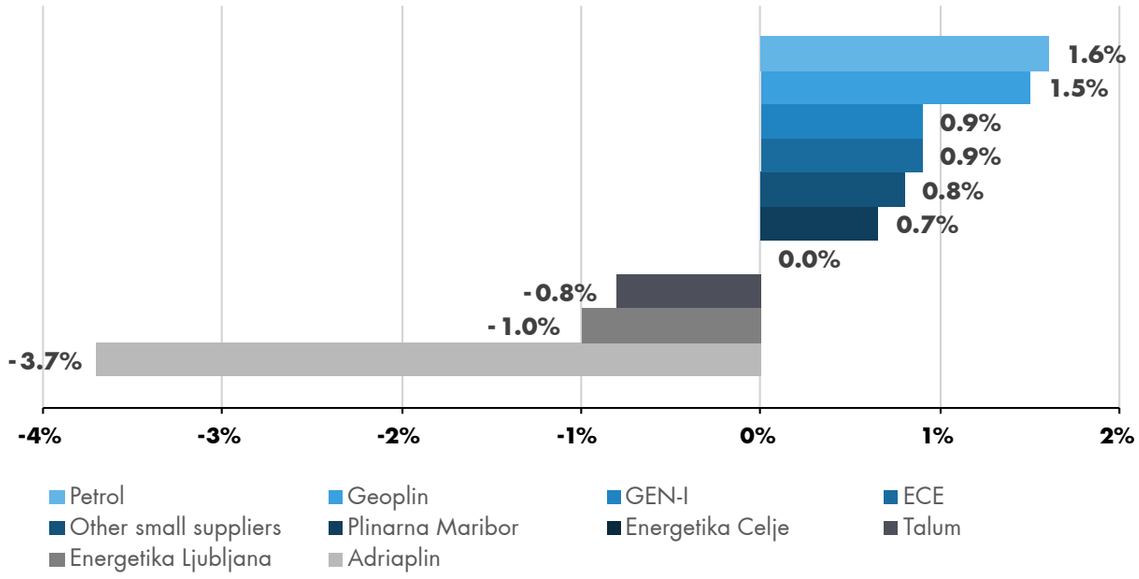
Source: Energy Agency

HHI shows that the retail market is highly concentrated (HHI is more than 1800). At the end of 2019, the value of HHI was 2483 and increased compared to 2018 (HHI was 2410). Following years of decline in HHI (in the 2014–2018 period, HHI decreased by more than 1000 points), we recorded an increase in 2019, which may have a negative impact on market competitiveness. This is due to the increase in market share of the largest supplier. After a few years of declining market share, Geoplin slightly strengthened its market position in 2019. The high concentration requires the competent authorities to monitor the market closely for possible abuses of market power.

The natural gas retail market remains highly concentrated

[67] Other suppliers are: Enos, Domplan, Energija plus, Istrabenz plini, Elektro energija, Komunala Slovenj Gradec, JP KPV, E.ON, Jeko, Plinovod Sevnica, Komunalno podjetje Velenje, and M-Energetika

FIGURE 154: CHANGES IN MARKET SHARES IN THE END CONSUMERS MARKET IN 2019 IN COMPARISON TO 2018



Source: Energy Agency

The largest market share in relation to 2018 was acquired by Petrol and Geoplin. Petrol increased its market share again in 2019 and the increase in market share in 2018 resulted from the merger with Petrol Energy. Adriaplin lost the largest market share.

Supply of natural gas to business consumers

Market shares of natural gas suppliers in the retail market for business consumers in 2019 are presented in Table 37.

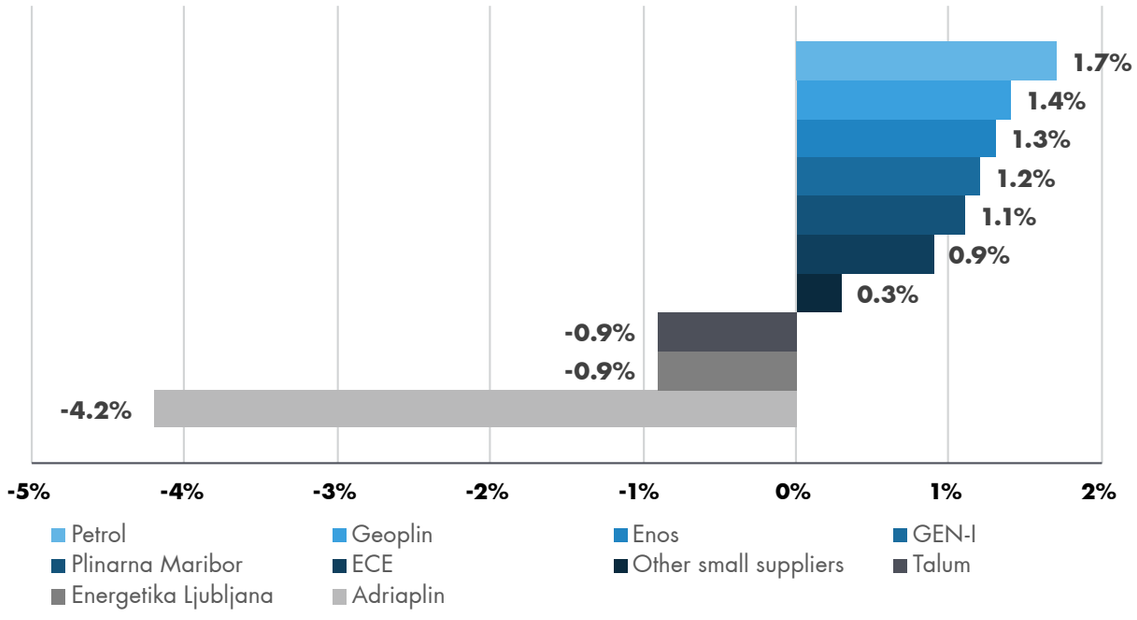
TABLE 37: MARKET SHARES AND HHI OF SUPPLIERS TO ALL BUSINESS CONSUMERS IN THE NATURAL GAS RETAIL MARKET

Supplier	Delivered energy (GWh)	Market share
Geoplin	4,306,187	50.9%
GEN-I	808,366	9.6%
Adriaplin	804,176	9.5%
Petrol	727,814	8.6%
Energetika Ljubljana	579,114	6.8%
Plinarna Maribor	541,475	6.4%
ECE	154,199	1.8%
Talum	144,414	1.7%
Enos	111,723	1.3%
Other small suppliers[68]	283,330	3.4%
Total	**8,460,797**	**100%**
HHI of the retail market		**2,944**

Source: Energy Agency

HHI shows that the retail market is highly concentrated (HHI is more than 1800). At the end of 2019, the value of HHI was 2944 and increased compared to 2018 (HHI was 2865). This is also due to the increase in market share of the largest supplier.

FIGURE 155: CHANGES IN MARKET SHARES IN THE BUSINESS CONSUMERS MARKET IN 2019 IN COMPARISON TO 2018



Sources: Energy Agency

[68] Other suppliers are: Domplan, Energija plus, Istrabenz plini, Elektro energija, Komunala Slovenj Gradec, JP KPV, E.ON, Jeko, Plinovod Sevnica, Komunalno podjetje Velenje, and M-Energetika

In this segment of the retail market, Geoplin, Petrol and ENOS increased their market share most in 2019 compared to the previous year. Although ENOS has significantly increased sales of natural gas to business consumers, its market share is low (1.3%). Adriaplin lost most of its market share.

Supply of natural gas to household consumers

Market shares of natural gas suppliers in the retail market for household consumers in 2019 are presented in Table 38.

TABLE 38: MARKET SHARES AND HHI OF SUPPLIERS TO ALL HOUSEHOLD CONSUMERS IN THE NATURAL GAS RETAIL MARKET

Supplier	Delivered energy (GWh)	Market share
Energetika Ljubljana	305,514	28.9%
GEN-I	250,911	23.7%
Adriaplin	112,669	10.6%
Petrol	111,726	10.6%
Plinarna Maribor	95,721	9.0%
Energetika Celje	47,611	4.5%
Domplan	37,509	3.5%
Istrabenz plini	19,533	1.9%
ECE	13,501	1.3%
Other small suppliers[69]	63,763	6.0%
Total	**1,058,459**	**100.0%**
HHI of the retail market		**1,744**

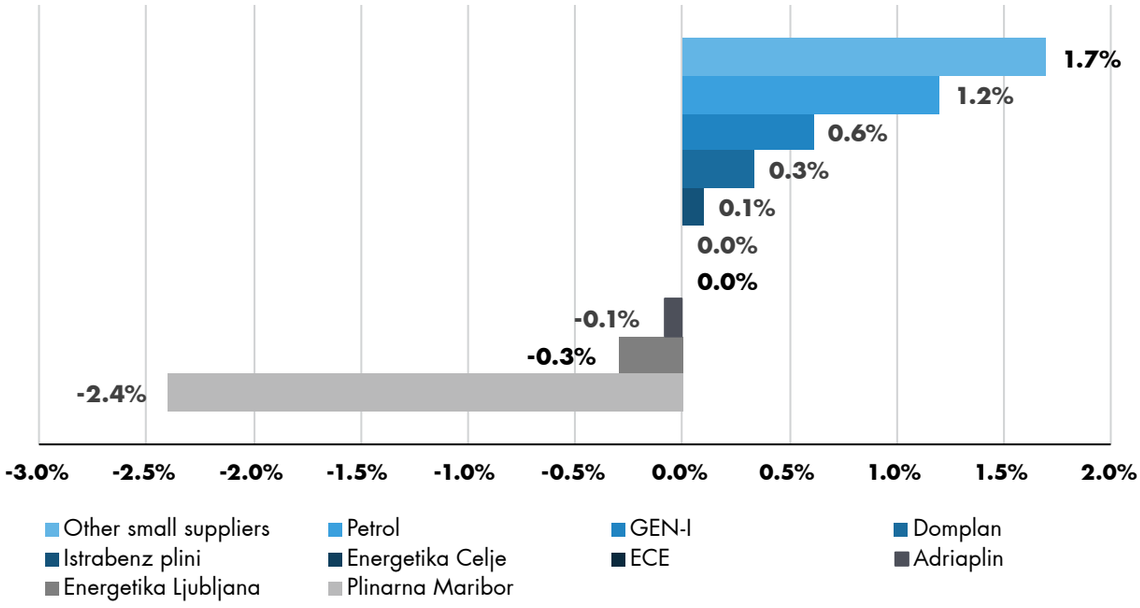
Source: Energy Agency

HHI shows that this is a moderately concentrated retail market (HHI ranges from 1000 to 1800). Compared to 2018, when it was 1775, HHI decreased slightly. The market share of the three largest suppliers (CR3) was more than 60%. The largest market share in this segment was held by the supplier JP Energetika Ljubljana, followed by GEN-I, Adriaplin and Petrol.

In this segment of the retail market, other smaller suppliers and Petrol increased their market share in 2019 compared to the previous year, while Plinarna Maribor lost the most of its market share.

[69] Other suppliers are: Energija plus, Elektro energija, Komunala Slovenj Gradec, JP KPV, E.ON, Jeko, Plinovod Sevnica, Komunalno podjetje Velenje, and Enos

FIGURE 156: CHANGES IN MARKET SHARES IN THE HOUSEHOLD CONSUMERS MARKET IN 2019 IN COMPARISON TO 2018

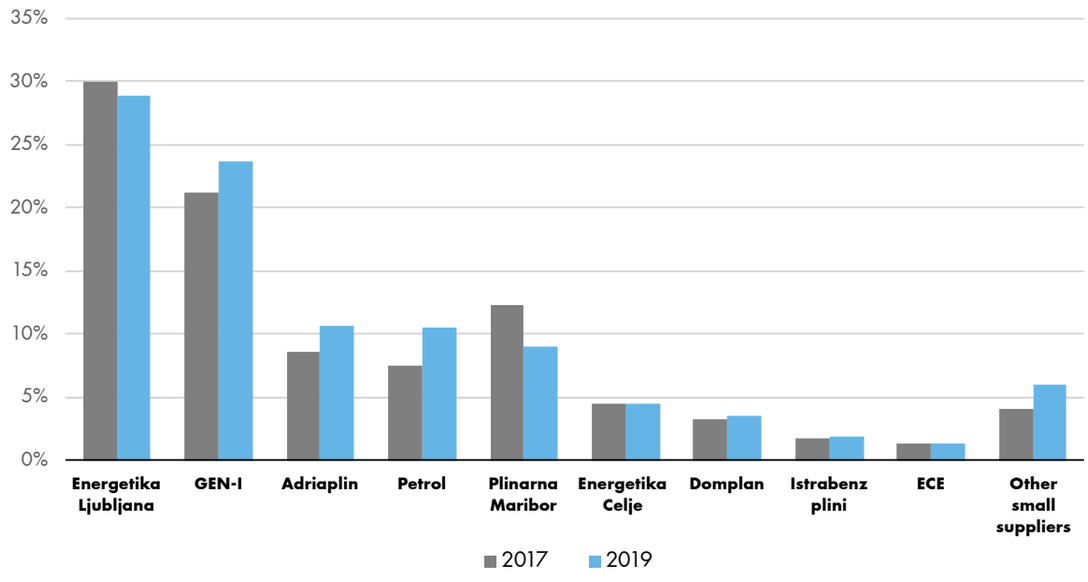


Source: Energy Agency

Figure 157 shows the market shares of the suppliers to household consumers. The market shares in 2017 and 2019 are shown. In the three-year period, Plinarna Maribor lost the largest market share in this segment of the market. Energetika Ljubljana also lost part of its market share.

The largest market share in the household consumer market was acquired by Petrol, as a result of the merger with Petrol Energetika, followed by GEN-I and Adriaplin, which acquired Mestne plinovode in 2018, as well as a group of other smaller suppliers.

FIGURE 157: MARKET SHARE OF SUPPLIERS TO HOUSEHOLD CONSUMERS IN 2017 AND 2019

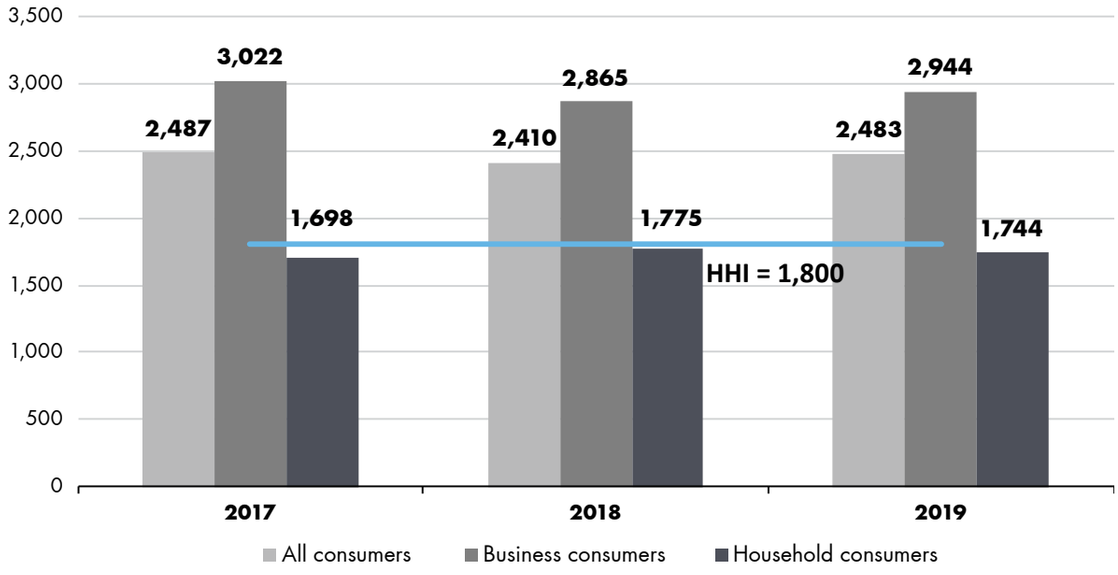


Source: Energy Agency

Comparison of concentrations on the markets concerned

In 2019, HHI slightly increased in the supply segments to all final and business consumers in the retail market, while the slight decrease in HHI is recorded in the segment of household consumers, which is also the only observed market with moderate concentration. According to HHI, the market for business consumers is a highly concentrated market.

FIGURE 158: MOVEMENT OF HHI IN THE RETAIL MARKET IN THE 2017–2019 PERIOD

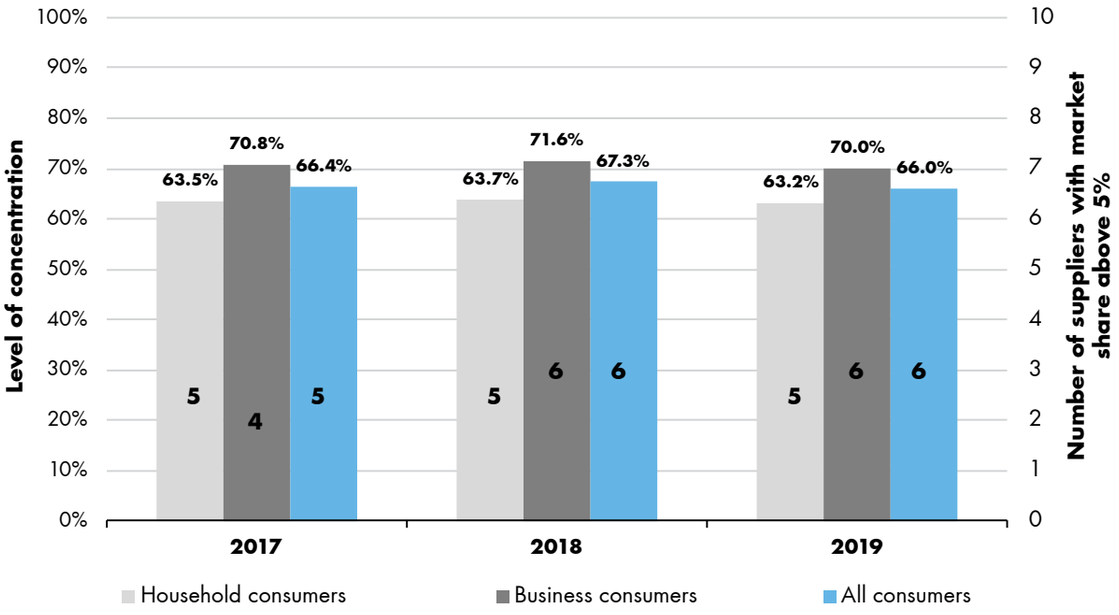


Source: Suppliers

Figure 159 shows concentration index of the three CR3[70] on individual segments of the market over the last three years. In all segments, CR3 values are close to the high concentration limit (70%) and can be defined by oligopoly. There is an insignificant decrease in CR3, and the concentration of the three largest suppliers remains at comparable levels.

[70] Total market share of the three largest suppliers on the market

FIGURE 159: LEVEL OF CONCENTRATION OF CR3 AND NUMBER OF SUPPLIERS WITH MARKET SHARE ABOVE 5% IN THE 2017–2019 PERIOD



Source: Suppliers

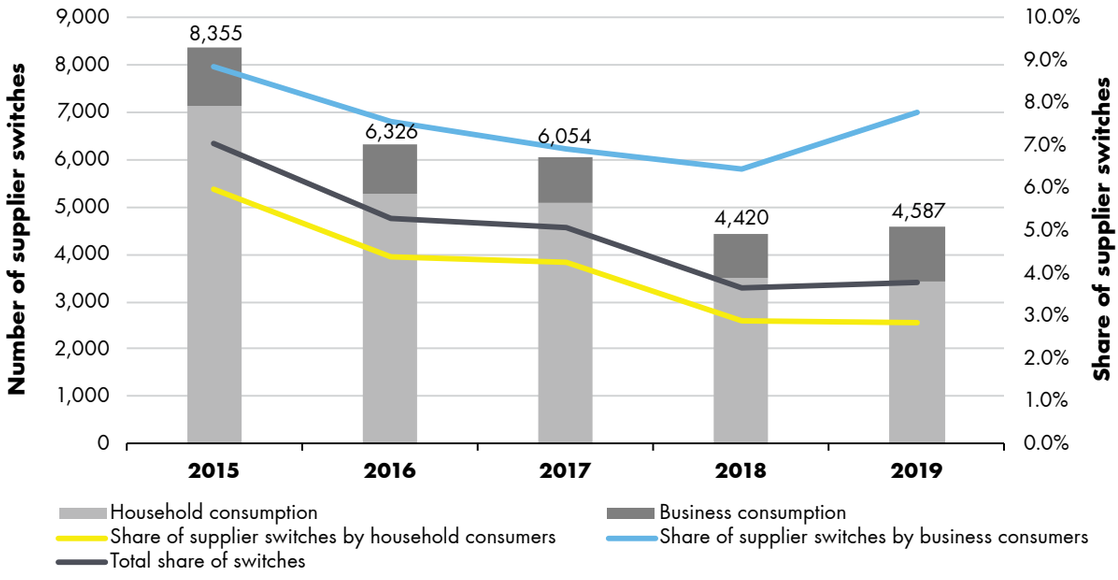
Switching supplier

In 2019, the natural gas supplier was changed by 4587 customers connected to the distribution network, 3444 household consumers and 1143 business consumers. On average, 287 household and 95 business consumers switched natural gas suppliers per month. Compared to 2018, the total number of switches increased by almost 4%, which means that in 2019 we recorded the first increase in the total number of switches of suppliers since 2015. In particular, the number of switches by business consumers increased, which was up by 23% compared to 2018. The number of switches by household consumers decreased by 1.4% compared to 2018.

Figure 160 shows the trend of the total number of switches and the share of switches per type of consumption in the 2015–2019 period.

