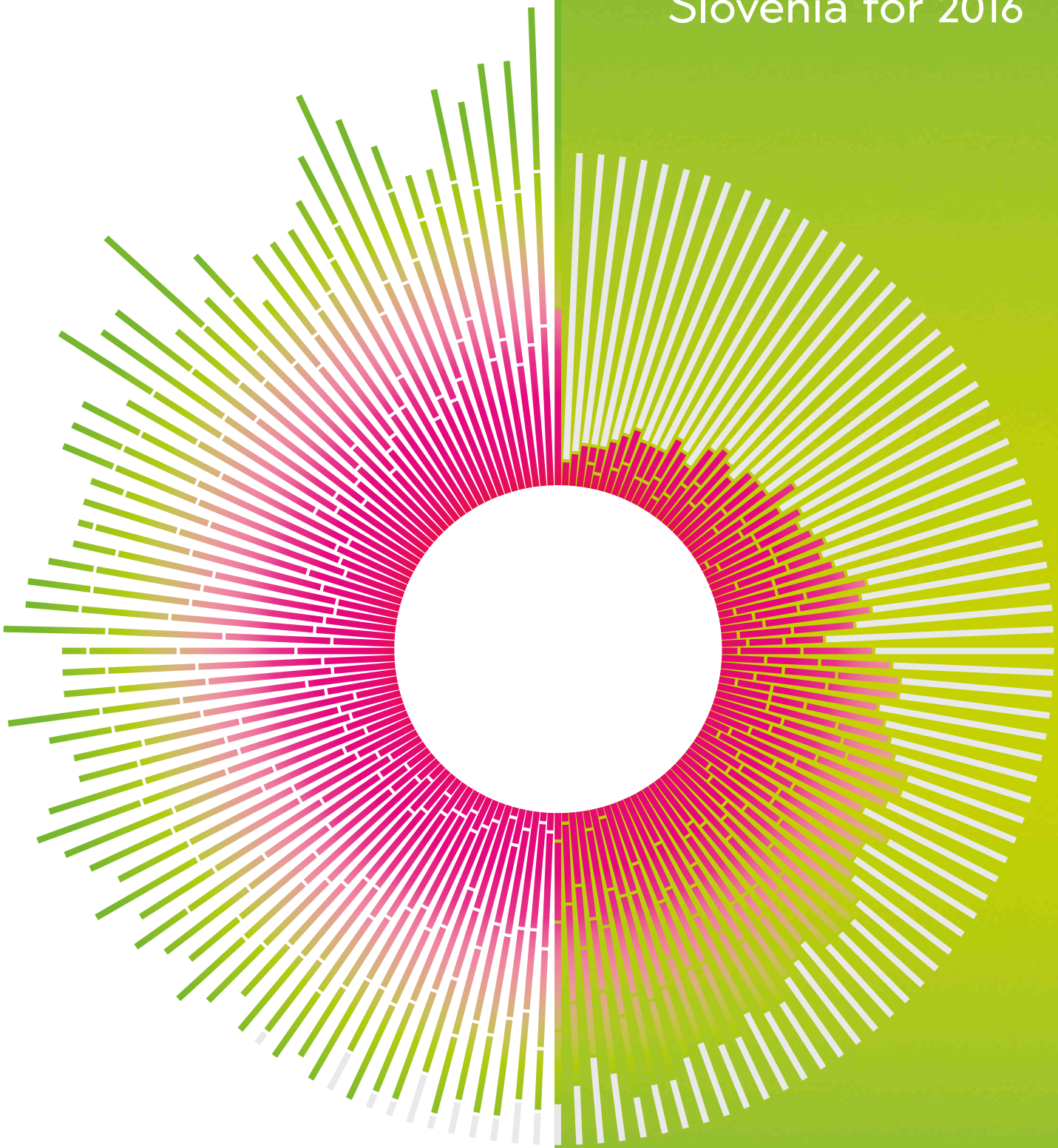
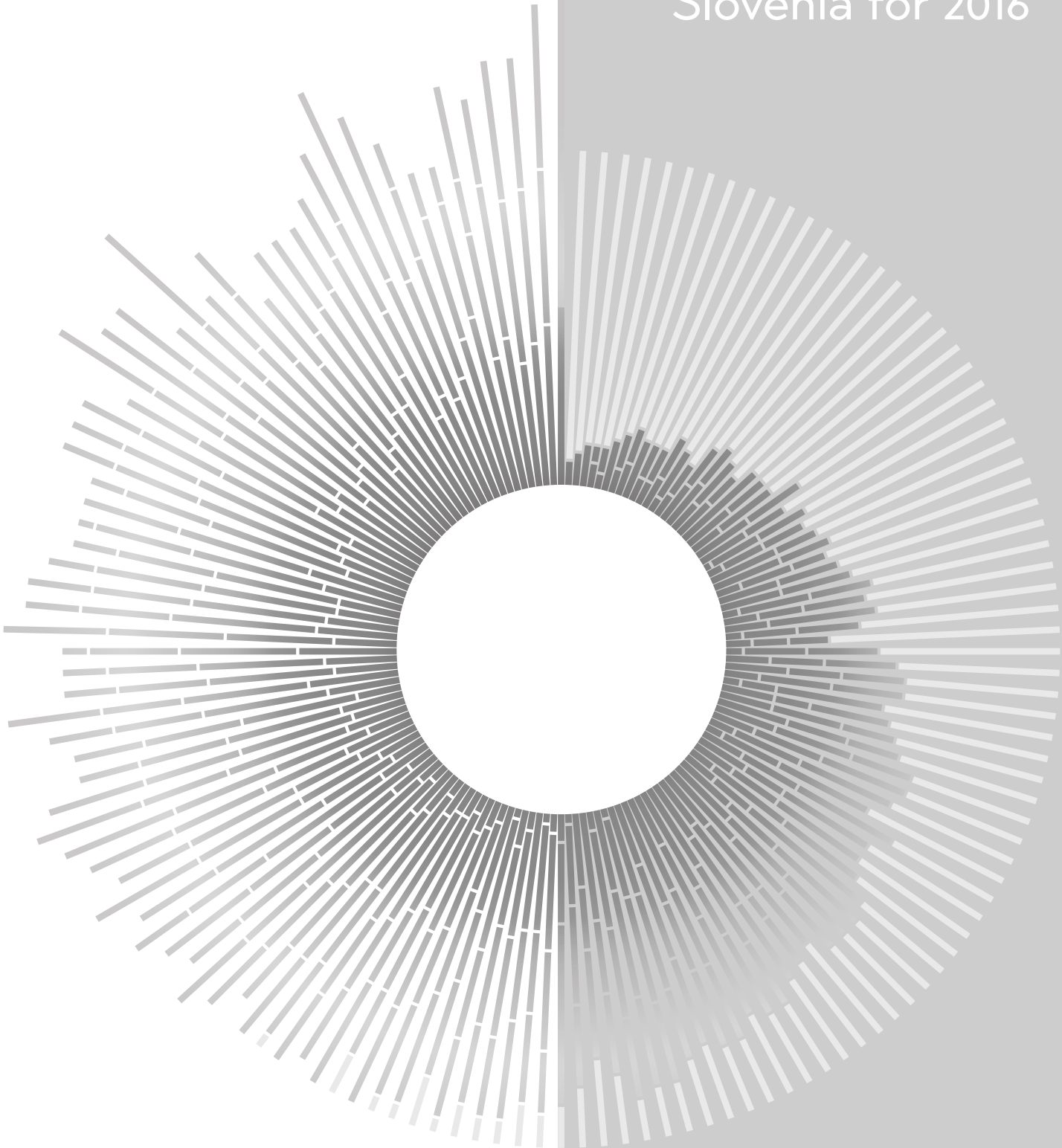
Report on the energy sector in Slovenia for 2016