23% increase in the number business consumers of natural gas switching supplier

FIGURE 160: NUMBER OF SUPPLIER SWITCHES IN THE 2015–2019 PERIOD



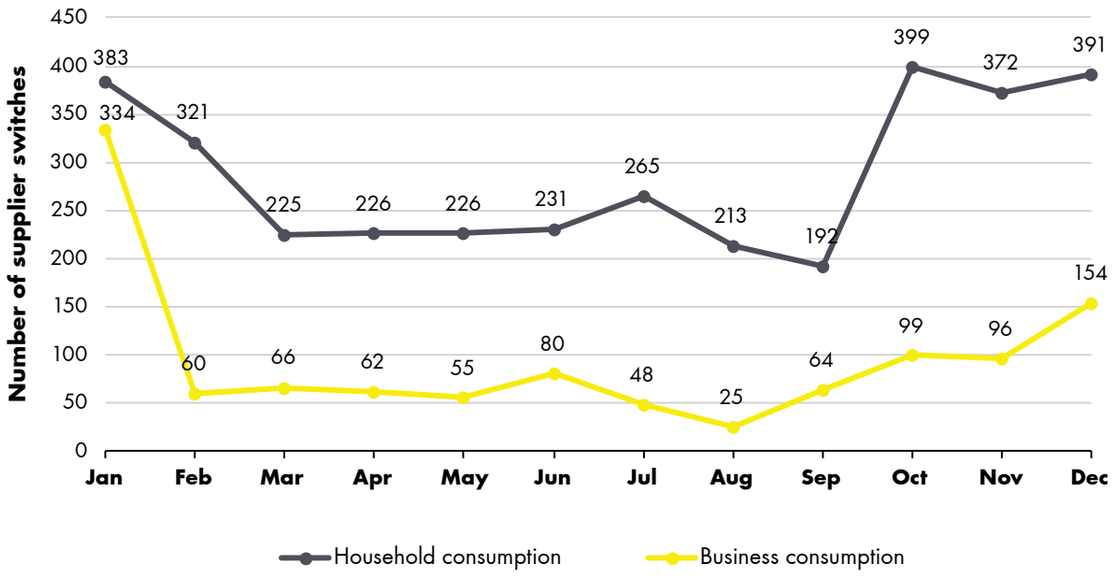
Source: Energy Agency

The share of switching in 2019 was 2.9% for household consumers. In 2018[71], Belgium[72] had the highest share of household consumer switching (based on measuring points) with a 22% share, while five countries had a share of more than 10%, which is significantly higher than in Slovenia.

Figure 161 shows that the number of switches among household consumers was the highest at the beginning and at the end of 2019. This may be due to the period of the heating season when consumption is higher and the energy price has a significantly higher impact on the monthly cost of natural gas supply.

[71] Data for 2019 will be published in November 2020
[72] Monitoring Report on the Performance of European Retail Markets in 2018, CEER, november 2019

FIGURE 161: DYNAMICS OF THE NUMBER OF SUPPLIER SWITCHES DEPENDING ON THE TYPE OF CONSUMPTION



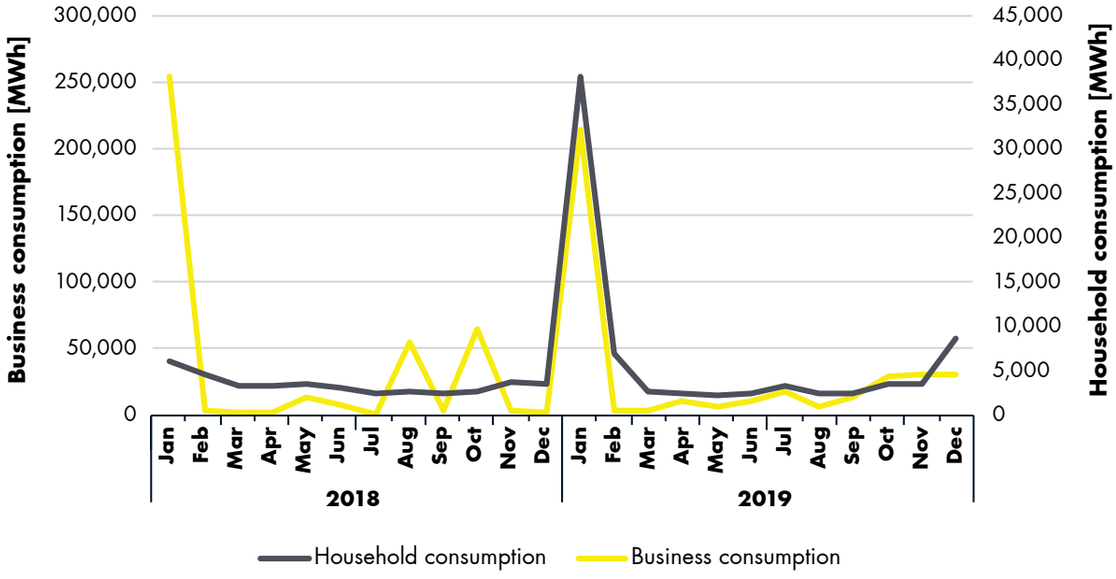
Source: Energy Agency

The increase in the number of business consumers switching occurred at the beginning of the year, which is expected, since the majority of signed supply contracts expire at that time, and at the end of the year when they are likely to take advantage of the opportunity of those business consumers who sign non-binding contracts. The share of switching by business customers in 2019 amounted to 7.8%, and the share of energy exchanged to 4.5%. The energy exchanged is the amount of natural gas consumed by a consumer over a given period and which, as a result of a change of supplier, will have an impact on the increase in energy consumption from another supplier. In 2018, Italy[73] had the highest share of switching by business consumers (based on the energy exchange) in the EU with a 31.4% share, while nine countries had a share of more than 10%, which is much higher than in Slovenia.

Figure 162 shows the trends in the switched volume of natural gas from January 2018 to December 2019.

[73] Monitoring Report on the Performance of European Retail Markets in 2018, CEER, november 2019

FIGURE 162: VOLUME OF SWITCHED GAS BY CONSUMPTION TYPE



Source: Energy Agency

As can be seen in Figure 162, the amount of gas switched in the segment of household consumption was much higher in January 2019 than in January 2018. This is the result of supplier switching by household consumers with higher consumption, which has significantly increased the amount of energy exchanged. The volumes of gas exchanged in the segment of business consumption segment was higher in January 2019, as there was also more switching at that time.

In February 2019, the Slovenian Consumers' Association organised the third campaign of collective purchase of natural gas "Switch and Save 3[74]", which had significantly increased the number of supplier switches in the past. However, the last campaign did not achieve the desired effect, as the number of customers switching supplier was low.

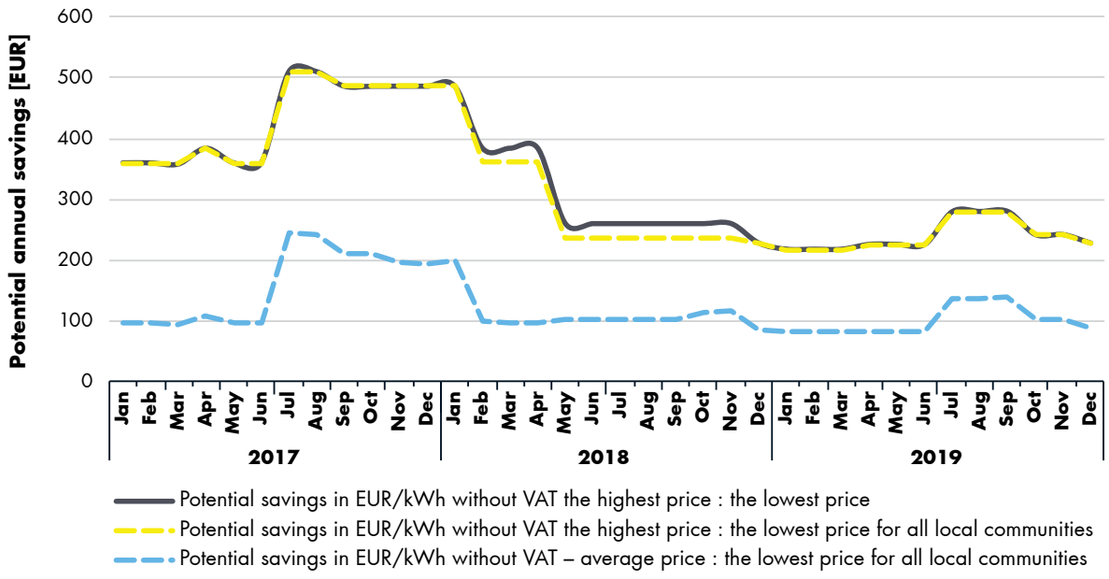
Estimating the potential benefits of switching supplier

By switching suppliers, each household or legal entity can reduce its annual natural gas costs, harmonise and improve contractual relations with the supplier, and thereby receive additional benefits. As the consumption of natural gas is closely linked to the heating season period, consumers can achieve high savings in the months with the highest consumption, if they are supplied on the basis of a more affordable supply.

Figure 163 shows the fluctuation of potential savings for a typical household consumer with an annual consumption of 20,000 kWh.

[74] https://www.zps.si/index.php/zamenjaj-in-prihrani/zamenjaj-in-prihrani-3/9463-znizajmo-racun-za-elektriko-in-plin-zamenjaj-in-prihrani-3

FIGURE 163: POTENTIAL SAVINGS IN CASE OF SWITCHING NATURAL GAS SUPPLIER FOR A TYPICAL HOUSEHOLD CONSUMER IN THE 2017–2019 PERIOD



Source: Energy Agency

The potential savings in the case of switching supplier with the highest price for the supply of gas to the supplier with the lowest price available in all local communities in 2019 ranged from EUR 218 to EUR 280. The potential savings in 2019 did not change significantly compared to 2018. The exception is the increase in savings in the summer months, as a result of the decrease in the lowest market price during that period.

Measures to promote competition

The Energy Agency monitors the natural gas retail market and cooperates with regulatory and supervisory authorities at the national level, such as the market inspectorate of the Republic of Slovenia, the Slovenian Competition Protection Agency and, where appropriate, with independent and non-profit consumer organisations. The Energy Agency's actions are diverse and result from internal analyses of the Energy Agency, bilateral activities and results of public consultations. Within the framework of the single contact point, the Energy Agency shall keep up-to-date relevant information on market developments.

The price of natural gas as an energy product is not regulated and is created freely in line with supply and demand on the wholesale and retail markets.

In the natural gas market, the Energy Agency carries out activities to unify the most important data exchange processes at the national and regional levels. The Act on the identification of entities in electronic data exchange between electricity and natural gas market participants obliges market participants to use standardised identifiers of key data entities in the electronic exchange of data on the market. The implementation of data exchange processes in the natural gas market is not yet largely based on open standards. The harmonisation of data exchange processes in the natural gas market is very slow. In autumn 2018, the Economic Interest Association for the Distribution of Natural Gas decided to use the standard GS1 for harmonised labelling of metering points in all natural gas distribution networks in Slovenia. Uniform and standardised identification of measuring sites across Slovenia is important for reducing the costs of implementing IT systems by market participants (entry costs for new entrants), for improving the efficiency of the supplier change process and for the effective deployment of data and other services in the relevant market. According to the information available, the process of shifting to standardised labelling, which started at the beginning of 2019, is underway and the marking of measuring sites on the basis of standardised identifiers has not yet been implemented.

In the natural gas market, the same rules apply as regards the prevention of restrictions of competition and abuse of dominant position as for other goods. As is apparent from publicly available data, in 2019 the Slovenian Competition Protection Agency did not find any restrictive practices or a possible dominant position in the natural gas market in the case of companies operating in the

natural gas market. In the context of the assessment of concentrations in 2019, no concentrations were notified on the natural gas market.

Security of natural gas supply

The supply of natural gas was uninterrupted. As Slovenia does not have its own sources of gas or storage, it is dependent on gas imports, which has been uninterrupted. Although maintenance works were carried out on neighbouring transmission systems, there was always enough gas available to supply all customers.

In order to ensure security of supply at the EU level, a regional risk assessment for all three regions in which Slovenia participates was carried out in 2018, which provided a framework for national risk assessment. The risk assessment was performed in 2019. The risk assessment provides an overview of the sources of risks and consequences of different events that occur with varying degrees of probability. Events or combinations of events trigger different scenarios affecting security of supply. A total of 113 different scenarios were examined and evaluated in the national risk assessment. For scenarios triggered by the same events as the scenarios in the regional risk assessment, the initial conditions are the same and the results of estimates are exactly comparable or identical. Of the 113 scenarios under consideration, as many as 110 lead to negligible or minor consequences at the national level. In all these scenarios, it is possible to ensure supply to all customers by means of supply-side measures and technical measures. Only in three of the scenarios considered can there be medium, large or very large consequences when there would be a shortage of gas for consumers. In two of these scenarios, the supply of protected customers would be possible or little reduced and sufficient or 90% of the natural gas needed would be available for them. In one scenario, the supply to protected customers would also be reduced by around 64%. All three scenarios are the result of the simultaneous onset of two or three events that are unlikely to occur at the same time. Therefore, each of the three scenarios mentioned is highly unlikely. In addition, the worst-effect scenario could be managed through solidarity assistance from a neighbouring country.

These results also take into account the change in the definition of protected customers. The EZ-1 Amending Act changed that definition in mid-2019; in addition to household customers, protected customers include basic social services, excluding educational and public administration services. Primary social services in the field of educational activities include facilities with accommodation, e.g. residence halls for upper secondary students and student residences. In addition, distributors of heat for district heating produced in installations that cannot switch to another fuel or heat source than natural gas are considered as protected customers to the extent that they supply heat to household customers and basic social services other than educational or public administration services.

The risk assessment shows that only 3 out of 113 scenarios can have more serious consequences that are manageable through solidarity assistance from a neighbouring country.

In 2019, the Energy Agency drafted new Acts to regulate preventive and emergency measures and started a public hearing. The two Acts meet most of the requirements of Regulation 2017/1938, which lays down both the content and the structure of the two Acts. One of the novelties is that they contain chapters or annexes that relate to regions and are harmonised in the risk groups to which Slovenia belongs.

The risk assessment shows that only 3 out of 113 scenarios can have more serious consequences that are manageable through solidarity assistance from a neighbouring country

On the basis of a plan governing preventive measures in gas supply, the Energy Agency as the competent authority determines the preparedness of suppliers for possible gas supply disruptions each year. The supply standard provides for three examples: A seven-day period with the lowest temperatures, a 30-day period with particularly high demand and a 30-day period in the event of a break on the single largest infrastructure at average winter temperatures. The supply standard is limited to the provision of supplies to protected customers. In order to meet the supply standard, suppliers must provide the following average daily gas quantities for Slovenia during the one-year period commencing in October 2019: 11,045 MWh/day in the first, 6573 MWh/day in the second and 8731 MWh/day in the third case mentioned above. Suppliers have demonstrated the necessary dispersion of purchasing sources of natural gas, and for the transport of gas for supplying protected customers to Slovenia, they also have no capacity constraints.

The right to reliable, affordable and quality energy supply

The Energy Agency in its online application for comparison supply costs from December 2019 again provides the comparison of all energy supply offers on the market

6x

In 2019 the last resort supply of electricity was provided to six consumers

Since 2019 the Energy Agency decides in disputes between suppliers and operators

One electricity and 21 natural gas consumers were eligible for emergency supply

An increase in complaints concerning the connection of production facilities for self-supply

CONSUMER PROTECTION

The protection of consumers' rights in the field of energy is carried out by various players in this market (suppliers, operators, the Slovenian Consumers' Association, the Slovenian Competition Protection Agency, etc.), and the Energy Agency plays a key role, since one of the fundamental objectives of its operation is to promote effective competition and thus a well-functioning market to ensure the benefits of all consumers within the competence of the regulator and at the same time protecting consumers (household consumers).

Consumer protection focuses in particular on protecting the rights of household consumers, as these players are, as a rule, not very active in the energy market. This could be the result of ignorance of their rights and the fact that they do not have a strong negotiating position in contractual relationships, are among the weaker players and therefore require special protection.

This has also been noted at European level, and as a result, the EC paid a little more attention to consumer protection when adopting new directives in the Clean Energy for all Europeans Package. Directive 2019/944 clarifies the existing rights of electricity consumers and introduces new ones. With regard to the introduction of new consumer rights in conjunction with the establishment of a flexibility market, the Energy Agency is already carrying out a number of activities (more in the chapter Promoting active demand and the introduction of the flexibility market).

The EZ-1 ensures the protection of consumers' rights the most important of which are:

- the right to be informed,
- the right to emergency supply (for household customers),
- the right to last resort supply (for electricity consumers),
- the right of appeal to suppliers and to out-of-court dispute resolution (for household customers),
- the right to protection of rights in the administrative procedure,
- the right to safe and reliable operation and to a quality supply of electricity or natural gas at a reasonable price.

Under the mandate given to the Energy Agency by the EZ-1 in the area of consumer protection, the Energy Agency has prepared new, updated questionnaires for operators and suppliers in the field of electricity and natural gas for the reporting year 2019. We obtained information on security and emergency supply, notifications of intended disconnection, actual disconnection and reconnection of disconnected final customers, and customer complaints against the operator, customer complaints against suppliers, terminations of supply contracts and suppliers' activities in the event of non-payments of household customers. Thus, on the basis of the analysed data, the Energy Agency also contributes to protecting consumers and guaranteeing their rights, and thus indirectly to the definition of energy poverty.

The right to be informed

The right of consumers to be informed is guaranteed by suppliers, operators and the Energy Agency. Consumers may choose a supplier, which must be notified by the distribution system operators of electricity and natural gas before they are connected to their system. In order to facilitate the selection of a supplier, the Energy Agency publishes on its website a tool for comparison of supply cost containing information on packaged and promotional offers from electricity and natural gas suppliers and a price list, as well as a comparison and calculation of supply costs on a monthly or annual basis. This tool is mainly intended for households and small business consumers.

Furthermore, electricity suppliers should inform consumers about the source of the electricity supplied, which can be done by indicating on the bill, promotional materials or on the supplier's website. All suppliers and operators should periodically inform end consumers about consumption and consumption characteristics in order to enable consumers to regulate their energy consumption. If this information is not available to suppliers, it must be provided by the operator.

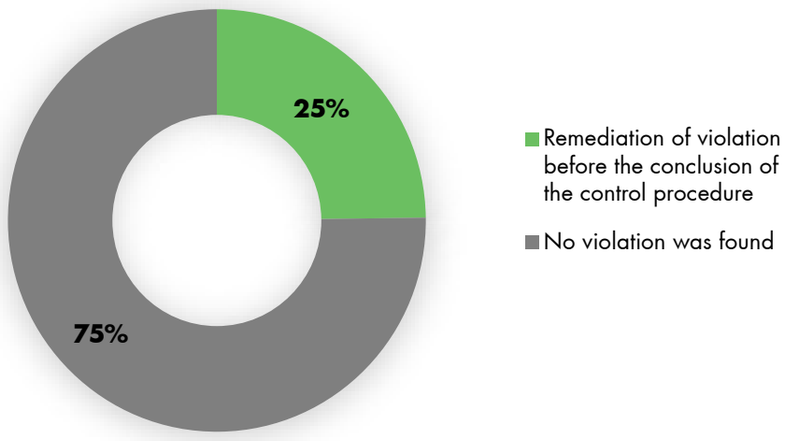
Consumers of electricity and natural gas must be familiar with the general conditions of supply, which suppliers shall ensure, at least through publication on their website, and these terms and conditions are also published on the Energy Agency's website. Household and small business consumers shall be informed at least one month prior to their entry into force of any change in the general conditions of supply relating to the performance of the contract. As a result of this change, household or small business consumers may withdraw from the supply contract within one month of the date of entry into force without notice or without the obligation to pay a contractual penalty, with particular information from suppliers in the notification of the change.

For the last five years the Energy Agency has published on its website all necessary information in the single contact point in order to inform consumers of their rights, applicable rules and general acts of public authority and on the methods for dealing with complaints concerning the supply of electricity and natural gas.

Informing consumers is the responsibility of suppliers, operators and the Energy Agency. In order not to have less information than required or not to be informed at all, the Energy Agency carries out inspection procedures. In 2019, it also carried out surveillance of the correctness of indicating the origins of electricity supplied, continued its control procedures (introduced in 2018), which concerned the provision of consumption data by electricity suppliers and information to final customers on dispute resolution methods with the supplier, ensured that the tariff items of network charges and other services published by operators of the natural gas distribution system on websites and in the Official Journal of the Republic of Slovenia are in line with Energy Agency's decisions, and carried out inspection procedures in other areas. In 2019, 117 inspection procedures were completed; in 25% of cases, the infringement was remedied by the completion of the inspection procedure, while in 75% of cases, infringements were not detected. We are noticing that liable entities act in accordance with the legislation, which is encouraging and shows that consumers are adequately informed about their rights. In only two cases, following the correction of the violation by the inspection officer, the Energy Agency took a control measure – a warning.

As of December 2019 the Energy Agency in its comparison tool for comparing the costs of supply provides all offers available on the market

FIGURE 164: ENERGY AGENCY'S FINDINGS IN CONTROL PROCEDURES



Source: Energy Agency

The right to last resort supply and emergency supply

In 2019 the last resort supply of electricity was provided to six consumers

The right to last resort supply

Last resort supply of electricity is provided by the electricity DSO if the supply contract of household or small business consumers is terminated because of measures resulting from the insolvency or illiquidity of a supplier, or at the explicit request of household or small business consumers, of which they shall be duly informed.

As retail electricity prices are not regulated, the Energy Agency does not issue recommendations on setting these prices. The exception is the electricity price for last resort supply, which is regulated under the provisions of the EZ-1. The price of such supply is set by the electricity DSO and made public. The price must be higher than the market price for the supply of a comparable customer and must not exceed the price by more than 25%.

If the electricity DSO does not set or set it contrary to the rules, the price is set by the Energy Agency.

In April 2019, the electricity DSO provided last resort supply to three small business consumers and one household consumer, most likely due to the fact that on 1 April 2019, the balance sheet scheme membership ended for one of the electricity suppliers. In addition, in March, the electricity DSO supplied one household customer under last resort supply and one small business consumer in October.

The right to emergency supply

Emergency supply is a measure which, subject to certain conditions, delays the disconnection of electricity or natural gas and is intended only for extreme cases of endangering the life and health of a vulnerable customer.

The definition of a vulnerable customer is left to each EU Member State. The latest ACER report on consumer protection in 2018[75] shows that most Member States associate the definition of vulnerable customers with the level of income in the household and the use of medical devices that are necessarily related to the use of energy. Most Member States have a clearly defined definition of a vulnerable customer in their legislation. In contrast, some have the concept of vulnerable customers regulated in such a way that these customer groups have certain rights without giving an explicit definition in the legislation.

In Slovenia, the definition of vulnerable customers is set out in the EZ-1, namely vulnerable customers are defined as a specific category of household customers who, due to their financial circumstances, income and other social circumstances and living conditions, are unable to obtain an alternative source of energy for household use that would incur the same or smaller costs for essential household use. A household customer may demonstrate the status of a vulnerable customer and thus entitlement to the emergency supply with a certified statement from the Social Work Centre (SWC), showing that the household customer has applied for regular social assistance benefit before the receipt of the notification of the electricity DSO or natural gas DSO of its intended disconnection and the decision process has not yet been completed in the SWC.

Before disconnection all DSOs must notify (as a rule by written notification of the intended disconnection) household customers of the possibilities of emergency supply, the conditions under which it is possible, and of the evidence to be provided by the customer in order to be approved for emergency supply by the operator, and of the time limits within which such evidence must be submitted.

One electricity and 21 natural gas consumers were eligible for emergency supply

The costs of an emergency supply of electricity to vulnerable customers are eligible costs of the electricity DSO, while in the case of the supply of natural gas, the expenses of emergency supply are borne by the natural gas DSO until they are paid by a vulnerable consumer.

Eligibility for emergency supply is assessed by the electricity and natural gas DSO and is carried out in accordance with the procedure laid down in the system operating instructions and, in the field of electricity, under the rules and criteria laid down by the Energy Agency in the Legal Act on the criteria and rules for providing the emergency supply of electricity.

The electricity DSO received five requests for emergency supply, but only one vulnerable customer met the conditions for such supply, which is a novelty in comparison to previous years when the emergency supply of electricity was not approved. The natural gas DSOs received 22 requests for emergency supply in 2019 and in 21 cases postponed the disconnection of a customer.

If the application for emergency supply is not approved and the customer does not pay the bill, disconnection follows. Given that all other electricity consumers pay the costs of the emergency supply of the network, the eligibility criteria for emergency supplies are very strict. This is in line with the orientations of European legislation that the Member States should provide measures to protect vulnerable consumers primarily through general social policy measures and other measures, which are not only linked to delay or non-payment of electricity bills.

[75] ACER Market Monitoring Report 2018 – Consumer Empowerment Volume, p. 17

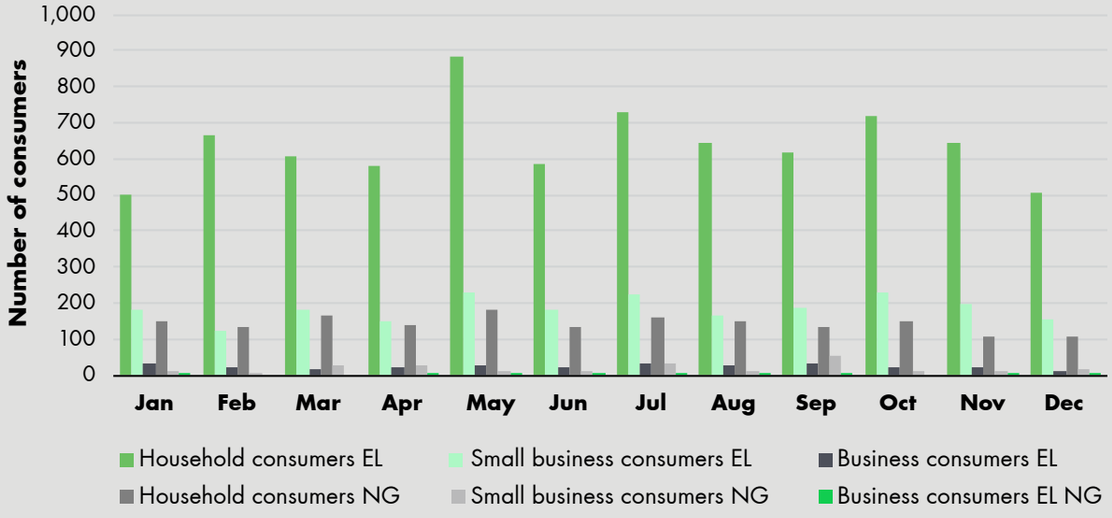
CASE STUDY: Reasons for the termination of the electricity supply contract due to default and measures to prevent the disconnection of customers

Disconnecting the customer is one of the most extreme ways of correcting the infringements caused or committed by the customer. The electricity or natural gas DSO may disconnect the customer as a result of the termination of a supply contract terminated by the energy supplier or for other reasons (infringement) specified in the EZ-1. Depending on the nature of the infringement, the disconnection procedure is carried out with prior notice, without prior notice or at the request of the system user.

One of the reasons for disconnecting is the failure to pay the network charge. The disconnection is subject to prior notice provided by the electricity or natural gas DSO to the customer after a customer has been informed by the energy supplier about the termination of the supply contract due to outstanding liabilities.

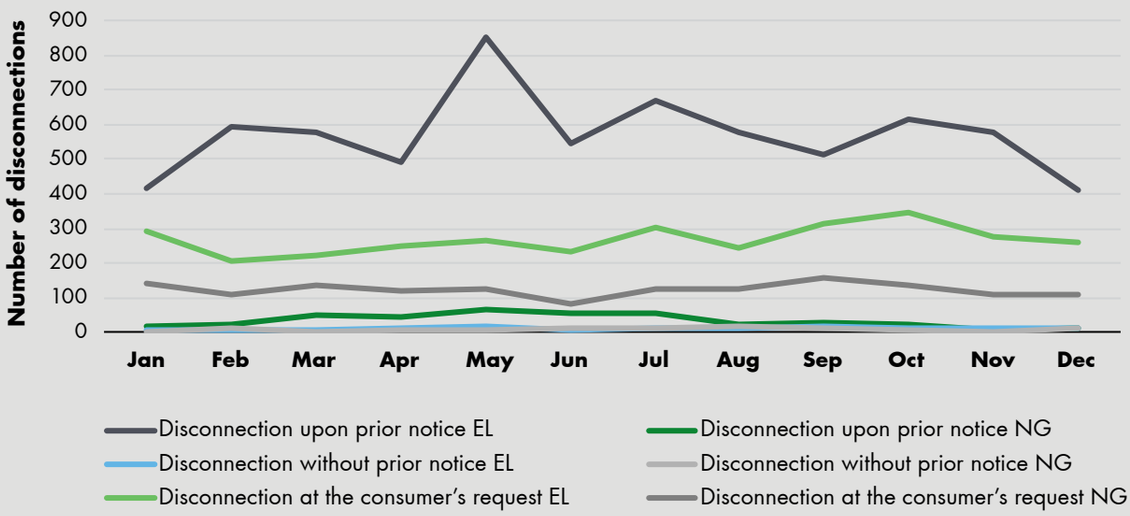
The figures below show that most of the disconnections are still carried out for household electricity and natural gas consumers, following a prior notice procedure in the field of electricity, while in the field of natural gas, most disconnections happen at the request of the customer.

FIGURE 165: DISCONNECTIONS BY GROUPS OF END CONSUMERS



Sources: Operators, Energy Agency

FIGURE 166: DISCONNECTIONS ACCORDING TO THE DISCONNECTION PROCEDURES

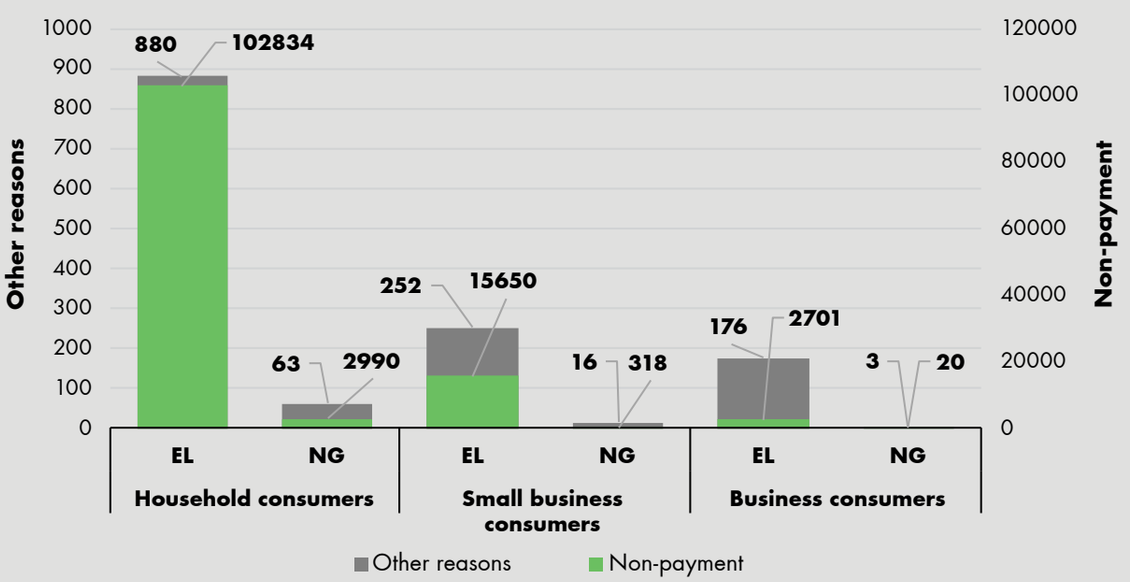


Sources: Operators, Energy Agency

Given that non-payment in the field of natural gas is not the most common reason for the termination of a supply contract and that the emergency supply is more used in the field of natural gas, the main focus is on identifying the reasons for the termination of a supply contract, followed by termination for non-payment in the field of electricity, and how to prevent it in the event of customer vulnerability.

Based on the information available, electricity suppliers most often cancel the supply contract to household customers due to non-payment. In 2019, there were 103,714 cancellations of the supply contract to household customers, of which 102,834 supply contracts were cancelled due to non-payment, representing 12% of all household customers.

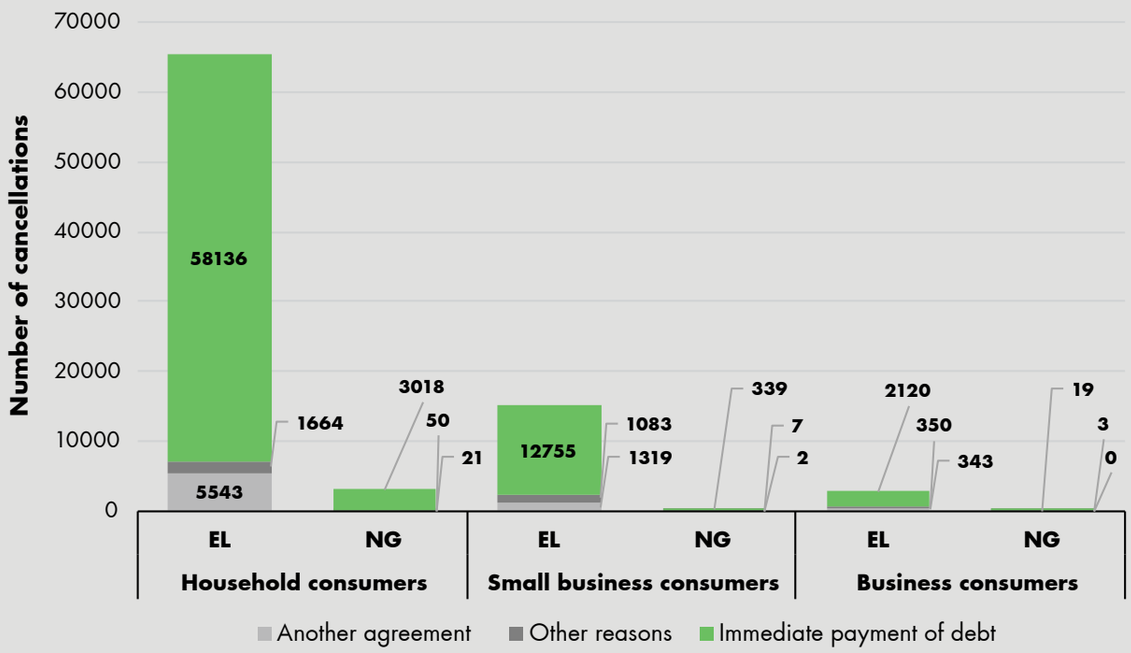
FIGURE 167: TERMINATION OF SUPPLY CONTRACT BY SUPPLIERS



Sources: Suppliers, Energy Agency

In 2019 suppliers withdrew 65,343 cancellations of contracts due to non-payment, of which 58,136 due to immediate repayment of the debt (almost 56%), and 5543 due to agreements concluded by household customers with suppliers, so in these cases no disconnections took place.

FIGURE 168: CANCELLATION OF TERMINATION OF SUPPLY CONTRACT BY SUPPLIERS



Sources: Suppliers, Energy Agency

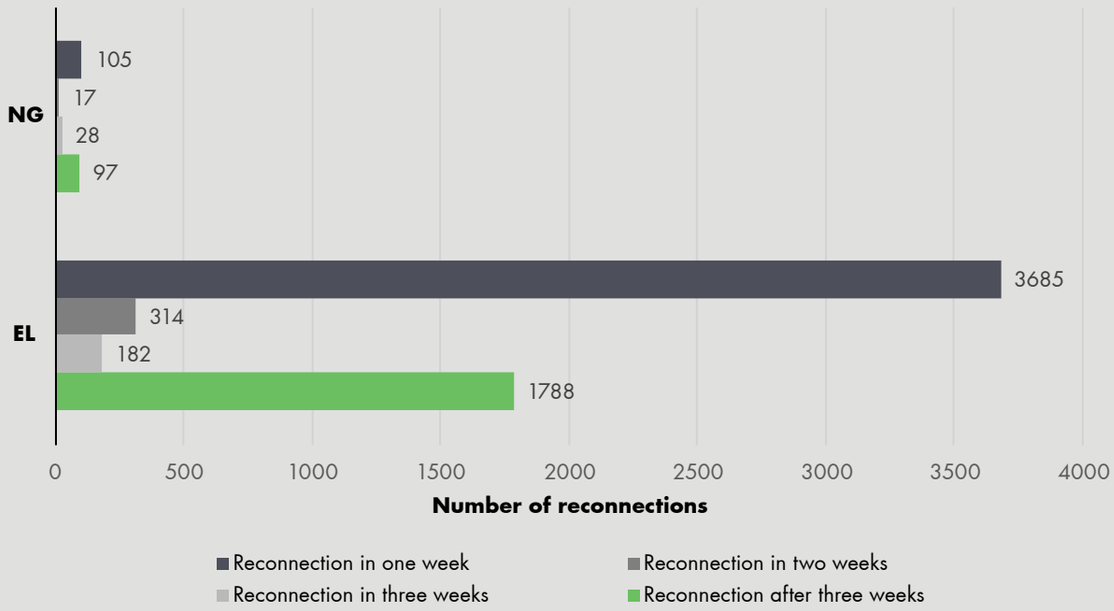
Of the 850,874 household consumers, 37,491 supply contracts were cancelled due to non-payment, which represents 4.4% of all household consumers. According to the electricity DSOs, 7681 household consumers were actually disconnected, representing 0.9% of all household consumers.

The reasons for the termination of the household consumer supply contract due to non-payment, followed by a disconnection, can be:

- late payment culture or
- bad social and financial situation of the household consumer.

Which of the above reasons is in question is difficult to determine on the basis of the available data obtained by the SWC, operators, and suppliers, since accurate and comprehensive data have not been regularly monitored so far.

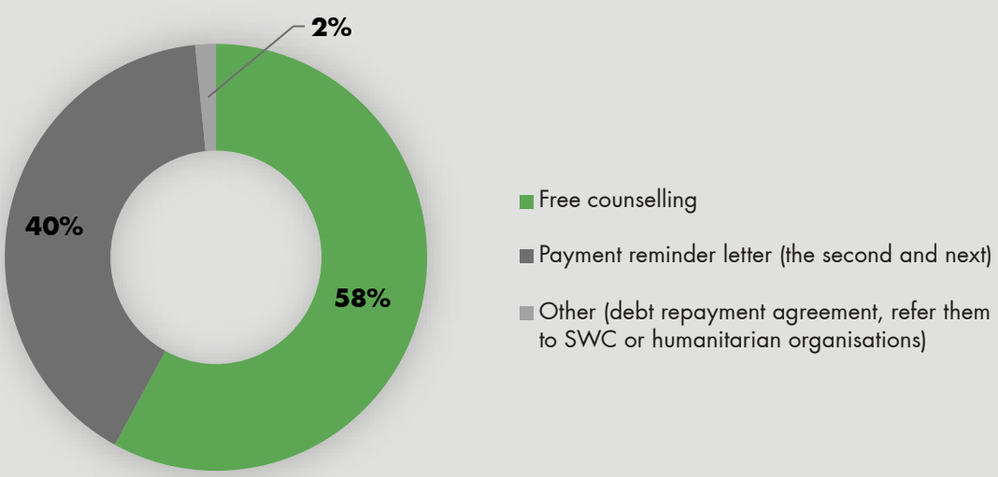
FIGURE 169: RECONNECTION



Sources: Operators, Energy Agency

Figure 169 shows that most household consumers whose supply contracts were cancelled due to non-payment and were disconnected were reconnected to the network within one week after disconnection. The reason for reconnection is the payment of the debt, but we do not know how consumers obtained the money (from their own resources or with measures provided by social institutions or electricity suppliers), as this information is not monitored by the competent authorities. In the context of the submitted questionnaires, suppliers provided data that, in case of disconnection or threat of disconnection, they would advise customers free of charge, enter into a debt settlement, refer them to the SWC or humanitarian organisations, or instruct them about the emergency supply.

FIGURE 170: AID MEASURES TO SECURE ELECTRICITY SUPPLY



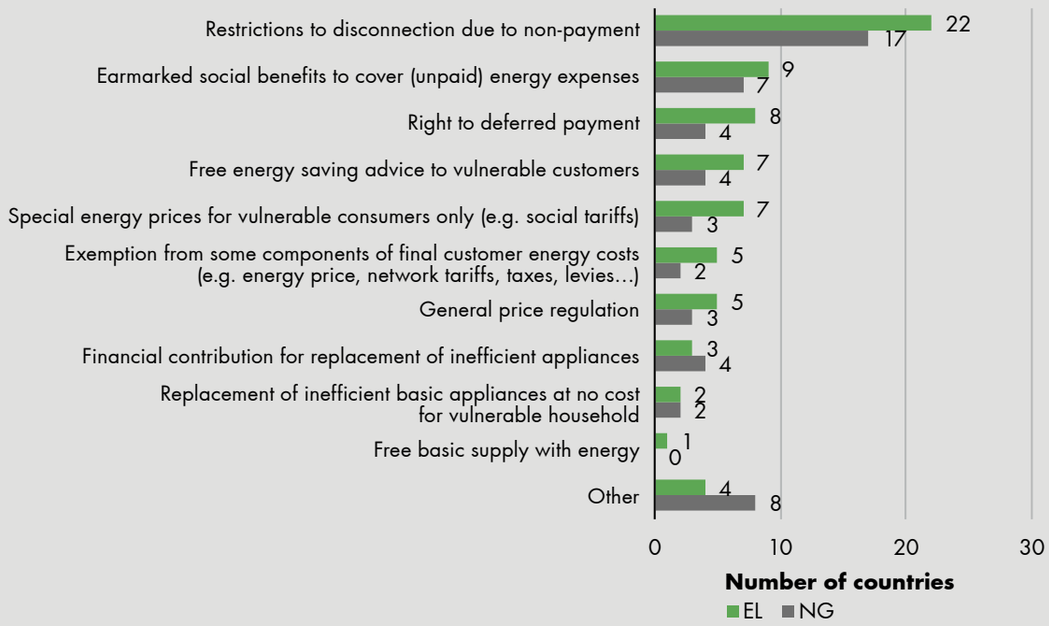
Sources: Electricity suppliers, Energy Agency

Given that in 2019, only five household electricity consumers submitted a request for emergency supply, representing only 0.01% of all customers at risk of disconnection due to cancellation of the supply contract because of non-payment, and the cancellation was not revoked (37,491), it can be concluded that in the event of a threat of disconnection, consumers benefit from other measures (especially social ones). The reasons for this cannot be sought in household consumers' lack of knowledge about the emergency supply, as they are informed of the possibility of emergency supply in any notification of their intended default disconnection, as has also been demonstrated in the control procedures, and they are also contacting their suppliers for advice on emergency supply. Information on the possibilities of using the emergency supply and the criteria to be met are also published by the Energy Agency on its website.

The reason for such a small exercise of the right to emergency supply may also be strict criteria, which are justified since all other electricity consumers or persons liable for network charges have to pay for the costs of emergency supply. The network charge is intended for the continuous and qualitative implementation of electricity transmission and distribution, and therefore the emergency supply should not be a key or the only measure to ensure the protection of vulnerable customers. Proper regulation of this area requires the active participation of all sectors in the state.

Directive 2019/944 also encourages cooperation between the various sectors and, to reduce the number of disconnections due to non-payment of energy, addresses, in the event of emergency supply, other measures that consumers can apply before disconnection. Figure 171 shows the diversity of measures used by the EU Member States in the field of electricity and natural gas to protect vulnerable consumers.

FIGURE 171: MEASURES IN PLACE TO PROTECT VULNERABLE CONSUMERS IN EU MSs



Source: ACER Market Monitoring Report 2018 – Consumer Empowerment Volume

The measures presented are not yet transposed into Slovenian legislation. Taking into account the guidelines laid down in Directive 2019/944 and the purpose and source of financing for emergency supply, a systemic solution should be found to ensure that emergency supply to vulnerable consumers is provided on the basis of State social policy measures (appropriate measures and the source of funding provided by the competent institutions) and not just through energy measures. The first important step in this direction is taken in INECP, where energy poverty is addressed correctly.

Right of complaint and out-of-court settlement of consumer disputes with suppliers and right of complaint with operators

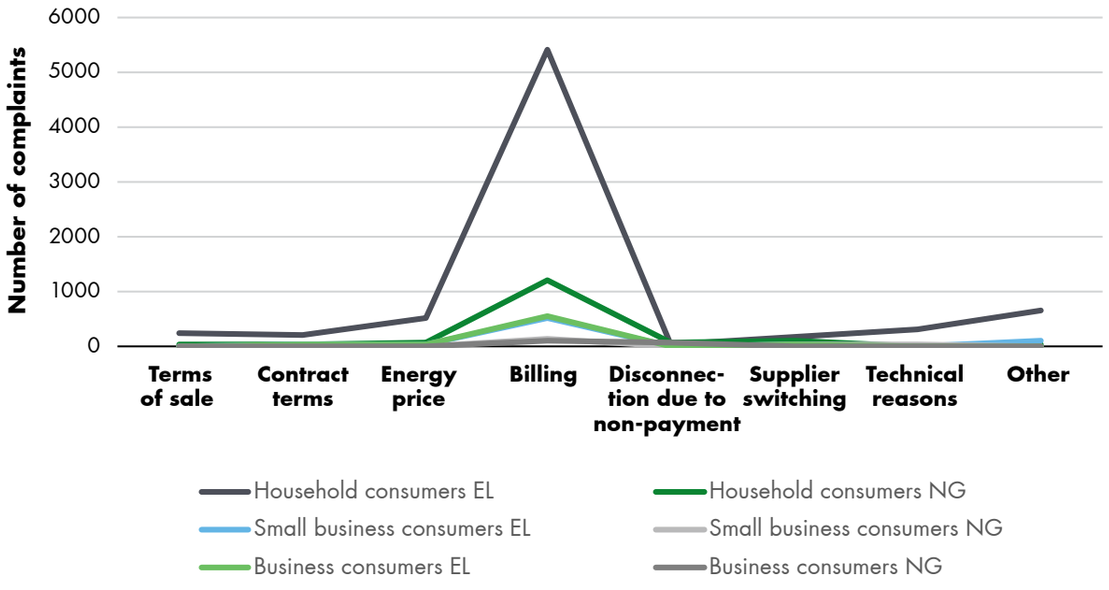
For the reporting year 2019, the Energy Agency prepared new, updated questionnaires for electricity and gas operators and suppliers, to obtain expanded information on the types of consumer complaints against operators and suppliers of electricity and natural gas, about terminations of supply contracts and activities of energy suppliers in case of non-payment of household consumers.