Agencija za energijo

Report on the energy sector in Slovenia for 2016



Mag. Duška Godina,
director

Foreword

Energy is the life force of our society. The well-being of society, industry and economy depend on sustainable, safe and competitive energy supply affordable to consumers.

In establishing a common electricity and gas market in Europe many changes have also occurred on other areas that have a significant impact on the energy market. One of the most important is certainly the awareness that human activities beyond control affect the environment. Releases of greenhouse gas emissions to the atmosphere, which are largely a consequence of the transport and generation of electricity from fossil fuels, cause climate changes, which have to be stopped if we want to preserve the environment for our descendants. The result of this awareness are climate and energy agreements at the highest political level and ambitious energy targets set by the EU by 2020 and even more optimistic by 2030. All this is reflected in increased use of renewable sources, which gradually replace fossil fuels, in better energy efficiency, and increasingly demanding consumers, who are also becoming producers, some even self-consumed.

Reports on the energy sector in Slovenia are one of the important aspects of providing transparency of energy markets, while at the same time make possible a good overview of market functioning and compliance with climate agreements to which Slovenia is also committed. The Report on the energy sector in Slovenia for 2016 is substantively designed in accordance with the requirements of national and EU energy legislation. It gives a comprehensive view of the development and the situation in electricity and gas markets, as well as in district heating.