Complaints and out-of-court consumers' dispute settlements with energy suppliers

All consumers have the right to complain to the energy supplier. Disputes between small or large business consumers, on the one hand, and energy suppliers, on the other, are settled at first with an individual supplier and later on before the competent court. For household consumers, the EZ-A also specifically regulates out-of-court dispute resolution with energy suppliers.

Figure 172 shows the number of complaints from electricity and gas consumers against energy suppliers in 2019 by reason of substance. Most complaints were filed by household consumers of electricity and natural gas and related to the bill of the energy supplier. With small business customers and business customers, the highest number of complaints was also related to the bill issued by the energy supplier. In part, these complaints also concerned the measured quantities of energy consumed, on the basis of which the billing is carried out, and for which the electricity and natural gas DSOs, who communicate this information to energy suppliers, are responsible.

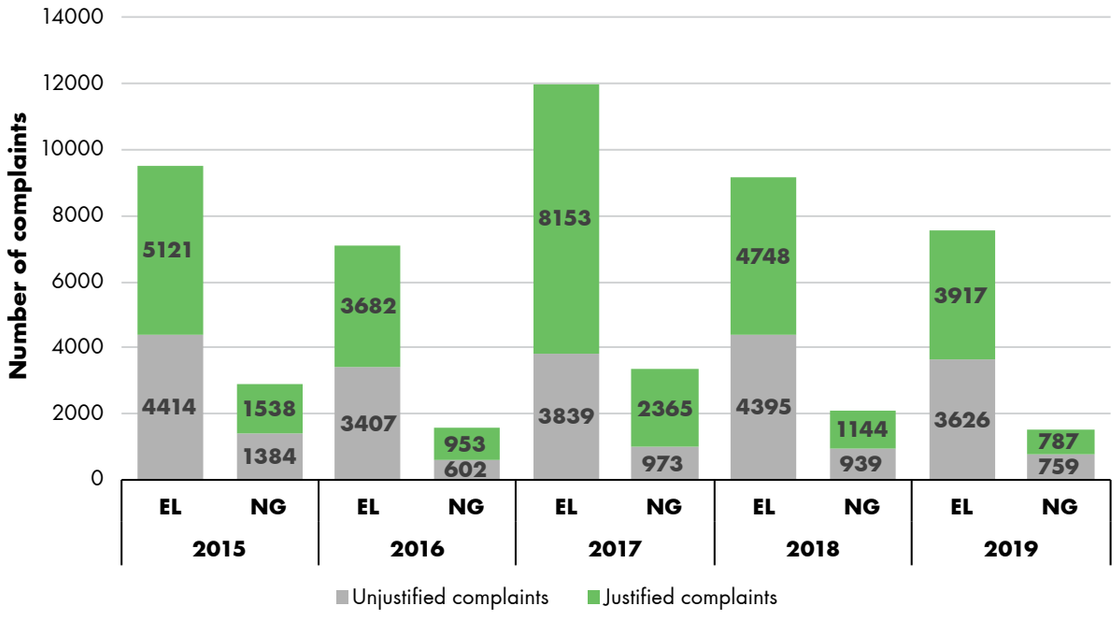
FIGURE 172: CONSUMERS' COMPLAINTS AGAINST SUPPLIERS BY REASONS



Sources: Suppliers, Energy Agency

Figure 173 shows energy suppliers' decisions on complaints by household electricity and natural gas consumers depending on the type of decision. The information received shows that the number of complaints from these consumers against energy suppliers decreased in 2019 compared to previous years, while at least half of all consumer complaints received were justified and that the complaints were granted by energy suppliers.

FIGURE 173: SUPPLIERS' DECISIONS ON THE ELIGIBILITY OF COMPLAINTS BY HOUSEHOLD CONSUMERS IN THE 2015–2019 PERIOD



Sources: Suppliers, Energy Agency

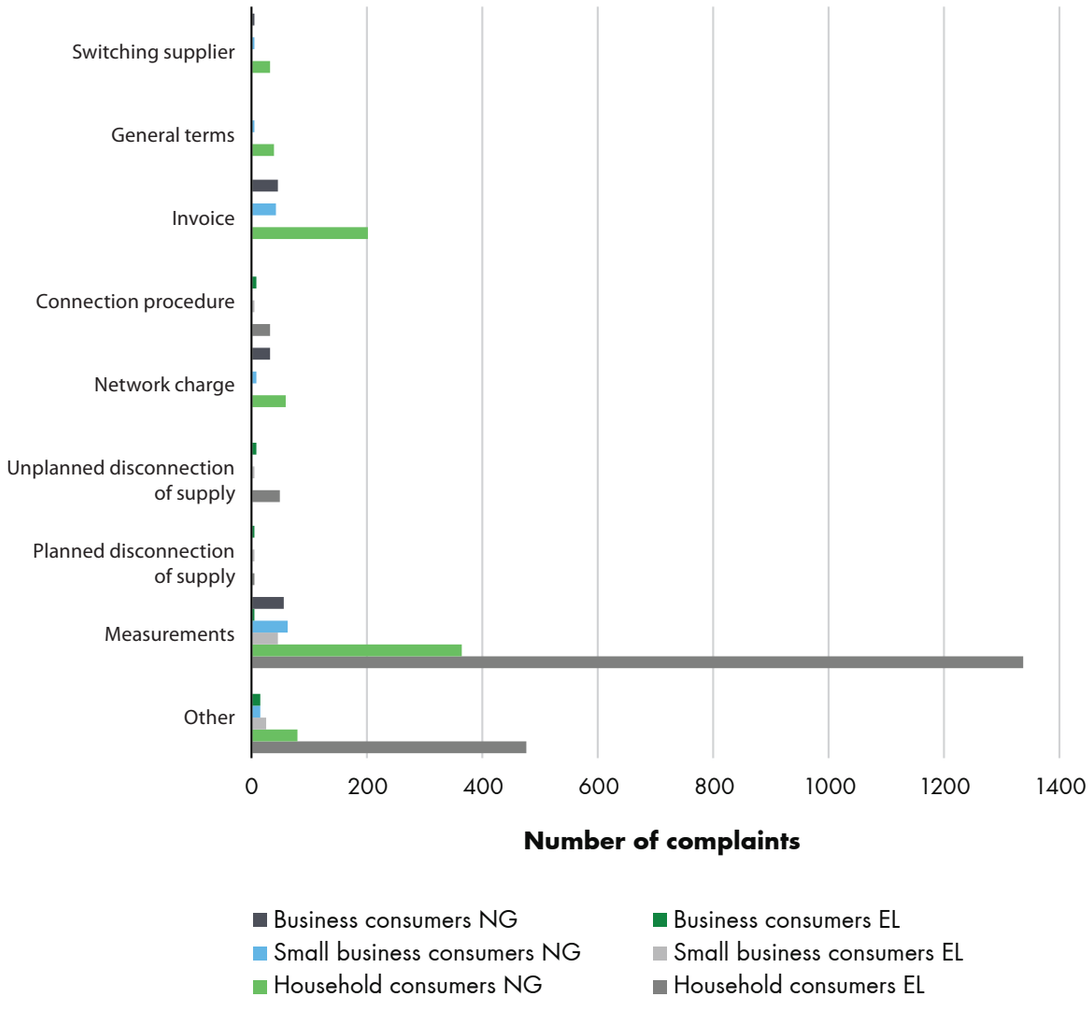
No household consumer of electricity and natural gas whose complaint was unjustifiably rejected by the supplier has proceeded with the out-of-court consumer dispute resolution process, even though consumers are aware of this possibility.

Possible breaches of general consumer protection rules in Slovenia are also monitored and sanctioned by the Market Inspectorate of the Republic of Slovenia.

Consumer complaints to electricity and natural gas distribution system operators

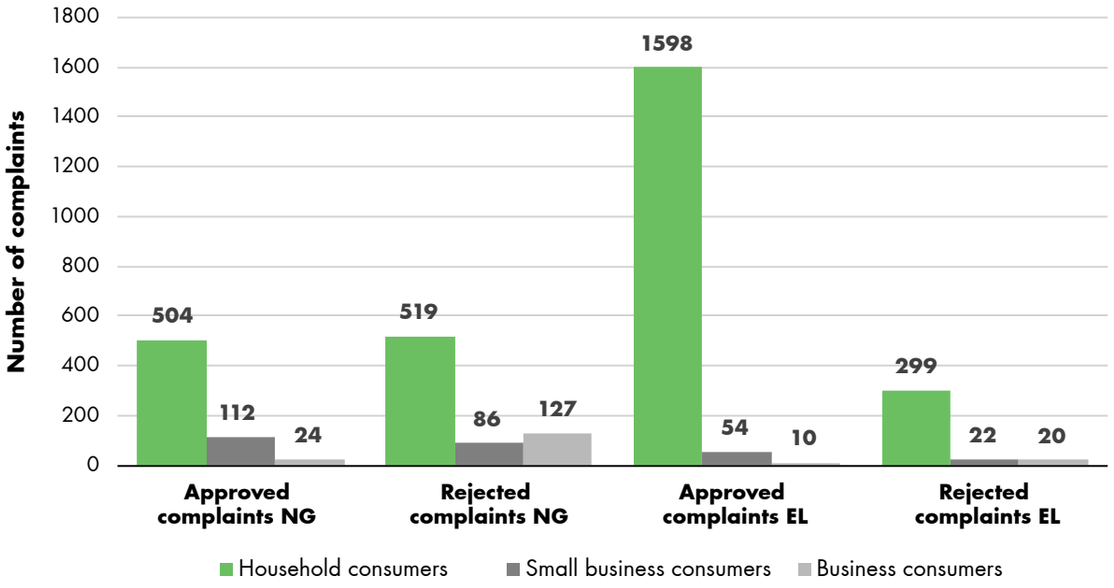
In the event of disagreement with the operator relating to the bill, measurement, network charges, interruption, etc. (more in the figure below), consumers have the right to submit a complaint directly to the operator of the distribution system of electricity or natural gas. Where consumers fail to resolve complaints directly with electricity or natural gas distribution system operators, disputes are being settled by the Energy Agency in accordance with the procedures described in more detail in the following chapter. A total of 2003 complaints from electricity consumers were submitted directly to the distribution system operator in 2019, 341 of which were rejected, and a total of 1372 complaints from natural gas consumers, 732 of which were rejected. Most complaints to electricity and natural gas distribution system operators in 2019 were submitted by household consumers (1023 household natural gas consumers and 1897 household electricity consumers).

FIGURE 174: NUMBER OF CONSUMERS COMPLAINTS TO OPERATORS BY REASON



Sources: Operators, Energy Agency

FIGURE 175: NUMBER OF COMPLAINTS DEALT WITH BY OPERATORS



Sources: operators, Energy Agency

Figure 175 shows the number of approved and rejected complaints against electricity and natural gas distribution system operators.

For 2019, the Energy Agency also started monitoring complaints against the electricity distribution system operator from the perspective of the grounds of complaint, which had been monitored in the past in the field of natural gas. Most complaints in the field of electricity concerned measurements, supply interruptions and the connection procedure, and in the field of natural gas, measurements, network charges and bills issued.

The right to protection of rights in the administrative procedure

The right to protect consumers' rights in the context of the administrative procedure is also extended to energy suppliers by the amendment of the EZ-1. In addition to electricity or natural gas consumers, suppliers of electricity or natural gas may submit a request to resolve a dispute before the Energy Agency. These are disputes brought before the Energy Agency by those eligible entities in relation to the transmission system operators of electricity and natural gas, distribution system operators of electricity and natural gas, or before the operator of the electricity market, subject to the prior implementation of the procedure laid down by the EZ-1 before submitting the request to the Energy Agency.

The disputes related to infringements of the Decree on self-supply of electricity from renewable energy sources are also added to the disputes within the competence of the Energy Agency relating to access to the system, the amount charged for the use of the system, breaches of the system's operating instructions, and the discrepancies identified.

Administrative procedures before the Energy Agency are quick and free of charge. A request for dispute settlement is decided within two to four months. Administrative applications (requests for decision) and final decisions of the Energy Agency (decision, conclusion) are free of administrative fees.

In 2019, the Energy Agency decided in 41 disputes between electricity system users and an electricity operator, in 13 cases at first instance (of which five cases were transferred from the pre-

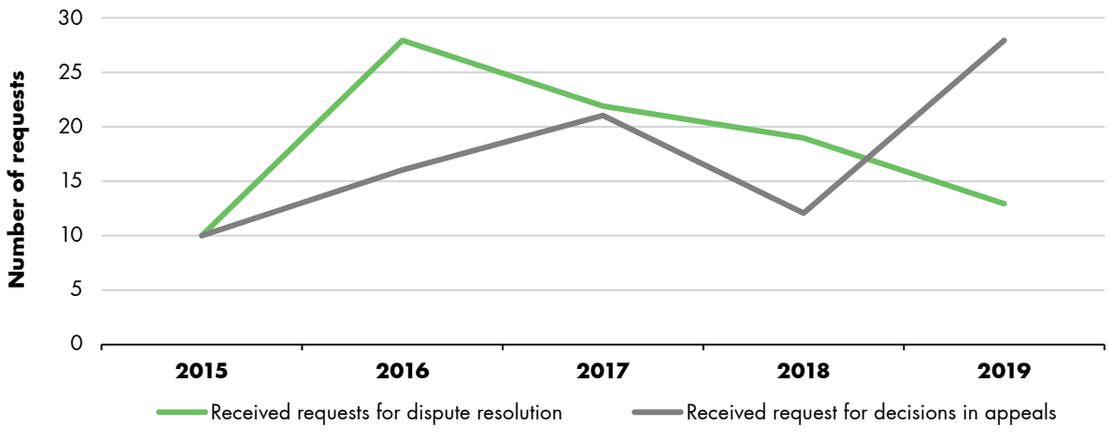
Since 2019 the Energy Agency decides in disputes between suppliers and operators

vious period), and 28 cases at second instance – complaints concerning connection approval. None of the issues concerned the subject of natural gas. There was an increase in the number of complaints against approval for the connection of generating installations for self-supply of electricity since 12 of the 28 complaints were related to the connection of self-supply production facilities.

Figure 176 shows the ratio between the received requests about which the Energy Agency decided at first and second instance over the last five years.

An increase in complaints concerning the connection of production facilities for self-supply

FIGURE 176: ENERGY AGENCY'S DECISIONS IN DISPUTES AND APPEALS IN THE 2015–2019 PERIOD



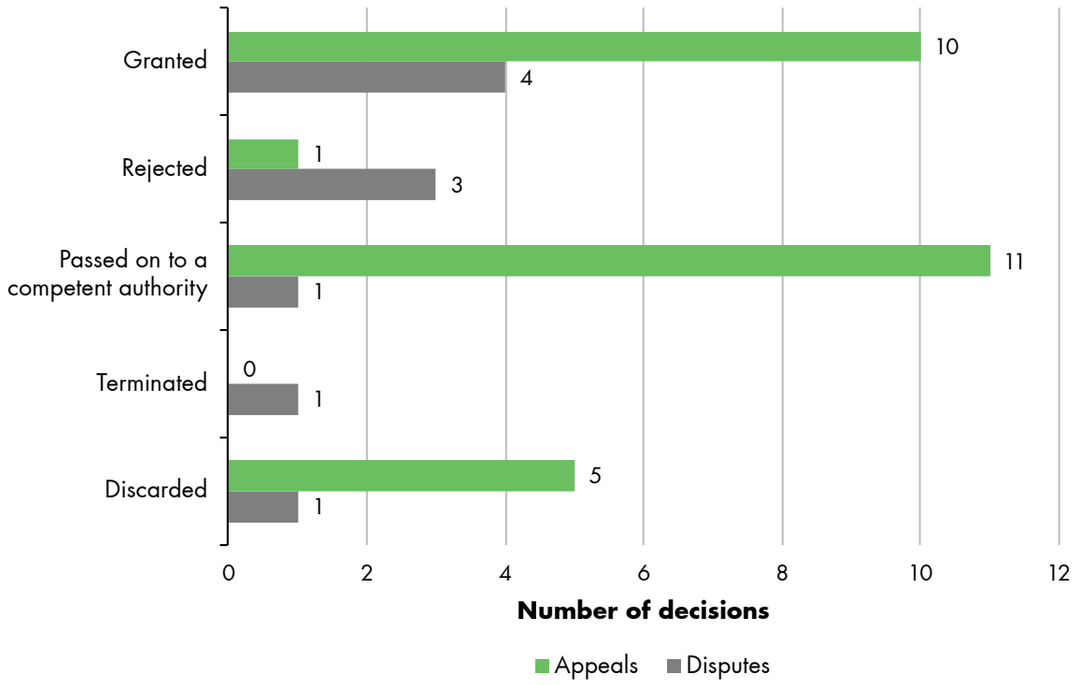
Source: Energy Agency

Four out of the nine requests for decision-making in disputes concerned unjustified consumption. In most of these disputes, the applicants' requests were rejected as the electricity DSO had proved unjustified consumption, and the price resulting from such consumption was correctly calculated in accordance with executive regulations. The remaining disputes concerning access to the metering point due to readings from the meter, electricity consumption billing, and disconnection of the metering point.

The Energy Agency also protects consumers' rights by resolving complaints submitted by consumers against decisions of electricity or natural gas DSOs relating to the granting of connection approval.

In deciding on appeals against the connection approval in the field of electricity, the Energy Agency decided on procedural irregularities (a violation of the rules of administrative procedure) in most cases, and in five cases the contested act (connection approval) was abolished by a supervisory right because it was issued by a non-responsible body in substance (the position of the Administrative Court in Judgment No I U 1606/2016-7). The decisions of the Energy Agency were subject to an administrative dispute by consumers in five cases. No complaints were brought against the connection approval of gas to the Energy Agency in 2019.

FIGURE 177: ENERGY AGENCY'S DECISIONS IN DISPUTES AND APPEALS



Source: Energy Agency

The right to safe and reliable operation of the system and quality of supply

All consumers have the right to the safe and reliable operation of the system and to the quality supply of electricity and natural gas provided by the electricity and natural gas system operators in accordance with the system operating instructions to which the Energy Agency gives its approval.

At the systemic level, the quality of supply regulation seeks to improve or maintain the level already reached at optimal costs. In addressing the quality of electricity supply, various activities are carried out, such as monitoring, reporting, and data analysis of the following observed dimensions: power continuity, commercial quality, and voltage quality. In addition to the above, the Energy Agency shall also carry out the regulation of the quality of supply through the publication of data and analyses published in the report on the quality of electricity supply. In the field of commercial quality, we record maintaining of the level of service achieved, compared to the previous year; however, the share of eligible complaints increased. As regards the voltage quality, the number of complaints received and justified has increased. More on this can be found in the chapter on voltage quality in electricity.

In 2019, natural gas system operators continued to ensure reliable and safe operation for smooth and high-quality supply by carrying out regular and extraordinary maintenance work.

More on this can be found in the chapter on the safe and reliable operation and the quality of electricity supply and the chapter on safe and reliable operation and quality of natural gas supply.

Energy suppliers also exceeded the savings targets in 2019

51% of achieved savings generated by electricity and liquid fuels suppliers

Energy efficiency - lower costs, less pollution,

71% of savings achieved with four measures

By **138,117** tons lower annual CO_2 emissions

181 large companies comply with the obligation to carry out energy audits

greater security of energy supply

ENERGY EFFICIENCY

Energy efficiency is an important factor in ensuring the sustainable use of energy resources. It is at the heart of the EU's energy strategy aiming to increase energy efficiency by 20% by 2020 and by at least 32.5% by 2030 compared to the base year 2007. Slovenia has in its second action plan, which is in line with Directive 2012/27/ EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency (Directive 2012/27), set a strategic target for the period 2017–2020, according to which the use of primary energy in 2020 will not exceed 82.86 TWh. In 2020, Slovenia also adopted the Integrated National Energy and Climate Plan and, among other things, set key strategic goals so that primary energy consumption will not exceed 73.9 TWh by 2030, and energy efficiency will increase by at least 35% compared to the 2007 baseline scenario.

Slovenia intends to achieve the goals through a series of measures to promote efficient energy use in all sectors, including transport and the sectors of energy conversion, distribution, and transmission, including networks for efficient district heating and cooling. In accordance with the action plan, the implementation of these efficient use measures is expected to save 4040 GWh of final energy consumption by 2020, 1481 GWh in transport, and 1201 GWh in households.

Slovenia's success in achieving energy efficiency goals compared to the EU

In April 2019, the European Commission published an Assessment of the Member States' progress towards the national energy efficiency targets by 2020[76], which summarises data from the Member States' national reports on cumulative energy savings achieved in 2014–2016. The assessment shows that Slovenia is among the 15 countries that meet the cumulative obligation to save final energy consumption on an ongoing basis. Slovenia belongs to the group of nine states that have established a combined method of achieving energy savings, namely, we achieve part of energy savings through the system of mandatory energy savings and part through alternative energy efficiency policy measures (Table 39).

[76] https://ec.europa.eu/transparency/regdoc/rep/1/2019/SL/COM-2019-224-F1-SL-MAIN-PART-1.PDF

TABLE 39: ACHIEVING ENERGY EFFICIENCY POLICY OBJECTIVES IN THE EU MEMBER STATES

Member State	Achieving energy efficiency policy objectives		Achieved energy savings in 2016 (GWh)	Progress towards reaching the 2020 energy savings
	System of the required energy savings	Alternative measures		
Austria	*	*	4524.07	37%
Belgium		*	2628.38	24%
Bulgaria	*		581.5	9%
Croatia		*	174.45	5%
Cyprus		*	23.26	6%
Czech Republic		*	1744.5	11%
Denmark	*		2977.28	35%
Estonia		*	895.51	47%
Finland		*	6536.06	113%
France	*	*	10967.07	21%
Germany		*	30668.31	24%
Greece			465.2	12%
Hungary		*	837.36	17%
Ireland	*	*	1349.08	28%
Italy	*	*		18%
Latvia	*	*	174.45	7%
Lithuania			267.49	19%
Luxembourg	*			5%
Malta	*	*		24%
Netherlands		*	6815.18	45%
Poland	*			22%
Portugal		*	337.27	8%
Romania		*		24%
Slovakia		*	651.28	22%
Slovenia	*	*	430.31	30%
Spain	*	*	5977.82	20%
Sweden		*		33%
United Kingdom	*	*		22%

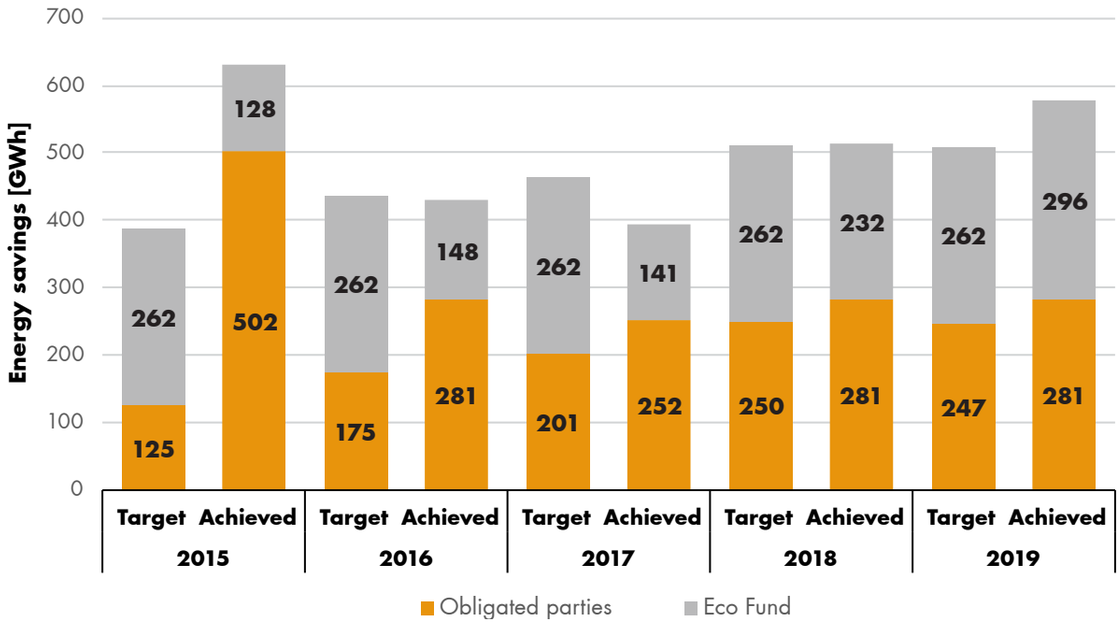
Source: Report from the Commission to the European Parliament and the Council 2018 assessment of the progress made by Member States towards the national energy efficiency targets for 2020 and towards the implementation of the Energy Efficiency Directive

Unachieved targets
Partially achieved targets
Achieved targets

The energy efficiency obligation scheme and alternative measure

The two most important measures for meeting energy efficiency targets in Slovenia are the system of mandatory achievement of energy savings, which binds energy suppliers to final customers, and an alternative energy efficiency policy measure implemented by the Eco Fund. The savings achieved with these measures since 2015 represent almost 85% of all achieved savings in final energy consumption in Slovenia. Within the system of obligatory achievement of energy savings and an alternative measure, Slovenia must achieve 1.5% annual savings in final energy consumption. Half of the stated target savings, i.e. 0.75%, must be met by energy suppliers to end consumers (excluding liquid fuel suppliers, who must deliver 0.25% of final energy consumption savings for petrol and diesel); the other half of the target savings must be achieved by an alternative measure implemented under the Eco Fund's energy efficiency programme. The programme is funded by funds collected from end energy consumers as part of a contribution to energy efficiency.

FIGURE 178: COMPARISON OF TARGET AND ACHIEVED TOTAL ENERGY SAVINGS



Sources: Eco Fund Annual Reports for 2015, 2016, 2017, 2018, and 2019, National Energy Efficiency Action Plan 2017–2020, Energy Agency

Slovenia is successful in reaching the cumulative energy savings target by implementing energy efficiency measures within the energy efficiency obligation scheme and the alternative measure of the Eco Fund, as shown in Figure 178. In 2019, energy suppliers exceeded the annual target savings for end consumers. This value is determined as a percentage of energy sold to end consumers in the previous year and has been gradually increasing since 2015, but only in 2018 did it reach 0.75%. Using alternative measure, the target savings, which amount to 262 GWh per year since the implementation of the scheme, were exceeded for the first time in 2019. In 2019, Slovenia achieved higher energy savings for the first time since the establishment of the energy efficiency obligation scheme. Obligated parties can cover target energy savings with surpluses of savings from previous years.

Target energy savings by obligated parties

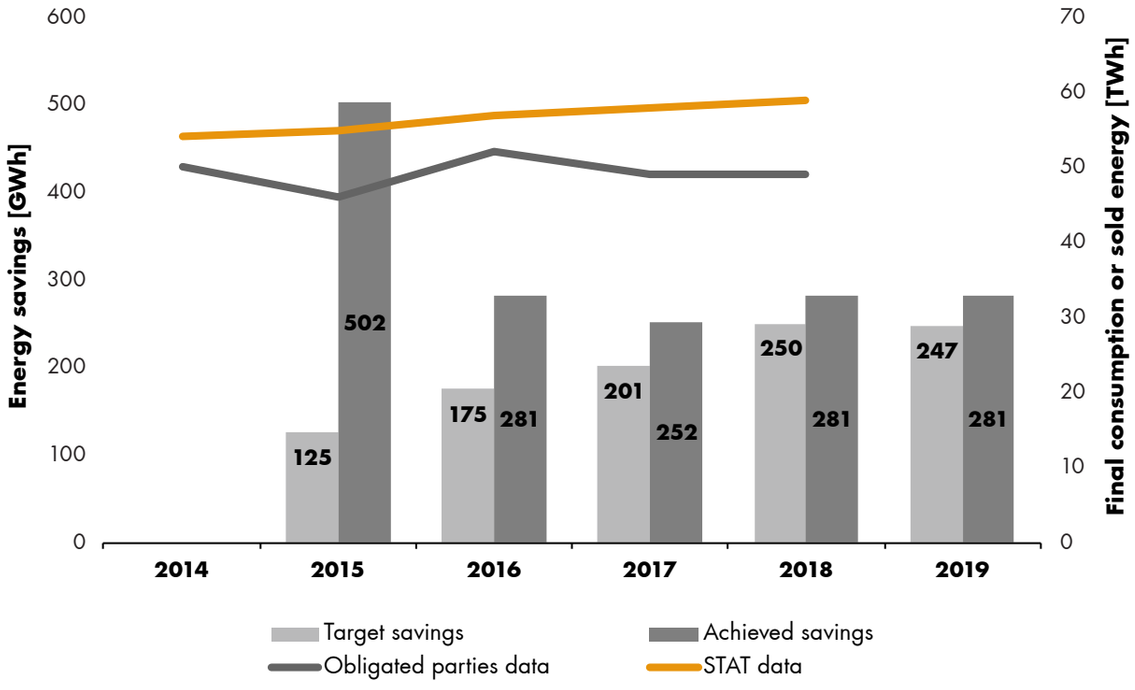
Energy suppliers also exceeded the savings targets in 2019

Obligated parties are the suppliers of electricity, heat, gas and liquid and solid fuels to final customers, which also had to contribute to the implementation of energy efficiency measures in 2019 at the annual level to provide energy saving to the extent of 0.75% of sold energy to final customers in 2018. An exemption applies to suppliers of liquid fuels, which must by 2020 achieve savings every year to the extent of 0.25% of sold petrol and diesel fuel to final customers in the previous year.

According to the reported data, obligated parties sold the most energy to end consumers in 2016, namely 51.6 TWh, in 2017 they reported that they sold 48.6 TWh, and 48.5 TWh in 2018. Based on the amount of energy sold in 2018, the target savings in 2019 amounted to 247 GWh, which is 0.75% of sales of all energy sources, except liquid fuels, for which obligated parties had to achieve 0.25% savings in relation to the quantities sold in 2018. In equal shares compared to sold quantities of energy in 2017, obligated parties had to provide savings in 2018, and in 2016 and 2017, the savings in the extent of 0.5% of sold energy to end consumers, except for liquid fuels, where the share of target savings in these years also amounted to 0.25%. In 2015, all obligated parties had to achieve a 0.25% share of savings. The volume of energy products sold to end consumers and a comparison with Statistical Office data on final energy consumption and target and achieved savings in the 2015–2019 period are shown in Figure 179.

Most of the energy in 2019 was supplied by suppliers of liquid fuels, namely 25,697 GWh. Thus, their target savings compared to the defined shares for 2019 amounted to 88 GWh.

FIGURE 179: COMPARISON OF FINAL ENERGY CONSUMPTION OR SOLD ENERGY BETWEEN LIABLE ENTITIES DATA AND STAT IN THE 2014–2018 PERIOD AND TARGET AND ACHIEVED ENERGY SAVINGS OF LIABLE ENTITIES IN THE 2015–2019 PERIOD



Sources: Energy Agency, STAT

By contributing to the implementation of energy efficiency measures, obligated parties achieved 281 GWh of energy savings in 2019, thus exceeding the target savings this year as well, i.e. 0.75% of energy sales (or 0.25% of the sale of liquid fuels) to end consumers for 34 GWh. In all previous years, since the scheme came into force, obligated parties have also exceeded the total target energy savings.[77] Liable entities can also use the surplus of savings over the target value from the previous three years to prove their target savings in each year.

Activities of liable entities to achieve target energy savings

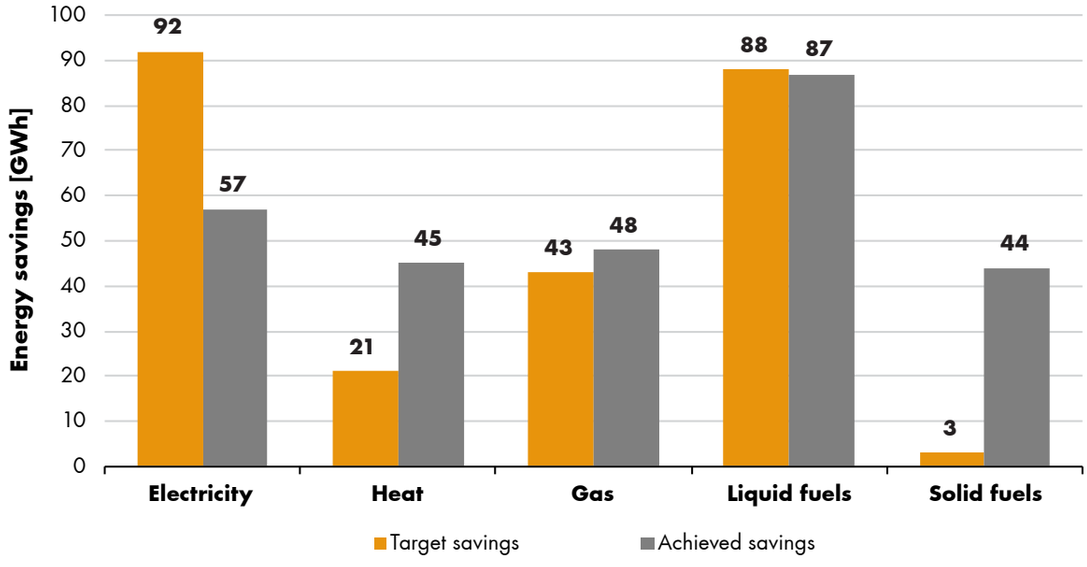
In 2019, 239 liable entities reported to the Energy Agency on energy savings. Out of these, 148 entities fully achieved their energy target savings–24 with surpluses from the previous years, 41 through participation in the implementation of measures, and the rest of them with their contribution to the implementation of the measures.

In 2019, among the liable entities that submitted the report suppliers of solid fuels prevailed. Reports were submitted by 76 suppliers of solid energy products, which is 28.5% of all entities that provided the report, while their target savings in relation to the reported quantities of energy sales amount to only 1.2% of target savings. Also, for 2019, due to the difficulties in identifying these liable entities according to energy consumption statistics, it is likely that not all suppliers of solid energy products were included in the system.

Figure 180 shows that the most savings were generated by electricity and solid fuel suppliers, which together produced 144 GWh of savings representing 51% of all achieved savings, but nevertheless, with achieved savings in 2019 they did not fulfil their target savings for this year. Heat suppliers achieved 45 GWh of savings, and gas suppliers 48 GWh. With the savings they have made, both have exceeded their target energy savings. Solid fuel suppliers achieved savings of 44 GWh and thus significantly exceeded the target savings, which is only 3 GWh in 2019, according to data on the quantities of energy products sold in 2018.

51% of achieved savings generated by electricity and liquid fuels suppliers

FIGURE 180: COMPARISON OF FINAL ENERGY CONSUMPTION OR SOLD ENERGY BETWEEN LIABLE ENTITIES DATA AND STAT IN THE 2014–2018 PERIOD AND TARGET AND ACHIEVED ENERGY SAVINGS OF LIABLE ENTITIES IN THE 2015–2019 PERIOD



Sources: Energy Agency, STAT

[77] In 2019, the Energy Agency checked a part of the reported savings of liable entities for 2018 and, in some cases, found inadequate use of methodological basis for calculating savings. The calculations and savings data have been amended accordingly and included in this Report. Due to the above, the data for 2018 differ from the data in the Report on the Energy Sector in Slovenia in 2018.

Liable entities who fail to deliver their energy savings target to contribute to the implementation of energy efficiency measures can fulfil their obligation by paying financial compensation to the Eco Fund for each MWh of unachieved energy savings. The value of the compensation shall be determined annually by the Eco Fund in accordance with the Decree on Energy Savings Requirements. For 2019, the compensation amounted to 209.44 EUR/MWh.

Energy savings by individual measures

Energy savings have been achieved through the implementation of energy efficiency measures in the industrial, services, and public sector, as well as in the energy conversion, distribution, and transmission sectors. In the context of individual measures, except for measures where savings have to be demonstrated by the executed energy audit, the savings are not measured but calculated in accordance with the methodologies for calculating savings for each measure set out in the Rules on methods for determining energy savings.

TABLE 40: ENERGY SAVINGS BY INDIVIDUAL MEASURES IN THE 2015–2019 PERIOD

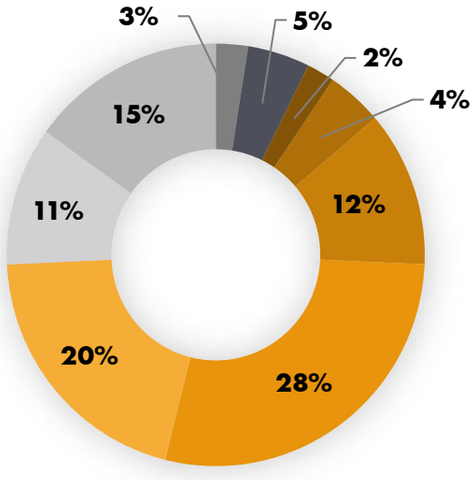
Measure	2015 (GWh)	2016 (GWh)	2017 (GWh)	2018 (GWh)	2019 (GWh)
Complete renovation of buildings	0.02	0.6	0.12	15.94	6.97
Replacement of boilers using all types of fuels with new high-efficiency boilers using gas	7.60	13.57	22.81	14.79	13.48
Replacement of boilers using all types of fuels with new high-efficiency boilers using woody biomass	1.57	2.39	0.82	1.48	2.87
Replacement of electric heating system with central heating with new high-efficiency gas boilers	0.00	0.01	0.00	1.45	0.00
Installation of heat pumps for heating	2.72	0.34	1.65	3.46	6.06
Comprehensive renovation of heat station	73.49	3.08	0.75	1.68	0.49
Connecting buildings to the district heating system	2.25	4.68	5.82	2.55	2.23
Renovation of the distribution network for district heating	3.92	4.37	2.91	4.54	3.75
Systems for the recovery of waste heat in buildings	0.00	9.16	1.95	0.62	0.04
Optimisation of technological processes, which is based on implemented energy audit in small and medium-sized enterprises	15.27	9.72	3.92	4.78	12.13
Adding fuel additives	195.52	99.07	45.20	54.43	33.37
High-efficiency cogeneration	37.66	9.84	11.92	66.16	78.92
Energy-efficient lighting systems in buildings	14.49	15.49	24.08	42.46	57.77
Renovation of outdoor lighting systems	0.07	0.00	2.74	2.22	0.27
Energy-efficient household appliances	0.04	0.06	0.10	0.92	0.12
Energy-efficient electric motors	0.21	0.06	1.64	1.58	0.07
Use of frequency converters	1.12	0.37	5.60	3.79	1.20
Implementation of energy management systems	98.34	92.94	103.81	9.71	29.79
Use of excessive heat in industry and service sectors	0.00	0.00	6.00	22.58	0.26
Other	47.10	15.98	9.81	28.91	30.96

Source: Energy Agency

Data in Table 40 and Figure 181 show that in 2019 the most energy savings were achieved with the following measures: installation of the high-efficiency cogeneration, introduction of energy-efficient lighting systems in buildings, adding fuel additives and implementation of energy management systems. Together, these measures achieved 199.85 GWh or 71.12% of all savings this year. For further development of energy efficiency measures, the growing trend of savings achieved with measures that generate the most savings, i.e., the introduction of high-efficiency cogeneration and the installation of energy-efficient lighting systems in buildings, is particularly encouraging. However, the final energy savings by adding fuel additives are continuing to decrease. This is the result of a change in the method for determining energy savings through this measure and with that the recognised saving factor in the chosen year, which is 1% for 2019 and 2020 and not 1.2% as before.

71% prihrankov doseženih s štirimi ukrepi

FIGURE 181: SHARES OF ENERGY SAVINGS ACHIEVED THROUGH INDIVIDUAL MEASURES



Source: Energy Agency

Based on methodologically defined calculations to reduce CO_2 emissions for each type of measure, the measures implemented under the Energy-Efficiency Obligation Scheme have reduced annual CO_2 emissions by 138,117 tons, the largest part in industry where the highest savings have been achieved, as shown in Figure 182.

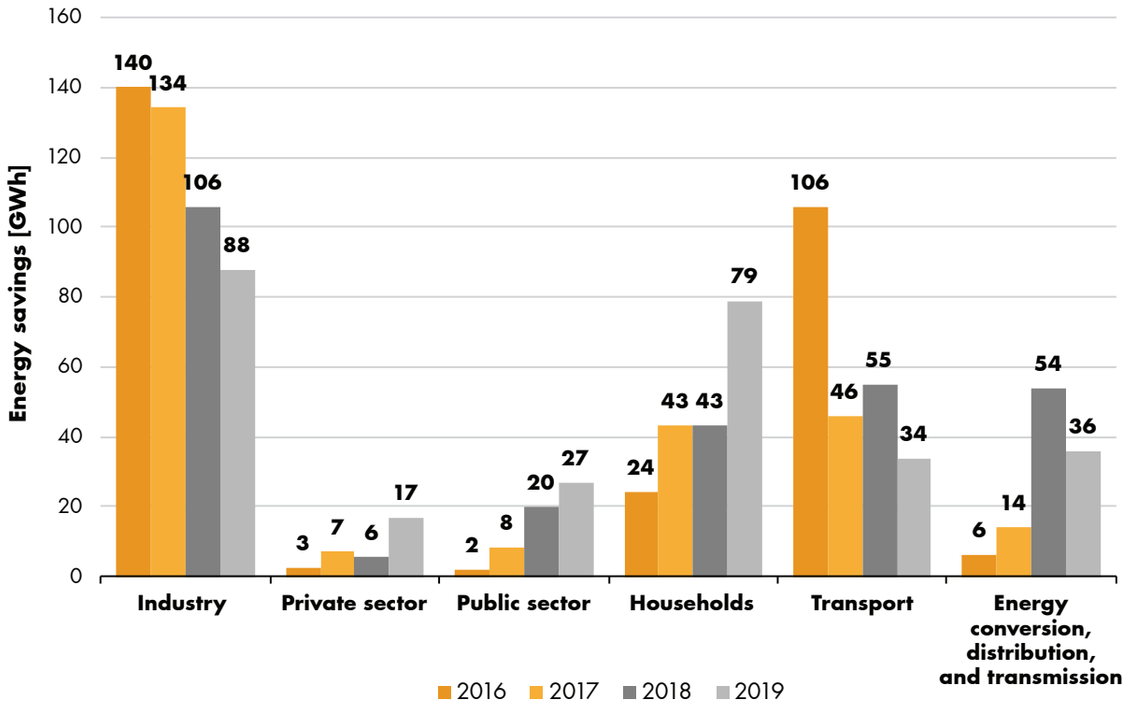
Annual CO_2 emissions lower by **138,117** tons

Energy savings by sector

In 2019, liable entities achieved the highest savings in industry and households, a total of 167 GWh, which is 59.4% of all achieved final energy savings in 2019; in industry this was mostly by implementing energy management systems and in households by using energy-efficient lighting systems in buildings. The lowest savings were generated in the private sector, i.e., 17.4 GWh, which is 6.2% of all savings. In this sector, most of the savings were generated by using high-efficiency cogeneration.

A comparison of the energy savings achieved by sectors over the period 2016–2019 shows that the greatest savings were achieved in industry over the whole period, and least in the private and public sectors. However, savings in transport are decreasing as a result of the revised method for calculating savings and corrections. This is due to identified errors in applying the method to add fuel additives

FIGURE 182: ENERGY SAVINGS BY SECTOR IN THE 2016–2019 PERIOD



Source: Energy Agency

Energy savings achieved under the alternative measure

As an alternative measure, Slovenia implemented the Eco Fund for the Energy Efficiency Improvement Programme as part of the combined system to achieve the target share of final energy savings. The Eco Fund must achieve additional savings of 262 GWh per year in individual years of the period 2014–2020, representing 0.75% of the indicative, annual savings target, or half of the energy savings.

The Eco Fund is achieving energy savings through three systems, as shown in Table 41, by leading investments in energy-efficient measures, awarding grants for the implementation of energy-efficient measures, and an energy advisory network for households, known as Ensvet. In doing so, most savings are achieved with financial incentives – grants awarded under the Eco Fund's calls for tenders.

TABLE 41: ACHIEVED ENERGY SAVINGS IN THE ECO FUND PROGRAMME FOR IMPROVING ENERGY EFFICIENCY IN THE 2015–2019 PERIOD

	2015	2016	2017	2018	2019
Credited investments (GWh)	5.0	7.5	10.6	23.8	23.2
Non-refundable grants (GWh)	123.0	126.6	116.8	190.3	272.4
Energy advisory for public (GWh)	0.0	13.7	13.6	18.1	23.2

Sources: Eco Fund annual reports for 2015, 2016, 2017, 2018, and 2019

Most of the savings made by the Eco Fund are achieved through actions undertaken by individual investors in households and companies and partly financed by grants awarded through calls for tender from the Eco Fund. In 2018 and 2019, the highest energy savings were achieved by the installation of heat pumps and thermal insulation of facades, a total of 113 GWh in 2018, representing 48.7% of total savings, and 157.7 GWh in 2019, representing 53.3% of the total energy savings of the Eco Fund in 2019.