The competitiveness of the electricity and natural gas wholesale and retail market is increasing as discussed in the report in terms of prices, transparency, and efficiency of the markets. The protection of consumers' rights is highlighted in a special chapter. The chapter on the promotion electricity production from RES and in CHP in addition to an overview of the support scheme also includes the implementation of energy efficiency measures at liable entities – suppliers of energy products to final consumers.

We analysed situations in areas mentioned above, causes, and consequences, and we also report on some new important areas such as pilot smart grids projects, data exchange on the energy market, and cybersecurity in the energy sector. We added some case studies to analyse individual issues in the light of development through several years and its consequences.

The electricity market in Slovenia is well developed and transparent. In the allocation of cross-border transmission capacity and market coupling with Italy and Austria, a significant progress has been made enabling the wholesale market participants more efficient trading. In the retail market, in 2016 the total number of electricity supplier switches reached a record level. The share of switches was almost 7% of all consumers, the level at which suppliers need to give special attention to consumers.

In the natural gas market in 2016, the consumption increased for the second consecutive year. Favourable effects of the new balancing rules have been shown. With trading on the trading platform, the imbalances of the balance groups' leaders significantly decreased as well as the volumes for balancing the transmission system. The virtual trading point began to operate. It allows its members on the open market performing all transactions with natural gas in the Slovenian transmission system. Very intensive was also a development of the secondary market with transmission capacity since the volume of subleased capacity increased by four times in comparison with the year before. At the same time, the prices of natural gas on the retail market decreased for the fifth consecutive year.

The Slovenian energy market integration in the international markets is well-developed, and the development in this area, however, was influenced by the further adoption of network codes, which are as European regulations also binding for the Slovenian power networks.

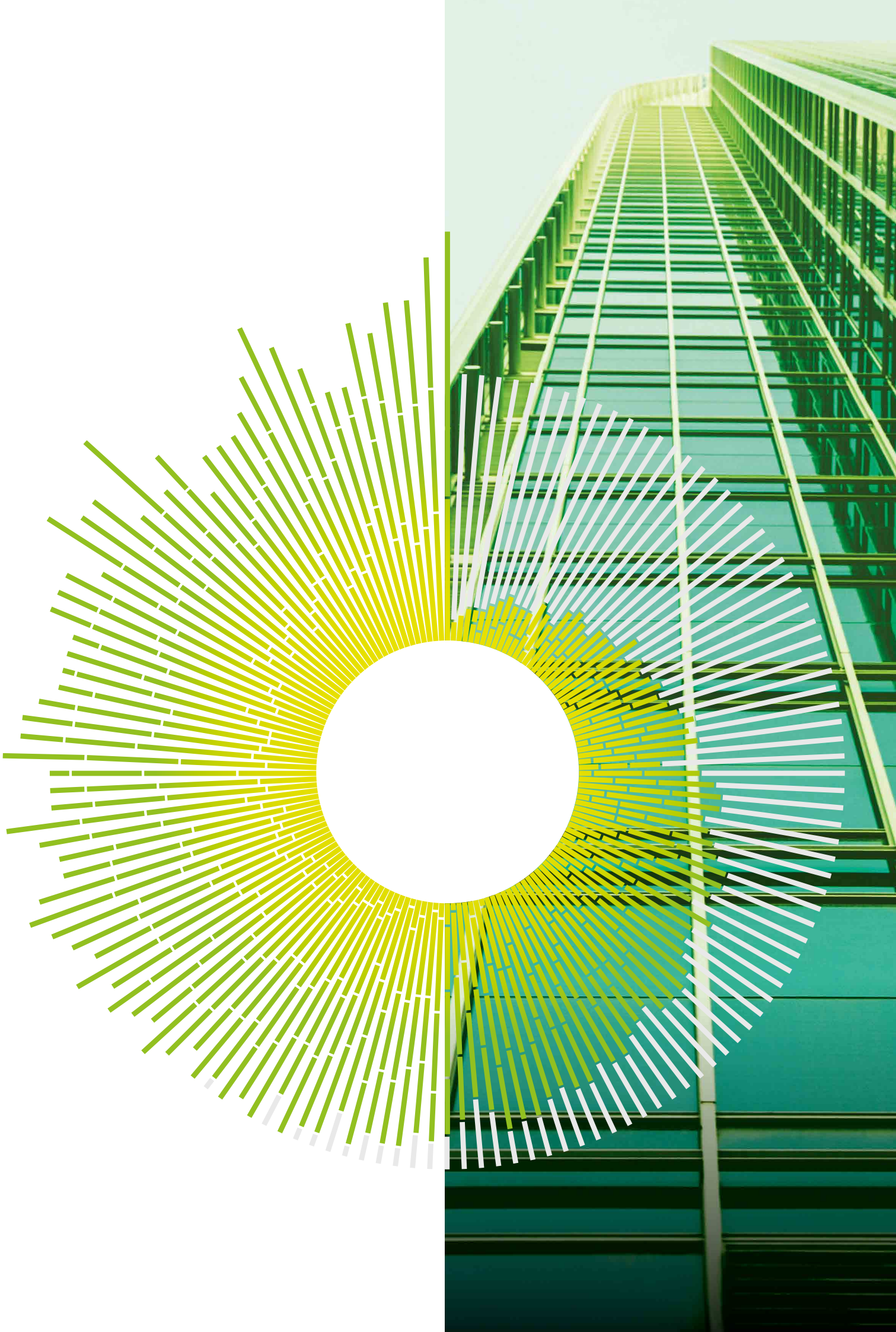
Further process of the implementation of REMIT continued as well. In the Slovenian wholesale market 43 electricity and natural gas suppliers are registered, and the Energy Agency is among the first European regulators gaining the access to the REMIT data at the transaction level, with which the main conditions for monitoring the wholesale market at the national level were fulfilled.