TABLE 42: ENERGY SAVINGS BY MEASURES IN 2018 AND 2019, PARTLY FINANCED BY ECO FUND GRANTS

	2018 (GWh)	2019 (GWh)
Wood biomass boilers	18.3	30.6
Installation of heat pumps	63.1	102.7
Self-supply - NET METERING	10	16.3
Installation of joinery	2.9	3.3
Thermal insulation of the facade	49.9	55
Thermal insulation of the roof	18	15.2
Fossil fuels boilers	10.9	31.7
Public buildings	3.7	1.9
Energy audits	3.3	1.3
Motor vehicles	3.2	2.5
Other measures	6.8	11.8

Source: Eco Fund

Energy audits

Large companies[78] are subject to an energy audit every four years and report about the audit to the Energy Agency. An energy audit is a systematic review and analysis of energy consumption in all segments of the company's operation, which includes energy consumption for buildings, processes, transport, and operation of people, to identify energy flows and potential for improving energy efficiency. The minimum requirement of the energy audit is a detailed review of the energy use of buildings, technological processes or industrial installations, transport, and possible measures to improve energy efficiency at the final customer. The energy audit should be based on actual, measured, demonstrable, and operational energy consumption data for all energy sources.

In 2019, the Energy Agency established a register of large companies in which, on the basis of data from Slovenian Business Register, it determined 315 large companies that fulfil the conditions for large companies according to the Companies Act and have to carry out the energy audit every four years.

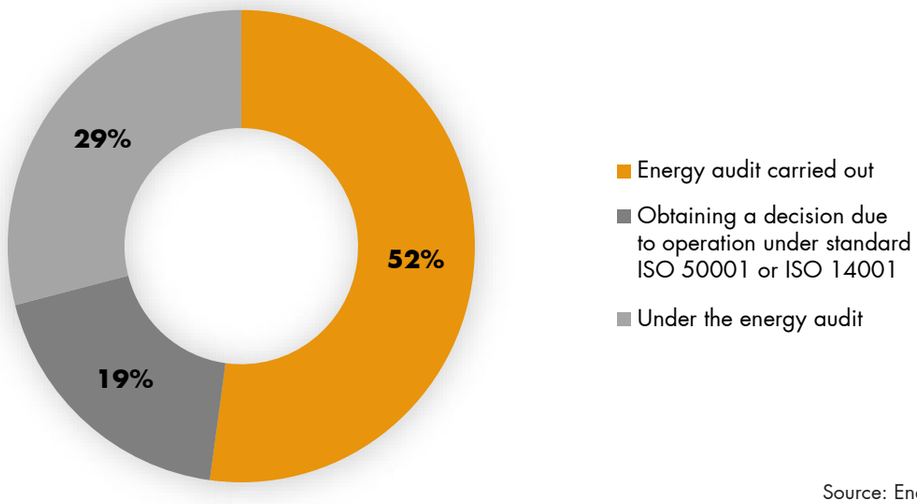
Companies fulfil the mandatory energy audit by:

- carrying out an energy audit in line with standards SIST ISO 50002 or the series of standards SIST EN 16 247-1, SIST EN 16 247-2, SIST EN 16 247-3 and SIST EN 16 247-4) or
- obtained energy management certificates in line with standard SIST EN ISO 50001 or the environmental management system in accordance with standard SIST EN ISO 14001, whereby the minimum inspection under Annex A, point A3 of standard SIST ISO 50002, which has to be carried out every four years. Based on the submitted certificate, the Energy Agency issues a decision on the fulfilment of the energy audit obligation.

In 2019, the Energy Agency verified the obligation to carry out energy audits and concluded that it was met by 181 large companies. Of these, 133 companies carried out an energy audit. However, the Energy Agency issued a decision to 48 companies on the completion of the implementation. Another 74 companies have joined the energy audit, but the procedures are not yet completed, as the audit lasts from three to six months on average.

181 large companies comply with the obligation to carry out energy audits

FIGURE 183: ENERGY AUDITS AT LARGE COMPANIES



Source: Energy Agency

[78] Under Article 55 of the Companies Act in force, large companies are those which, based on data from the last two consecutive financial years on the balance sheet cut-off date, meet the criteria for large companies for the financial year by meeting two of the following conditions: They employ on average more than 250 workers, net sales revenues exceed EUR 40 million and the value of assets is above EUR 20 million.

Heat means energy in the form of warm water, hot water, steam, or cooled liquids


10.1%
higher
average monthly
retail price for a typical
household consumer
49%
of total primary sources
for heat production
represents coal
78.9%
of distributed
heat produced in
cogeneration units
68%
energy-efficient
distribution systems

HEAT

Heat supply is the distribution of heat and cold, which are used for heating and cooling, industrial processes, and for the preparation of sanitary hot water. Heat supply covers activities of distribution and supply of heat, and the heat distribution itself can be carried out as an optional local service of general economic interest or commercial activity. The supply of heat can also be carried out by private distribution systems, which are fully owned by heat consumers.

The situation illustrates the aggregated data of the recorded distribution systems and the data of the recorded heat producers supplying these distribution systems.

0.9%
lower consumption of heat

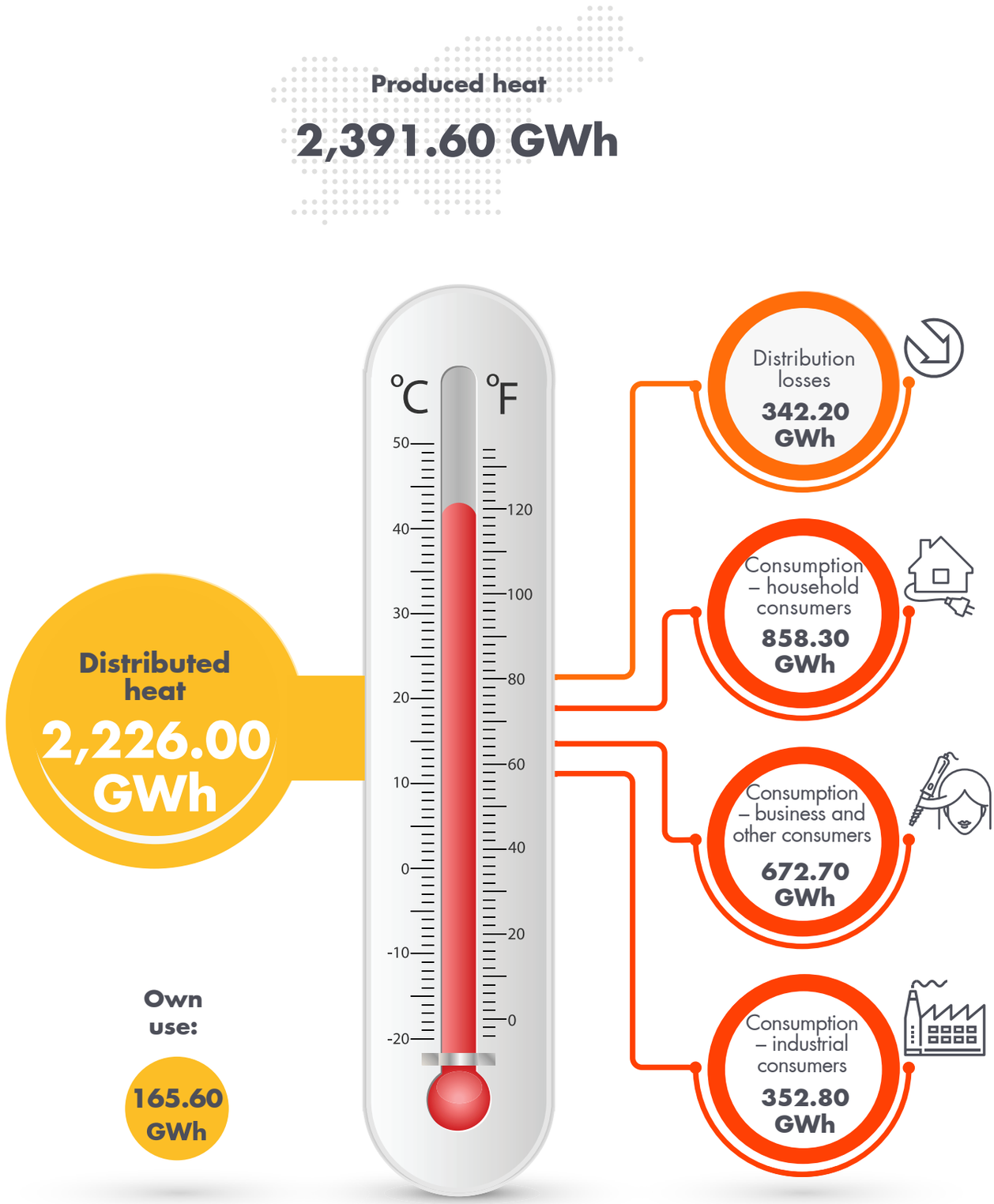
Supply of heat

In 2019, in Slovenia, supply of heat was provided from 100 distribution systems by 55 heat suppliers. Distribution was carried out in 66 municipalities.

Heat distributors supplied 2226 GWh of heat and delivered 1883.8 GWh to 106,593 consumers. The difference represents losses amounting to 342.2 GWh. Heat consumption for the supply of consumers on registered distribution systems was less than 0.9% the year before, without taking into account own use of heat producers, and compared to 2019 by as much as 4%, as a result of higher external temperatures during the last two years.

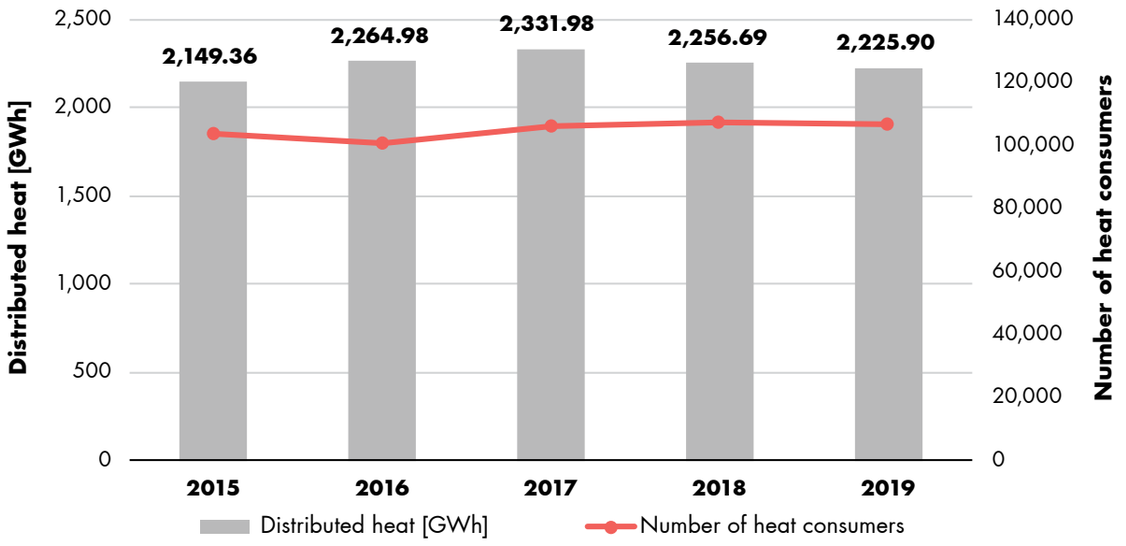
The number of heat consumers decreased by 0.5% compared to the previous year. The decrease is related to the 0.8% lower number of household consumers, while the number of business consumers increased by 2.9%.

FIGURE 184: BASIC DATA ON PRODUCED AND DISTRIBUTED HEAT FOR CONSUMERS OF HEAT CONNECTED TO THE DISTRIBUTION SYSTEMS IN 2019



Source: Energy Agency

FIGURE 185: DISTRIBUTED HEAT AND NUMBER OF CONSUMERS IN THE 2015–2019 PERIOD



Source: Energy Agency

There were no new distribution systems for district heating this year. Two large distribution systems with a total installed cooling capacity of 3.88 MW were supplying mainly business (Municipality of Velenje) and industrial consumers (the area of the former industrial complex Iskra Labore in the municipality of Kranj).

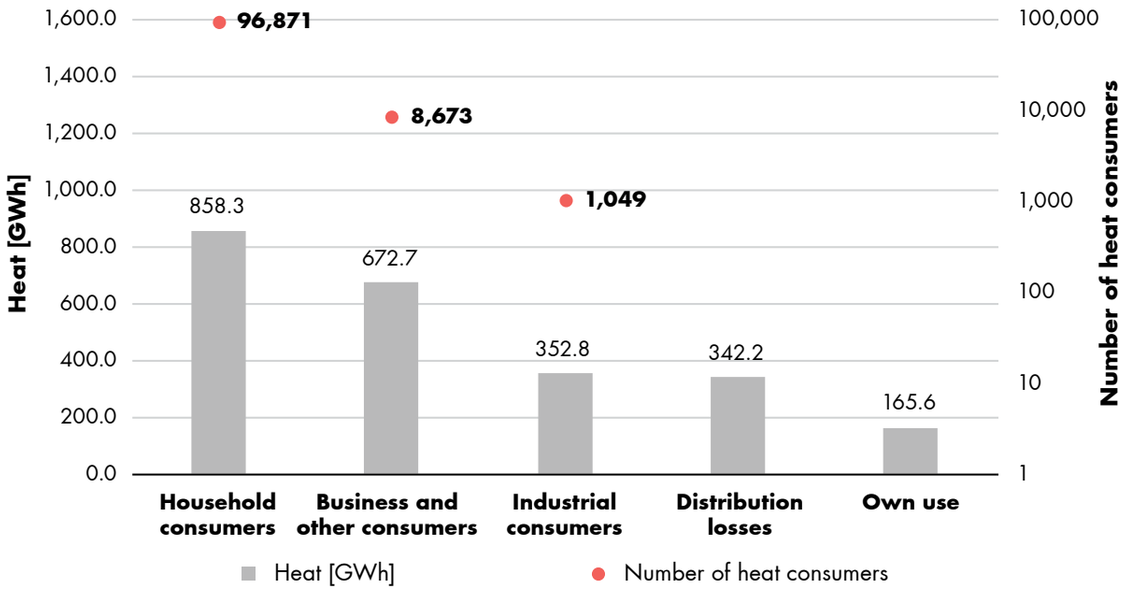
Heat distributors with own production and heat producers supplying distribution systems have produced 2391.6 GWh of useful heat for heating, the preparation of sanitary hot water, the supply of industrial processes, and their own needs.

At the same time, 847.8 GWh of electricity or 761.8 GWh was produced at the threshold of cogeneration processes. The heat produced in cogeneration production processes accounted for 76.1% of all useful heat produced (for own use and distribution systems). The remaining 23.9% was produced in other technological processes (woody biomass boilers, natural gas, liquefied petroleum gas, heat recovery processes from geothermal wells, waste heat from industrial processes, incineration plants, etc.). In the share of heat supplied by distribution systems, heat from cogeneration sources was represented by 78.9%.

78.9%
of distributed heat produced in cogeneration units

The highest share of total useful heat produced, i.e. 36%, was delivered to 96,871 household consumers, 28.1% to 8673 business consumers, and 14.8% to 1049 industrial consumers. Average annual distribution losses were estimated at 14.3% of distributed heat and decreased by 0.3% compared to 2018, and the remaining 6.8% of the heat produced represent the difference between the heat produced and the delivered heat used in the industrial processes of the heat producers or distributors, i.e., for own use. The heat consumption by type of consumers and their number is shown in Figure 186.

FIGURE 186: HEAT CONSUMPTION BY THE TYPE OF CONSUMERS AND THEIR NUMBER



Source: Energy Agency

In 2019, 2% less heat was produced than in the previous year, resulting in a decrease of 0.7% of the consumption of all primary energy products for heat production. Coal, with a 49% share, remained the primary energy for the production of heat for distribution systems, followed by natural gas with a share of 30.1%. The share of natural gas increased by less than 6% compared to 2018.

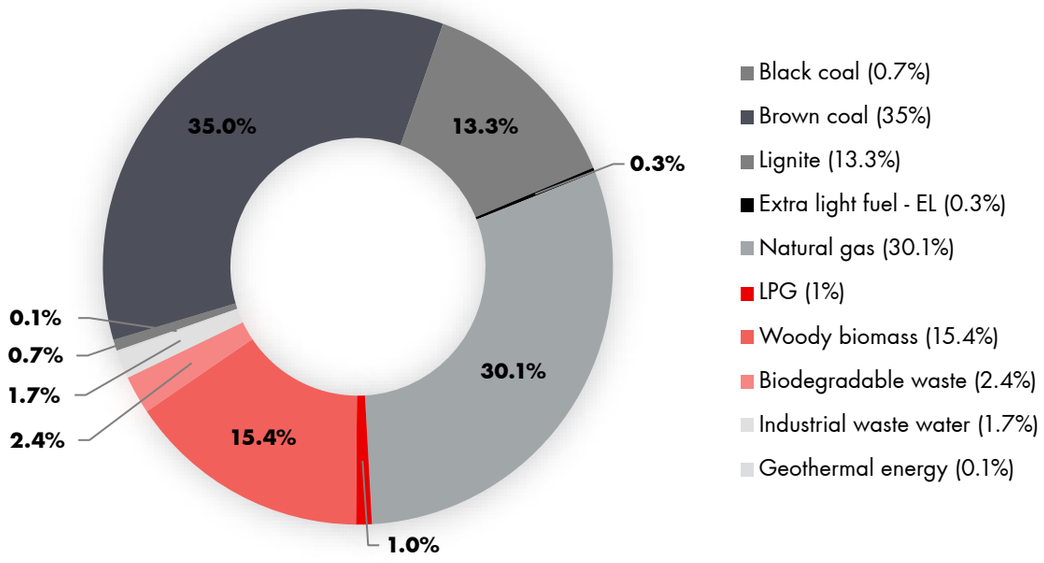
Oil and petroleum products were represented with 1.3% of renewables (woody biomass, geothermal energy, and biodegradable waste) with 17.9% and industrial waste with 1.7%. Heat from biodegradable waste was produced only at the Celje municipal waste incineration plant, and heat from industrial processes was produced in the area of the former Ravne Ironworks (SIJ Metal Ravne). The structure of primary energy products for heat production is presented in Figure 187.

Coal represents

49%

of total primary sources for heat production

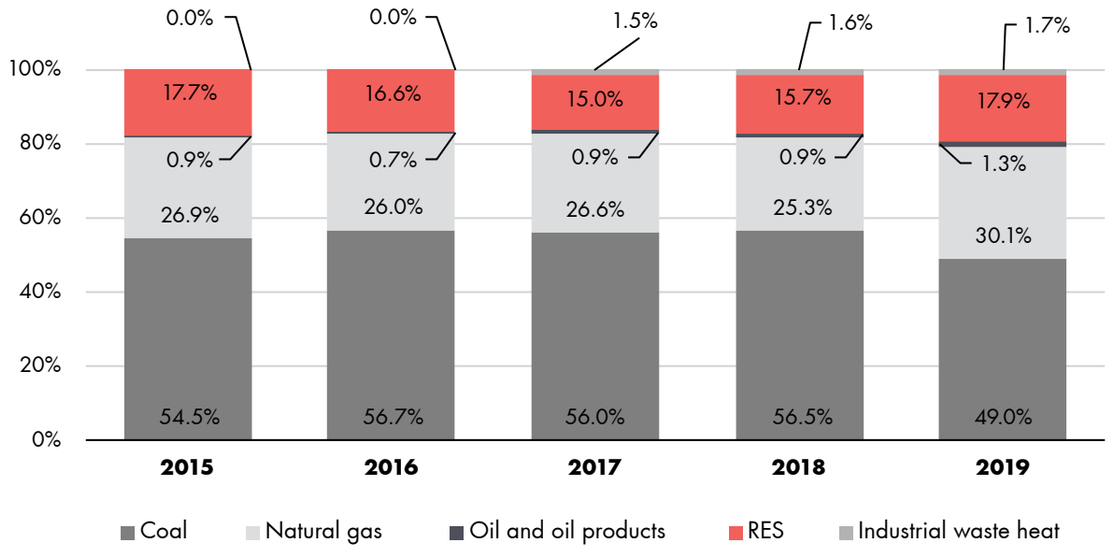
FIGURE 187: STRUCTURE OF THE PRIMARY ENERGY PRODUCTS FOR HEAT GENERATION



Source: Energy Agency

In the structure of the primary energy products for heat generation the shares of coal and natural gas changed the most significantly (Figure 188). Lower consumption of coal is the result of almost 9% lower production of heat and structure of the primary energy sources in the company Energetika Ljubljana, which is the largest producer of heat from coal.

FIGURE 188: STRUCTURE OF THE PRIMARY ENERGY PRODUCTS IN THE 2015–2019 PERIOD

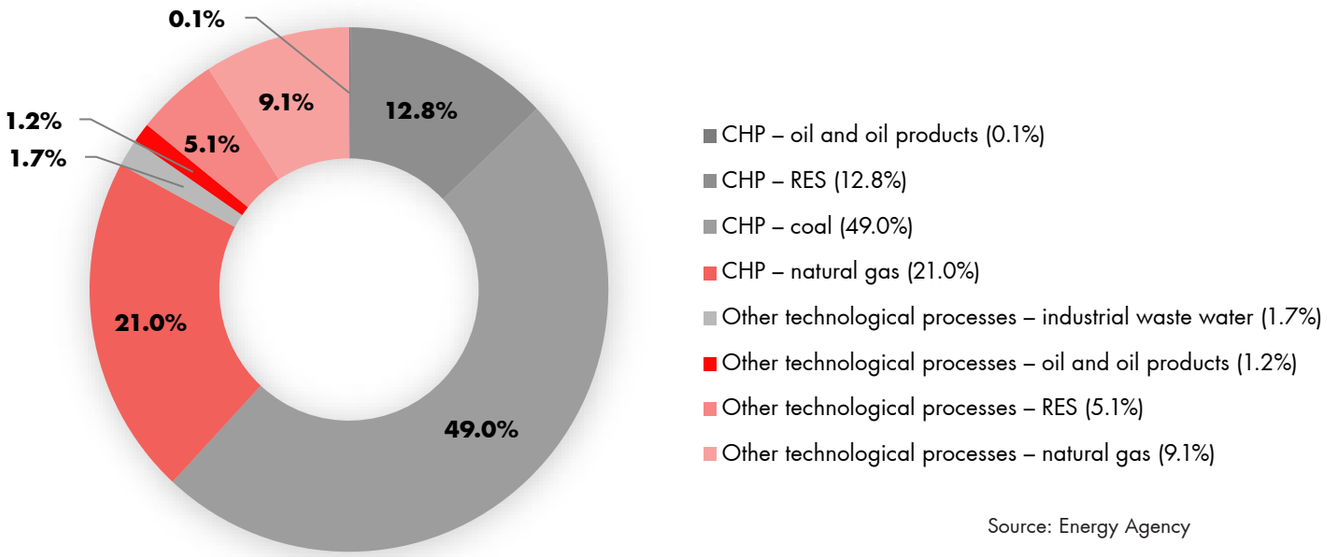


Source: Energy Agency

Coal was used only in cogeneration processes of electricity and heat, where 484.1 GWh of electricity and 1392.8 GWh of heat were produced. To a greater extent, natural gas is used in the cogeneration and other technological processes (310.4 GWh of electricity and 669.4 GWh of heat produced).