The Energy Agency has been implementing a number of measures to increase the transparency of the energy market, which also indirectly influenced its efficiency. As a result of the legislative changes in 2016 the number of supervision procedures over the legality of the implementation market energy activities increased. In the area of consumers' protection the number of disputes and complaints has grown and with the single point of contact on the Energy Agency's website household and small business consumers have in one place the access to all necessary information about the functioning of the energy market and their rights.

At the time of publishing this report, the ten-year period of the complete market opening for household consumers has been expiring. Both markets on 1 July 2007 also opened for household consumers; since then, all consumers in Slovenia can freely choose their supplier on the market. That was also a reason that in the form of a case study we analysed this period and demonstrated the effects of the process and its benefits for consumers. The events show a remarkable importance and the potential of consumers' active relationship – we estimate that from the full opening of the electricity market in mid-2007 the total savings of household consumers achieved by switching a supplier amounted to more than 10 million euros.

We are striving to make our energy report an important and comprehensive tool for both, the providers of energy activities and for consumers, and also the energy policy makers and facilitators of its development, so that we could on the basis of the situation and findings be even more successful in planning the development of the market and the Energy Agency's work.

By carrying out the tasks of the Slovenian energy regulator we also want in the future facilitate to the successful development of the energy sector and efficient functioning market operation since only a developed, competitive and transparent market ensures a high level of welfare for consumers and excellent business opportunities for energy companies.



02

Development in the energy markets

Dynamic 10-year development of the Slovenian retail market, in which the number of electricity suppliers doubled, and the number of gas suppliers increased by a quarter. Total savings of household electricity consumers that during this period changed supplier are estimated to be more than 10 million euros.

7%

or 76,531 electricity consumers in 2016 switched their supplier, which ranks Slovenia among the countries with the most developed markets.

29%

was a reduction in the final natural gas price in the period 2011–2016 due to competitive market conditions and other factors

2.1 The development in the electricity market

In Slovenia was in 2016 to the transmission and distribution system delivered 15,233 GWh of electricity, which is 1,279 GWh more than the previous year. The delivery from generating plants using RES was 4,589 GWh or 529 GWh more than in 2015. The Slovenian power plants in 2016 generated 13,030 GWh of electricity. The total consumption in Slovenia amounted to 14,173 GWh and was in comparison to 2015 higher by 1.9%. The coverage of Slovenian consumption with domestic sources was 88%. Therefore the import dependence of Slovenia was 12%, which is considerably lower than the year before when it was 19%. Slovenia is well connected with neighbouring electricity systems; net transmission capacity enables reliable supply of domestic market.

System operators and distribution companies provided safe and reliable operation of the system and with that also reliable supply. For electricity networks a rapid development can be observed, the networks of the future should be cost-effective and sustainable. Pilot projects are being successfully carried out towards the desired goals. At the same time, in Slovenia the system of advanced metering is also rapidly developing; at the end of 2016 half of the consumers connected to the distribution systems had advanced measuring devices. Just like in all other areas, the issue of cyber security is becoming a subject of immediate relevance in the energy sector; the Energy Agency actively participates at all levels and provides incentives for planned and coordinated action.

With an increasing number of tasks and challenges that the Energy Agency faces in its operation, one of the basic tasks remains to set prices for the use of the networks. In 2016, the new three-year regulatory period has begun. In the previous period, the network charge was gradually decreasing, but the new one in the view of an increase in planned eligible costs envisages again the growth of the network charge.

There has been a lot of activities going on in the area of cross-border transmission capacity; in the middle of the year market coupling for a day-ahead was introduced at the Slovenian-Austrian border, and at the Slovenian-Italian border cross-border intraday implicit allocation was implemented. The most interesting was the direction from Austria across Slovenia, and since 2012 the use of cross-border transmission capacity from Slovenia to Italy has been reduced.

The Slovenian wholesale electricity market reaches similar prices or trend of movement of prices as the neighbouring ones, and it is a part of the North-Italian and Central-East Europe electricity regions. To provide an effective market monitoring the Energy Agency monitors the level of wholesale prices in Slovenia and the referential markets that affect prices in Slovenia. Since 2012 the average prices of base load have been decreasing; in 2012 the price on the Slovenian Energy Exchange was 53.1, and in 2016 only 35.6 per EUR/MWh. The final price for business consumers was without VAT in the second half of 2016 in comparison to 2015 lower by 4%.

Since activities in the electricity market are more dynamic, the transparency of the market is becoming more and more important. REMIT provides integrity and transparency of the wholesale energy market and it had served as a base for many activities of the Energy Agency in 2016. The data show that the Slovenian wholesale electricity market is well developed with a high level of transparency. The Slovenian retail electricity market is moderately concentrated, according to market shares the three largest suppliers GEN-I, ECE, and Energija plus have more than 55% of market share altogether. The total number of electricity supplier switches was in 2016 a record-high since there were 76,531 switches, and the share of switches was approximately 7% of all consumers.

Ten years of an open electricity market for household consumers

Since 1 July 2007 in Slovenia also household consumers, which are the largest consumer group with a total annual consumption of more than 3.2 TWh, freely choose their suppliers and with their choice affect the price and other also other characteristics of electricity supply.

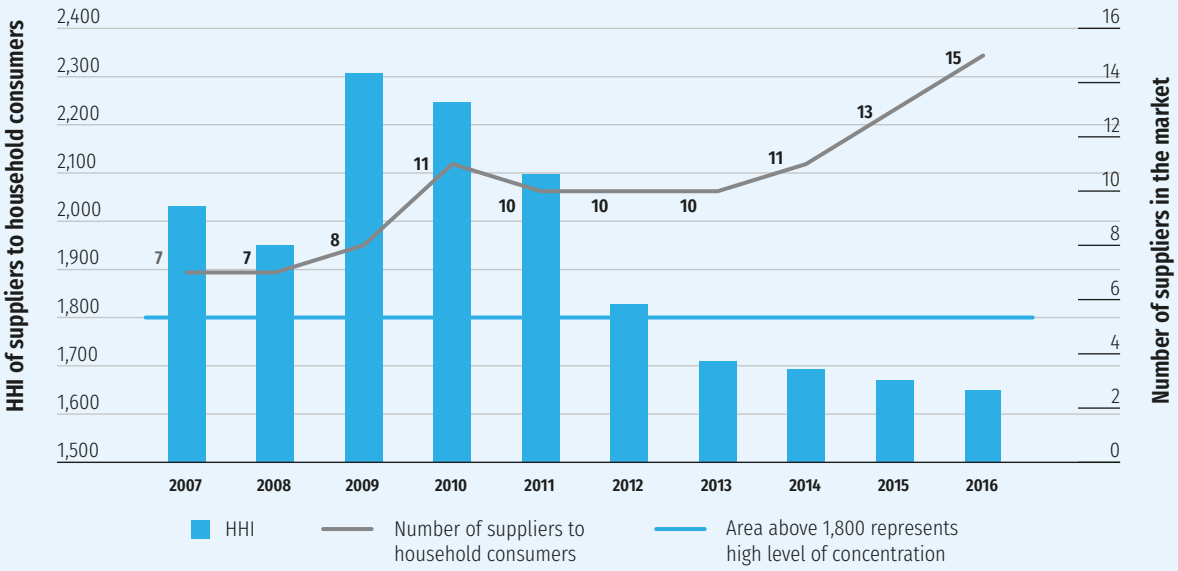
In 2004, the Energy Act in accordance with European Directive 2003/54/EC transferred to the Slovenian legislation the right of household consumers to become eligible customers no longer supplied under regulated tariffs, and their access to the network is free regardless of their choice of supplier. With this measure, Slovenia together with many EU countries encouraged further activities for strengthening the internal electricity market. Among the necessary conditions for market functioning was also effective unbundling of regulated and market-based services of the companies, which up to this date performed uniform supply and distribution of electricity. The Energy Act provided for the legal unbundling on the basis of Directive 2003/54/EC, which was carried out in March 2007 with the establishment of the distribution system operator, SODO d.o.o. company. The Government determined that this company should carry out the distribution of electricity throughout the entire territory of Slovenia and that with the companies, which up to 1 July 2007 carried up electricity distribution and owned the majority of the electricity infrastructure for distribution, signed appropriate contracts that will provide further activities of the electricity distribution system operator. This step provided the conditions for five electricity distribution companies (Elektro Celje, Elektro Gorenjska, Elektro Ljubljana, Elektro Maribor and Elektro Primorska) started to act as independent electricity suppliers in the retail market for households. Later on, the suppliers were effectively excluded from distribution companies in the form of the legal unbundling of entities (companies).