From RES 43.2 GWh of electricity and 243.3 GWh of heat were produced. The structural share of primary energy products consumed in relation to the method of obtaining heat for heat supply systems is shown in Figure 189.

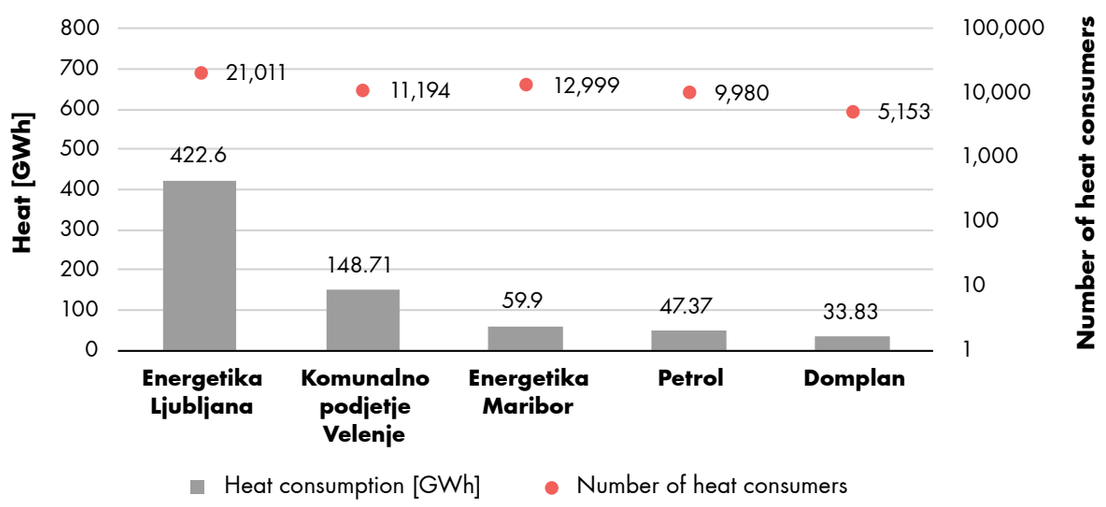
FIGURE 189: STRUCTURE OF THE PRIMARY ENERGY PRODUCTS FOR THE PRODUCTION OF HEAT FOR THE DISTRIBUTION SYSTEMS



Source: Energy Agency

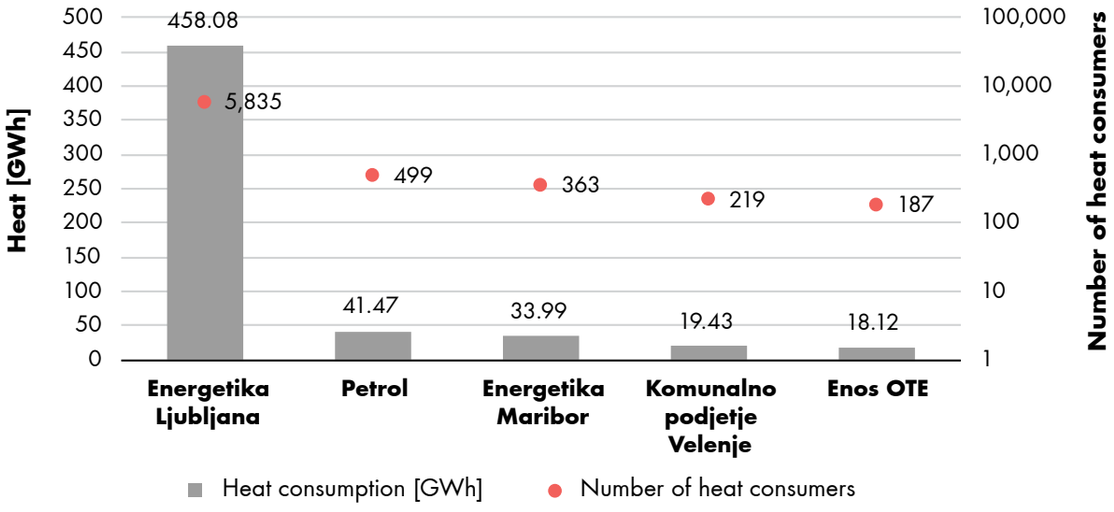
The first five largest heat distributors in 2019 delivered to end consumers almost 85.8% of all delivered heat from the distribution systems. The first five largest distributors to household consumers supplied 62.3% of these consumers and delivered 83% of heat to them. This is shown in Figure 190.

FIGURE 190: HEAT CONSUMPTION AND THE NUMBER OF HOUSEHOLD CONSUMERS AT THE FIVE LARGEST HEAT DISTRIBUTORS



Source: Energy Agency

FIGURE 191: HEAT CONSUMPTION AND THE NUMBER OF HOUSEHOLD CONSUMERS AT THE FIVE LARGEST HEAT DISTRIBUTORS

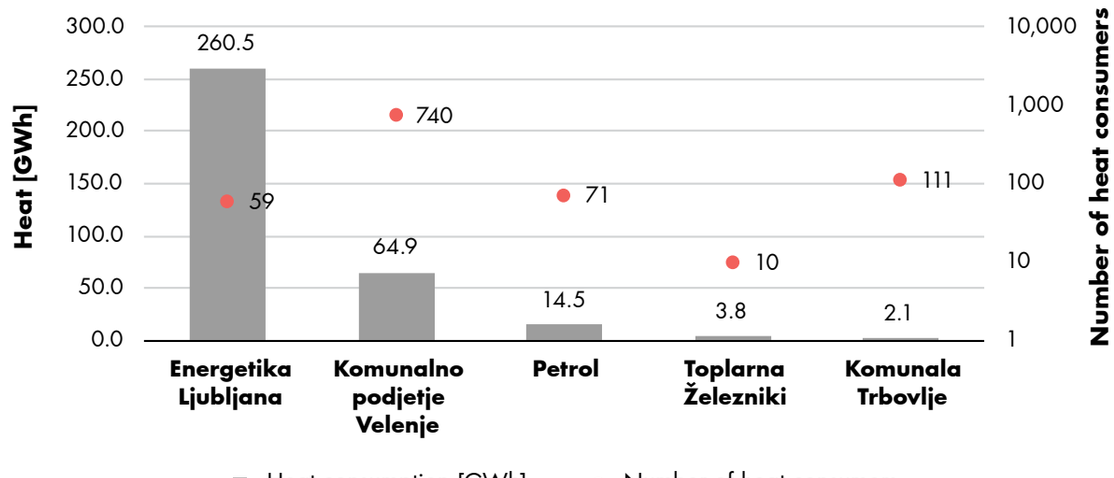


Source: Energy Agency

The first five largest heat distributors, which supply heat to business and other heat consumers, delivered heat to 81.9% of these consumers and supplied them 84.9% of heat intended to them (Figure 191).

The five largest heat distributors regarding the amount of delivered heat for industrial processes and heating supplied as much as 94.5% of these consumers and delivered 98% of heat to them, as shown in Figure 192.

FIGURE 192: HEAT CONSUMPTION AND THE NUMBER OF INDUSTRIAL CONSUMERS AT THE LARGEST DISTRIBUTORS OF HEAT TO THESE CONSUMERS



Source: Energy Agency

Heat distribution systems

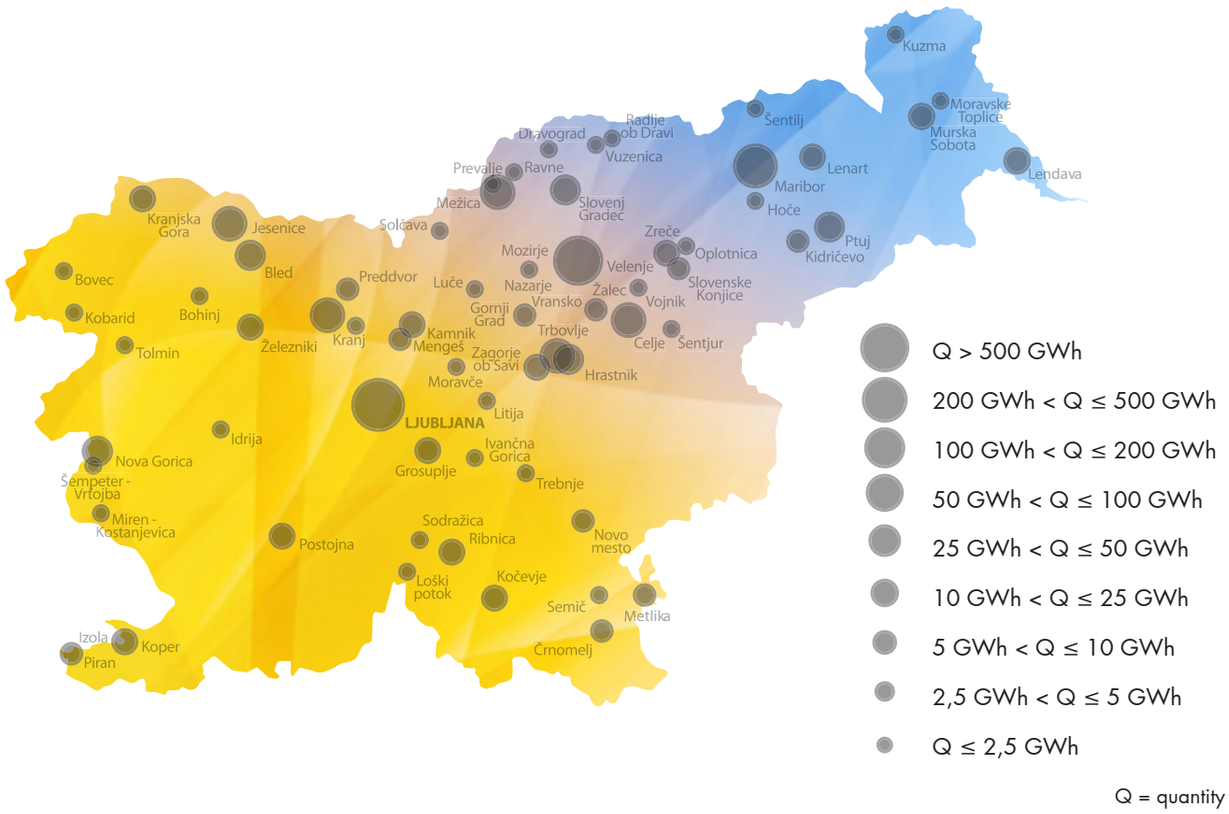
According to the Energy Agency's records in 2019, the heat supply from distribution systems was carried out from 100 distribution systems (62 as a service of general economic interest, 12 commercial distributions, and 26 private distribution systems) in 66 Slovenian municipalities. The total length of distribution systems was 881.8 km. As an optional local service of general economic interest, the heat supply was carried out by 62 distribution systems operated by 37 distributors in 51 Slovenian municipalities. In nine municipalities, the supply was carried out as a market activity, and in 17 municipalities, the heat supply was carried out by private distribution systems. Private distribution systems in the area of municipalities Kranj, Koper, Maribor, and Žalec are large distribution systems for the supply of household and business customers, as they supplied as many as 10,052 customers, including 9931 households.

The distribution systems where the activity of distributing heat is carried out as an optional local service provided heat to 88.5% heat consumers, and their share of the transferred heat was 93.7%.

Large district cooling systems are located only in the municipalities of Velenje and Kranj, with a total of 1.5 km.

Municipalities with distribution systems and quantities of distributed heat in 2019 are shown in Figure 193.

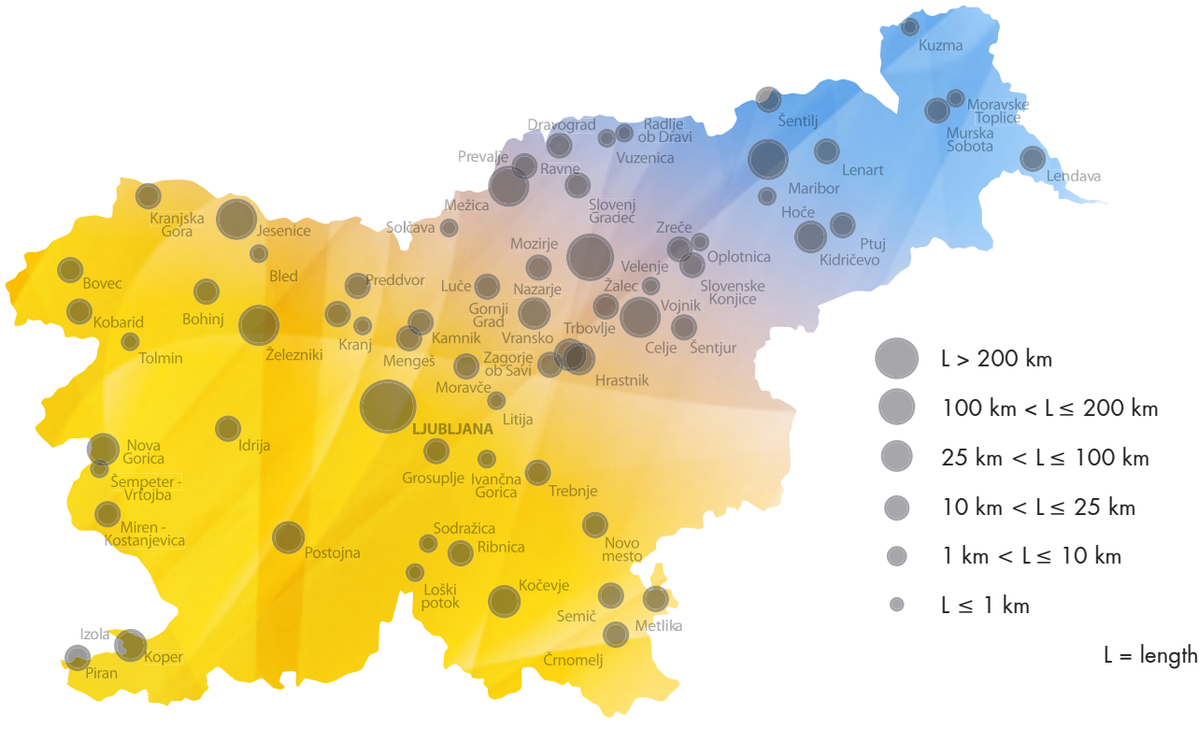
FIGURE 193: QUANTITIES OF DISTRIBUTED HEAT BY SLOVENIAN MUNICIPALITIES



Source: Energy Agency

With respect to the temperature regime of the operations of the individual system, the systems are divided into warm-water systems, hot-water systems, steam distribution systems, and district cooling systems. The length of warm-water and hot-water distribution systems accounts for 98.8% of the entire length of distribution systems, steam distribution systems 1%, and district cooling systems slightly less than 0.2% of the total length of distribution systems. The longest distribution systems are in Ljubljana (262.8 km long warm-water distribution system) and Velenje with Šoštanj (179.3 km long warm-water distribution system). The average length of warm-water distribution systems was 8.7 kilometres, and the average annual distribution losses of heat 16.5%.

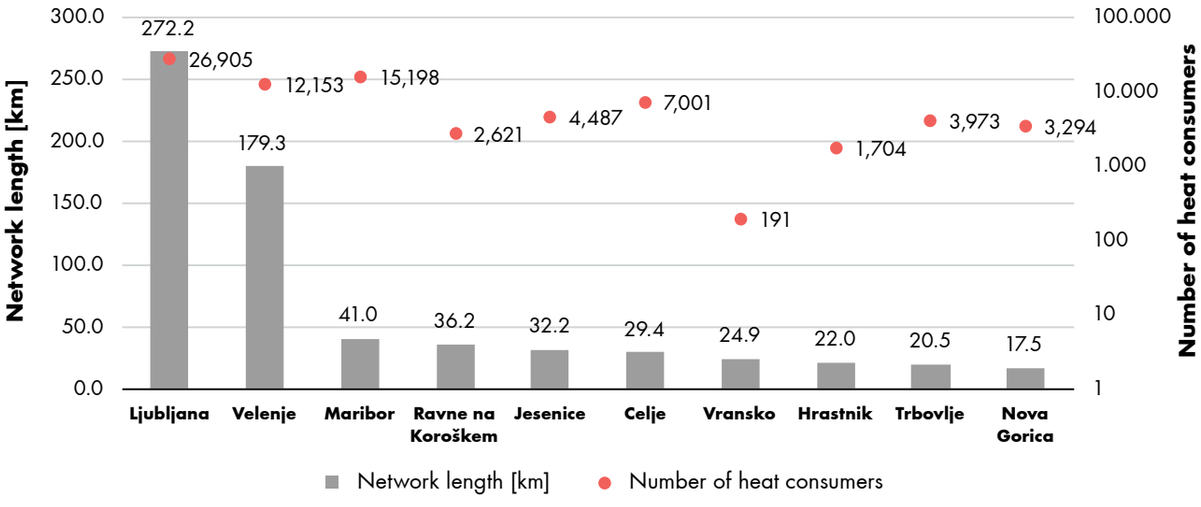
FIGURE 194: LENGTH OF HEAT DISTRIBUTION SYSTEMS IN SLOVENIAN MUNICIPALITIES



Source: Energy Agency

The length of the ten largest heat distribution systems and the number of consumers in 2019 are shown in Figure 195.

FIGURE 195: LENGTH OF HEAT DISTRIBUTION SYSTEMS AND NUMBER OF CONNECTED CONSUMERS IN INDIVIDUAL MUNICIPALITIES



Source: Energy Agency

Energy-efficient district heating systems

District heating and cooling systems are energy efficient if the heat distributor ensures an annual level of heat by using at least one of the following sources:

- at least 50% of the heat produced from renewable energy sources;
- at least 50% of waste heat;
- at least 75% of cogenerated heat; or
- at least 75% of a combination of the heat referred to in the above three indents.

Every year, the Energy Agency monitors which heat distribution systems meet the criteria and publishes a list of energy-efficient heat distribution systems on its website[79].

According to data, as many as 67 of 99 heat distribution systems where the distribution of heat is carried out either as a service of general economic interest or market activity or from a private distribution system are classed as energy-efficient distribution systems according to the criteria. Most distribution systems, i.e., 51, met the energy-efficiency criterion by producing at least 50% of heat directly or indirectly from RES. For 15 distribution systems, the energy efficiency criterion was met because at least 75% of heat was produced by cogeneration. However, no distribution system was sufficiently energy efficient to meet the criterion of achieving at least 50% of heat produced from heat.

A heat distribution system can also be energy efficient if the heat produced is a combination of production from RES, waste heat, or cogeneration. This criterion was met by nine distribution systems.

68%
energy-efficient distribution systems

[79] https://www.agen-rs.si/izvajalci/toplota/ucinkoviti-distribucijski-sistemi

Price of heat

The average retail price of heat in nine selected Slovenian municipalities with heat distribution systems is calculated as the average monthly retail price of heat for residential heating and sanitary hot water on the basis of publicly announces price lists of heat distributors for 2019 for a typical household heat consumer in a multi-dwelling residential building with an annual capacity of 7 kW and average annual consumption of 6.21 MWh.

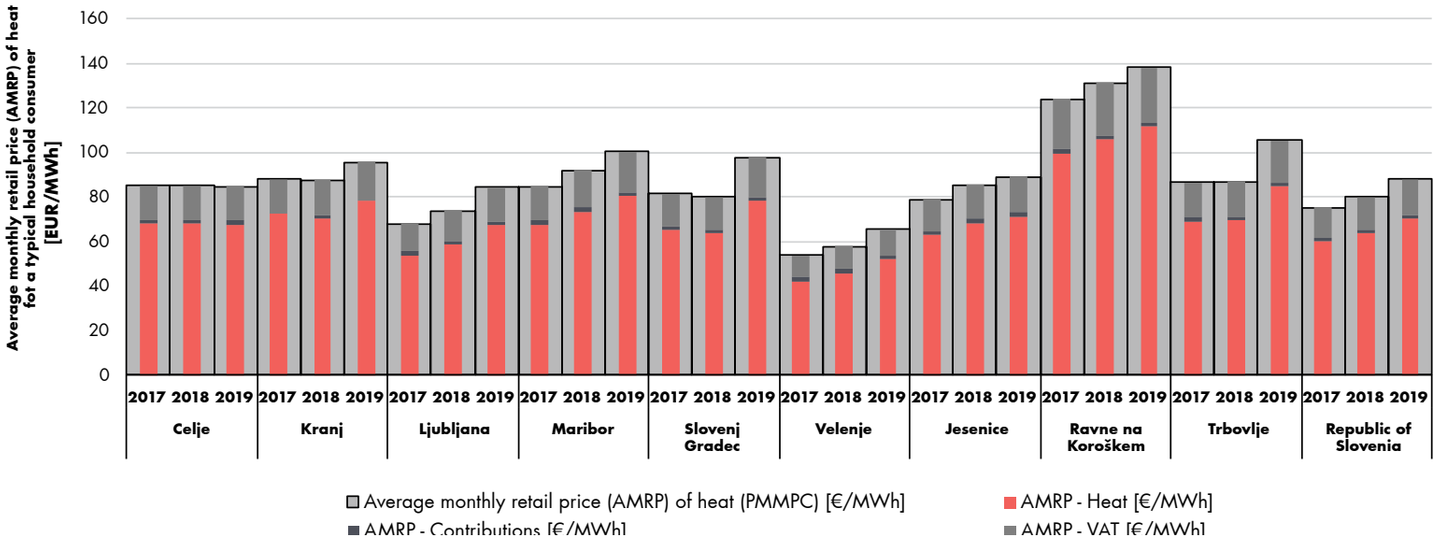
In 2019, distribution systems in selected Slovenian municipalities supplied 71% of all household consumers supplied in Slovenia, while their acquired heat was 86.7% of all heat delivered to these consumers.

Average retail heat prices in the selected Slovenian municipalities are shown in Figure 196. They are calculated as the weighted average monthly retail prices for a typical household heat consumer living in a multi-dwelling residential building in each selected municipality, and the average monthly retail price of heat for the entire territory of Slovenia, weighted by the number of household consumers supplied is also shown. The average monthly retail price of heat for household consumers increased on average by 10.1% in all of the mentioned municipalities in comparison with the previous year, amounting to EUR 88/MWh in 2019.