Household electricity consumers are among consumers the least knowledgeable about the rights concerning electricity supply. The Energy Agency and other regulatory authorities in the EU therefore on their websites set up the web application for comparison of suppliers, mainly with the aim of being able to uniquely identify prices and other conditions of electricity supply in an opened market. Over a ten-year period, the Energy Agency's application Comparison of suppliers has become a trusted tool for household consumers, which during this period made more than 172,000 comparisons of suppliers. With this programme, it was possible to see the offers of all active suppliers, recognize price differences, get information on supplier switching, and information about primary electricity sources offered by suppliers. At the same time, due to an efficient switching of supplier a uniform procedure of switching supplier, which envisage switching within a maximum of 21 days, was developed, as well as protective measures for a current supplier to make supplier's cost recovery. One of the key factors in the procedure of switching supplier was a single bill, which enables household consumers and in particular electricity suppliers a user-friendly common way of charging the network charge for the system operator, and charging costs paid to suppliers for electricity from producers, and other taxes and levies that are part of the country's energy policy.

Within a decade, the development of the retail market for household consumers has been dynamic. A significant influence on the retail price market in Slovenia has beside a number of suppliers the access to the electricity sources, also from other countries; nevertheless, conditions on the wholesale electricity market were also important. From 2008 to 2012, there was a significant increase in subsidized generation from RES, and also the financial crisis and the measures taken in Germany concerning the continued use of nuclear energy. All these issues conditioned fluctuation of wholesale from 50 EUR/MWh before 2008 to 95 EUR/MWh in 2010, followed by a reduction in prices below 40 EUR/MWh after 2015. The EU's liberalised electricity market and accessibility of sources have enabled that the number of suppliers in Slovenia doubled since market opening. By introducing the competition, the Slovenian market became liquid and comparable to the neighbouring ones. The progress of suppliers' number and the level of competition are shown in Figure P1-1. Despite increased competition, the Slovenian market experienced only one exit of a supplier, while new suppliers entered during this period, but only a few of them merged.

Figure P1-1

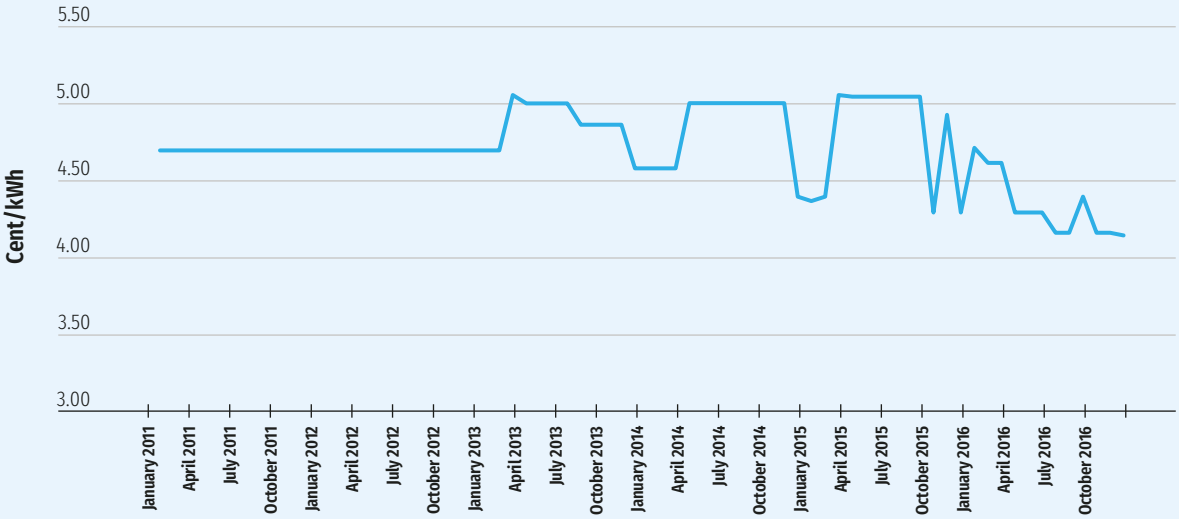
NUMBER OF SUPPLIERS IN THE RETAIL MARKET FOR HOUSEHOLD CONSUMERS



During the observed period, when prices fluctuations in the wholesale market were the most obvious, the price for household consumers was not directly affected, or price changes lag behind. The retail price index (RPI) determined by the lowest price (available to all consumers) in the market, was unchanged during this period, which is an indicator of a relatively poor response of the retail market to developments in the wholesale market.

Figure P1-2

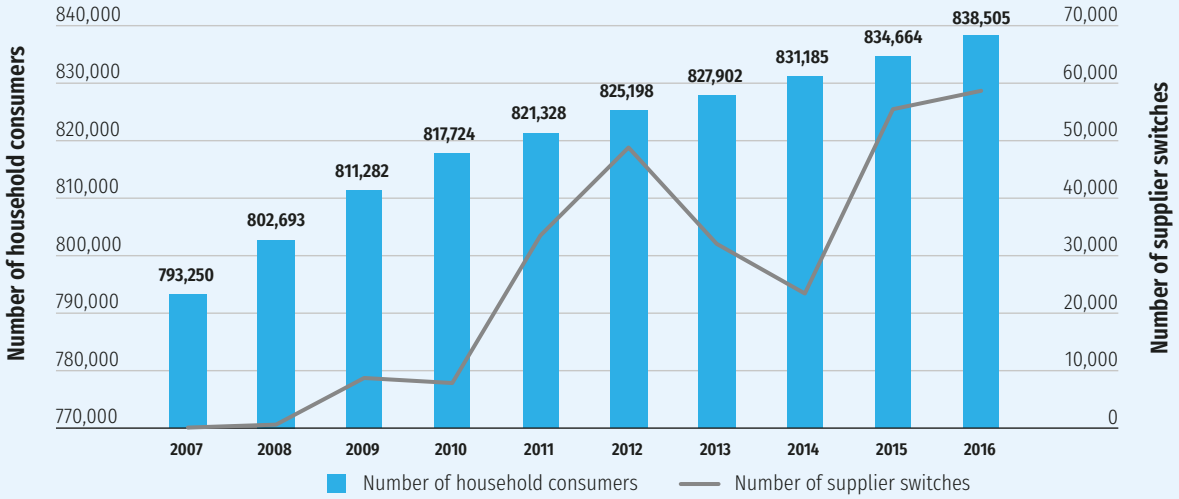
MOVEMENT OF HHI FOR A TYPICAL HOUSEHOLD ELECTRICITY CONSUMER



The number of switches started to increase faster after 2008, more precisely after the first large supplier, which was not related by ownership to the previous distribution companies, entered the market. Later on, numerous offers of others suppliers followed inviting household consumers with new supply packages.

Figure P1-3

DYNAMIC OF SUPPLIER SWITCHES AMONG HOUSEHOLD CONSUMERS

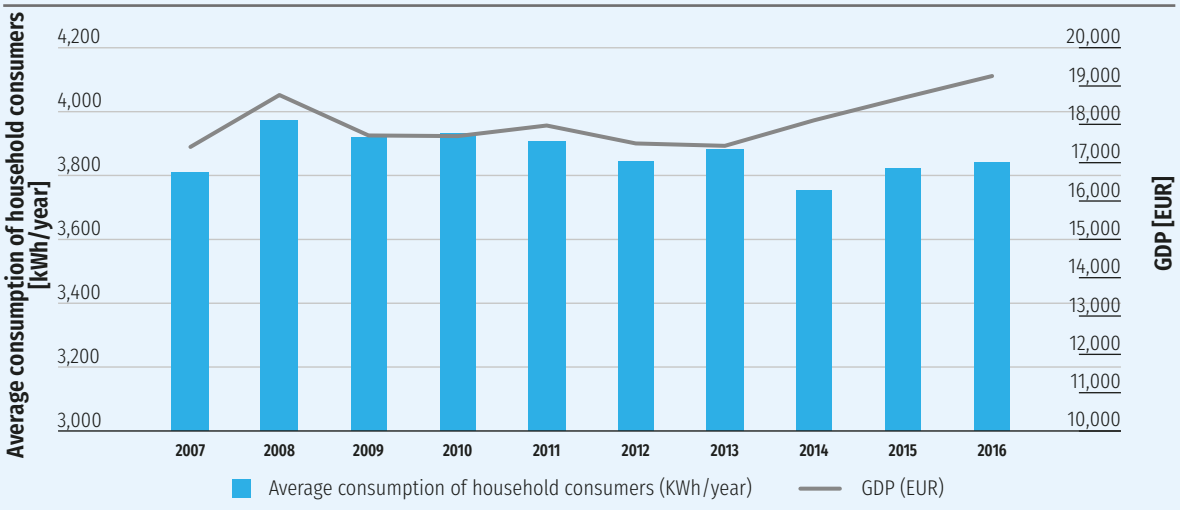


The share of the electricity supplier switches in 2016 amounted to 7% (Figure P1-3), which ranks the Slovenian market between the countries with the most developed markets. In addition to the level of supplier switching, the factor that influences on market's development is the efficient supplier switching procedure. The efficiency was good due to information process at the SODO, d.o.o., which allows suppliers regardless of consumer's location and related DSO that provides access to the distribution system for SODO, to carry on the switching procedure smoothly.