The highest increase in average retail prices was recorded in the area of Slovenj Gradec (22%), followed by Trbovlje (21.5%), Ljubljana (14.2%), Velenje (13.1%), Kranj, Maribor, and Jesenice (9%), and Ravne na Koroškem (5.3%). Only in the area of Celje did the retail price decrease by almost 0.5%.

10.1%
vhigher average monthly retail price for a typical household consumer

FIGURE 196: AVERAGE RETAIL PRICE OF HEAT FOR HOUSEHOLD CONSUMERS IN INDIVIDUAL SLOVENIAN MUNICIPALITIES FOR THE PERIOD 2017–2019



Source: Energy Agency

Regulating the price of heat for district heating

The Energy Agency implements the regulation of the price of heat for district heating on the basis of the current Act on Heat Supply Pricing Methodology. Persons subject to regulation are heat distributors performing optional service of general economic interest and producers of heat that supply heat to distributors of heat more than 30% of the intended distributed heat or have ownership links with them. Persons subject to economic regulation must obtain the Energy Agency's agreement on the starting price of heat for each distribution system or the supply of heat. They form the base price according to the criteria and baselines set out in the Act.

The Energy Agency dealt with the demands for granting consent to the starting price of heat of persons who did not yet have a valid starting price, and the requirements it received due to the fulfilment of criteria for the new requirements of the Act on Heat Supply Pricing Methodology. These criteria relate to major technological changes, changes in the tariff system, changes in planned quantities of distributed heat by more than 20% or changes in consumers' planned accounting power by more than 10%, a substantial change or suspension of an undertaking's activities and a lower actual cost-plus price than the last applicable average price. In 2019, the Energy Agency did not receive any request for issuing consent due to the notification of the new distribution system.

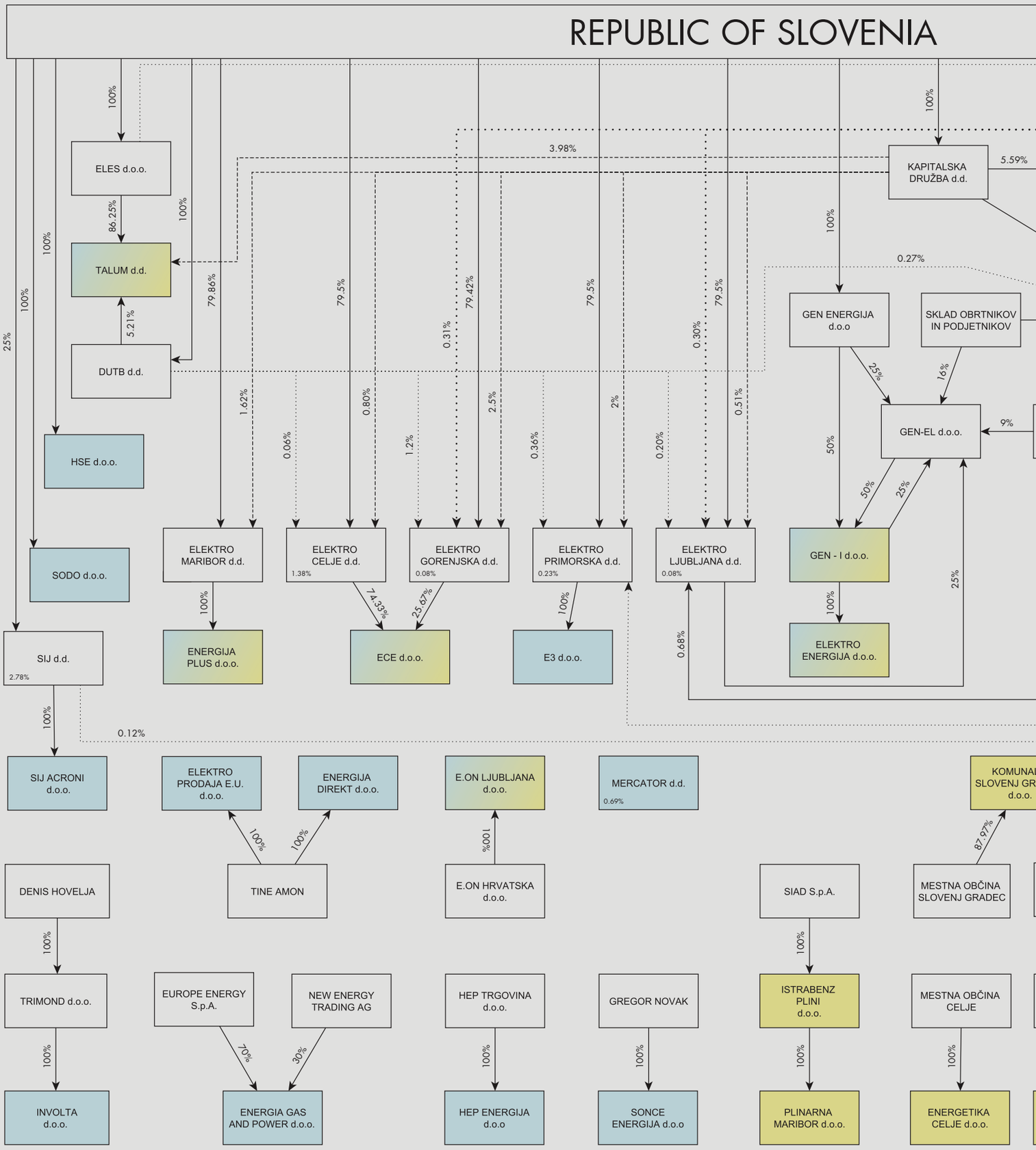
One consent was given to the starting price of heat for a distributor who did not yet have a valid starting price, one decision was issued to reject the requirement to give approval to the starting price, and 21 approvals on the starting price of heat to the regulated persons who requested consent be granted on the basis of the criteria for submitting a new requirement set out in the abovementioned Act.

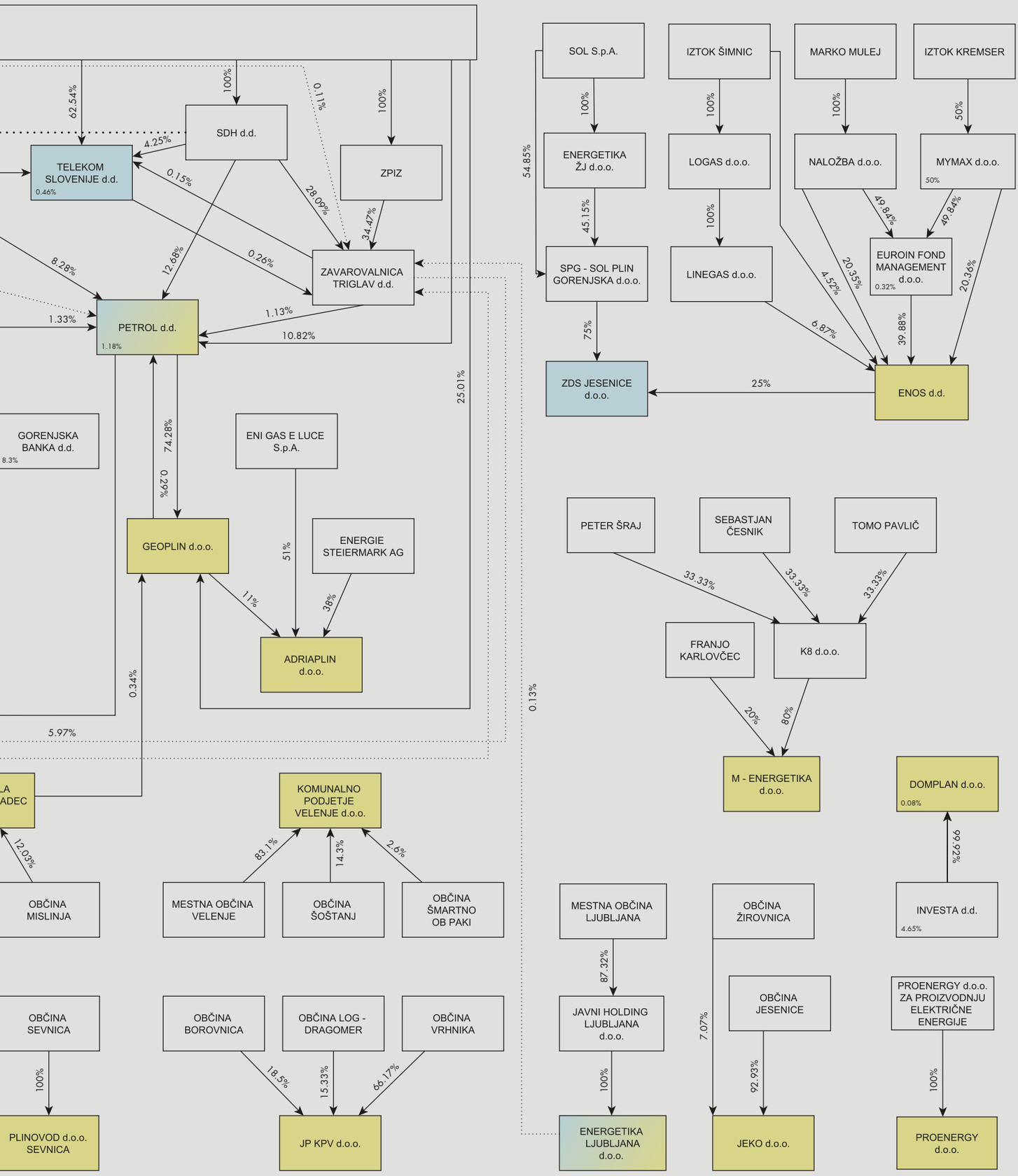
Monitoring and analysing the received notifications on changes in starting heat prices are important factors in assessing the appropriateness of the proposed starting price and average price in the request for consent to the starting heat price. In 2019, the Energy Agency received 128 notifications on the adjustment of the variable part of the starting heat price and ten notifications on the adjustment of the fixed part of this price. The changes in the starting heat prices were mainly related to the changed energy price for heat production. The Energy Agency monitored and analysed changes in the starting heat prices due to the change in eligible costs and supervised the method of charging heat and the publication of heat tariffs.

Unbundling

Distributors performing services of general economic interest and carrying out activities other than heat distribution should keep separate accounts in accordance with accounting standards and disclose separate accounts in the notes to the financial statements for heat distribution, heat production and other activities. To this end, they should define in their internal acts the criteria for allocating assets and liabilities, costs and expenditure, and revenues, which they take into account in the management of accounts and the preparation of separate accounts. They must also be disclosed in full in the notes to the financial statements. The adequacy and correctness of the application of judgments should be audited annually by the auditor, who must make a special report.

FIGURE 197: OWNERSHIP STRUCTURE OF ELECTRICITY AND NATURAL GAS SUPPLIERS ON 31ST DECEMBER 2019





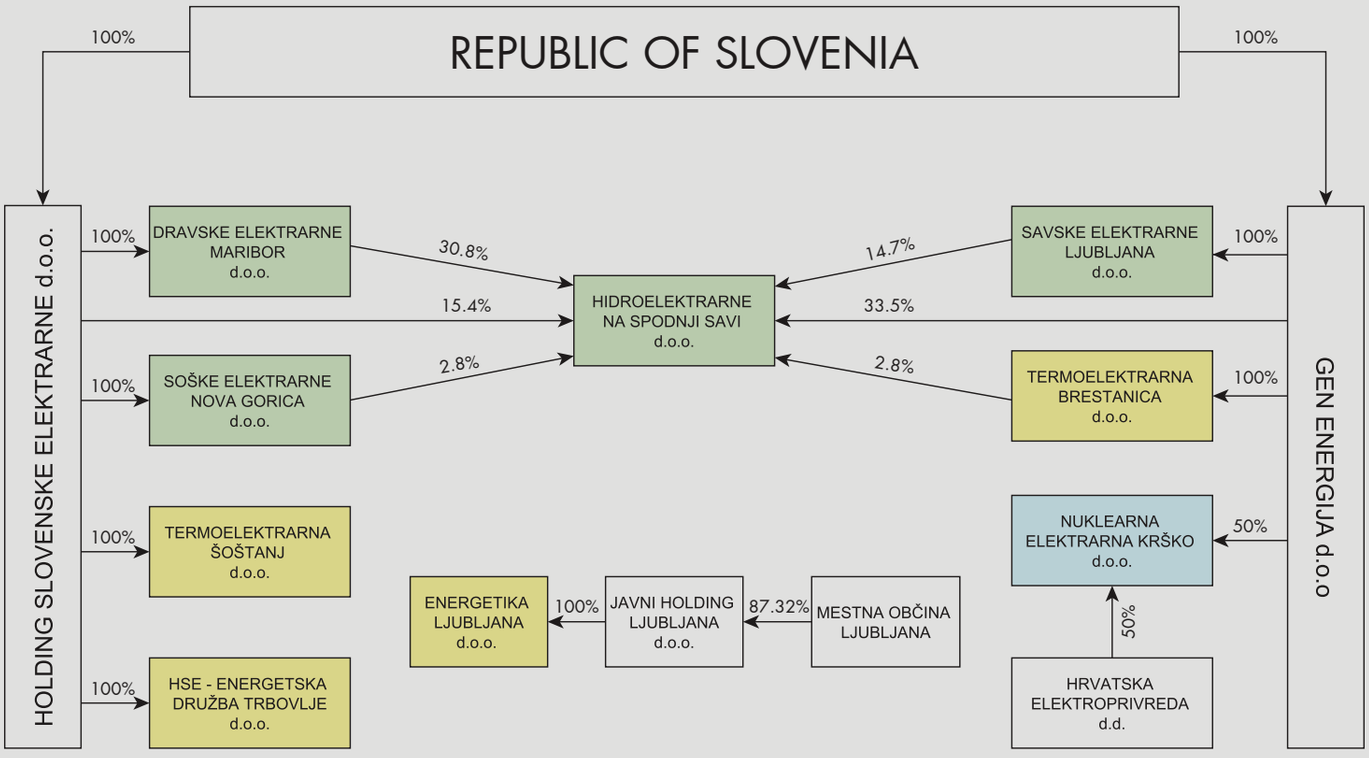
Source: gvin.com

Electricity supplier

Natural gas supplier

Electricity and natural gas supplier

FIGURE 198: OWNERSHIP STRUCTURE OF ELECTRICITY PRODUCERS WITH INSTALLED CAPACITY MORE THAN 10 MW ON 31ST DECEMBER 2019



Source: gvin.com

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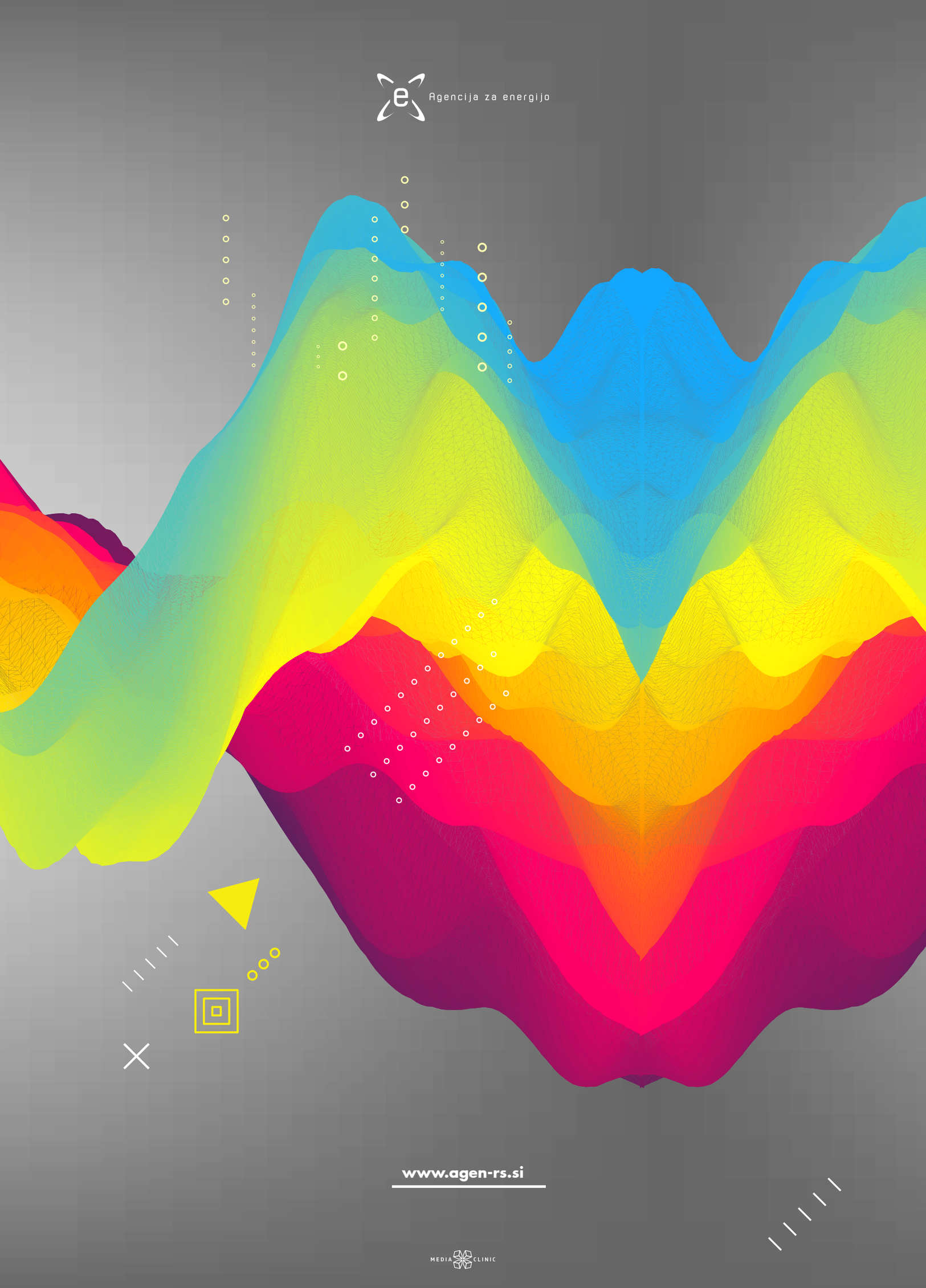
ACER	Agency for the Cooperation of Energy Regulators
Agencija za energijo	Energy Agency
AIB	Association of Issuing Bodies
AMS	Advanced Metering System
AREDOP	Active Regulation of Energy Activities and Networks of the Future
Borzen	Borzen, Power Market Operator
BS	Balance Group
BSP, Southpool	BSP, Regional Energy Exchange, Southpool
B2B	Business to Business
B2C	Business to Consumer
Cneg in Cpoz-	Basic Imbalance Prices
CDS	Closed Distribution System
CEER	Council of European Energy Regulators
CEGH	Central European Gas Hub AG Vienna
CIM	Common Information Model (IEC 61970-3XX)
CRIDA	Complementary Regional Intraday Auctions proposal
CSDMP	Central system for the access to metering data
DEM	Dravske elektrarne Maribor d.o.o. (HPP Dravske elektrarne)
DSO	Distribution System Operator
DTS	Distribution-Transformer Station
E	Electricity
EZ-1	Energy Act, Official Gazette of the RS. št. 60/19 – official consolidated text and 65/20
ebIX	European forum for energy Business Information eXchange
EC	European Commission
EEX	European Energy Exchange AG. Leipzig
ENTSO-E	European Network of Transmission System Operators for Electricity
EU	European Union
EXAA	Energy Exchange Austria
GME	Gestore Mercati Energetici, Italian Power Exchange
GDP	Gross Domestic Product
CHP	Combined Heat and Power
CNG	Compressed Natural Gas
GO	Guarantee of Origin

GS1	Global Business Languages (http://www.gs1.org)
CZC	Cross-zonal capacity
HEP	Hrvatska elektroprivreda d.d
HESS	Hidroelektrarne na Spodnji Savi, d.o.o.
HHI	Herfindahl-Hirschman index
HOPS	Hrvatski operator prijenosnog sustava d.o.o.
HPP	Hydroelectric Power Plant
HSE	Holding Slovenske elektrarne, d.o.o.
HSE EDT Trbovlje	HSE - Energetska družba Trbovlje, d.o.o.
HUPX	Hungarian Power Exchange
HV	High Voltage
IEGSA	Interoperable pan-European Grid Service Architecture
INECP	Integrated National Energy and Climate Plan
IPET	Energy Market Data Exchange (IPET Section)
JAO	Joint Allocation Office
LNG	Liquified Natural Gas
LT	Lower Tariff
LW	Low Voltage
MAIFI	Momentary Average Interruption Frequency Index
MRS	Metering-regulation Station
MV	Medium Voltage
NEMO	Nominated Electricity Market Operator
NG	Natural Gas
NNP	Nuclear Power Plant
NREAP	National Renewable Energy Action Plan
P	Power
PCI	Projects of Common Interest
PL	Power Line
PSHPP	Pumped-Storage Hydroelectric Power Plant
PT	Peak Tariff
R&I	Research and Innovations
REMIT	Regulation (EU) No 1227/2011 of the European Parliament and of the Council on wholesale energy market integrity and transparency

RES	Renewable Energy Sources
RF	Regulatory Framework
RPI	Retail Price Index
RRM	Registered Reporting Mechanism
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
SEE	South-East Europe
SEL	Savske elektrarne Ljubljana d.o.o. (HPP Savske elektrarne)
SEDP	System for Uniform Access to Measurement Data
SENG	Soške elektrarne Nova Gorica d.o.o. (HPP Soške Elektrarne Nova Gorica)
SEVF	Slovenian Energy Security Forum
SHB	Slovenia, Croatia, Bosnia and Herzegovina (block SHB)
SIDC	Single Intraday Coupling
SIPX	Slovenian Price Index
SKT	Single contact point
SODO	Slovenian Distribution System Operator
SONDSEE	System operating instructions for the electricity distribution system
STAT	Statistical Office of the Republic of Slovenia
SWC	Social Work Centre
T	Annual operating hours
TEB	Termoelektrarna Brestanica d.o.o. (Brestanica TPP)
TEŠ	Termoelektrarna Šoštanj d.o.o. (Šoštanj TPP)
TOE	Tonne of Oil Equivalent
TPP	Thermoelectric Power Plant
TS	Transformer Station
TSO	Transmission System Operator
VAT	Value Added Tax
ZGD-1	Companies Act, Official Gazette of the RS. Nos 65/09 – official consolidated text, 33/11, 91/11, 32/12, 57/12, 44/13 – dec. CC, 82/13, 55/15, 15/17 and 22/19 – ZPosS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