In the observed period, a slight increase in the number of household consumers can be detected (on average 0.57% growth) and stable electricity consumption of this group (on average 0.09%) in comparison to the growth of GDP, which was increasing with an average rate of 1.13%. Within the decade, related fluctuations of average electricity consumption and movement of GDP can also be observed (Figure P1-4).

Figure P1-4

CORRELATION BETWEEN AVERAGE ELECTRICITY CONSUMPTION OF HOUSEHOLD CONSUMERS AND GDP

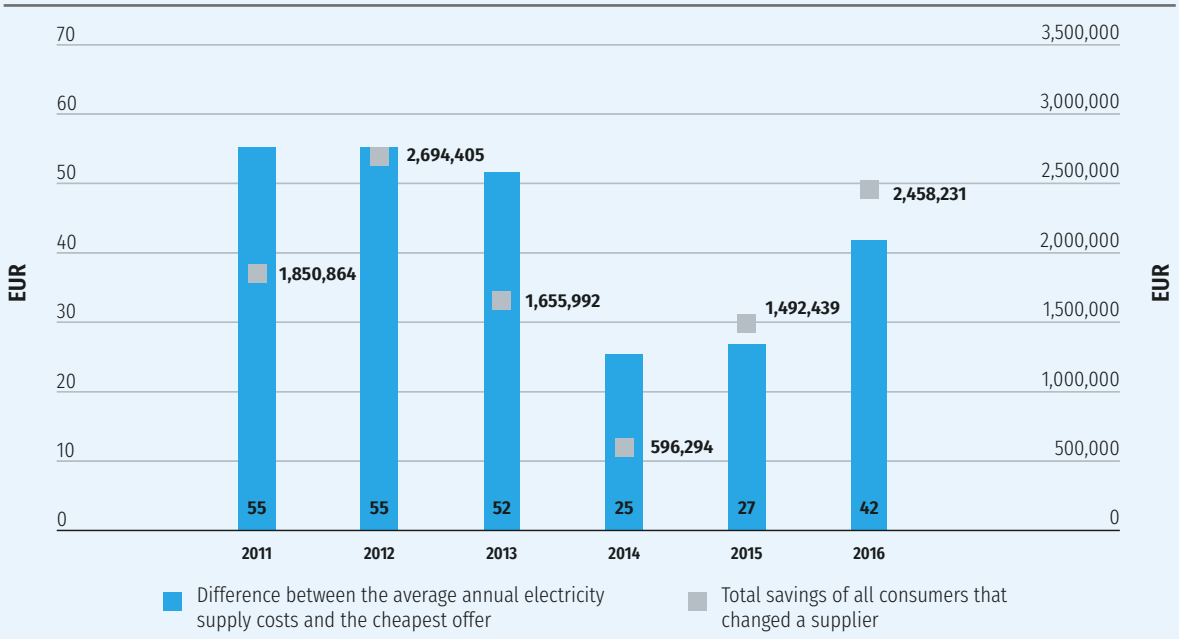


In the last two years of the observed period, two mergers were approved; the first one between suppliers from distribution company (ECE and Elektro Gorenjska Prodaja) and the second one between the two largest suppliers (GEN-I and Elektro Energija). For both mergers, the Slovenian Competition Protection Agency issued positive decisions. At the merger between the two largest suppliers certain conditions were set for keeping the competition level at the extent that would least affect the development of the retail market; one such condition was, for example, a price increase restriction for household and business consumers for the next five years from the date of issuing the decision.

On the important role of household consumers show the potential savings that could be made by household consumers if they were to benefit from favourable conditions on the market. Because of price changes in the wholesale market, the method of forecasting consumption at household consumers, the prices for deviations between actual consumption and planned consumption, and a creation of supply offers relative large differences are kept between the most expensive average offer on the annual level and the cheapest offer, which is reflected in high cumulative savings. For the entire decade, since market opening in July 2007, the savings of household consumers who changed a supplier are estimated to more than EUR 10 million.

Figure P1-5

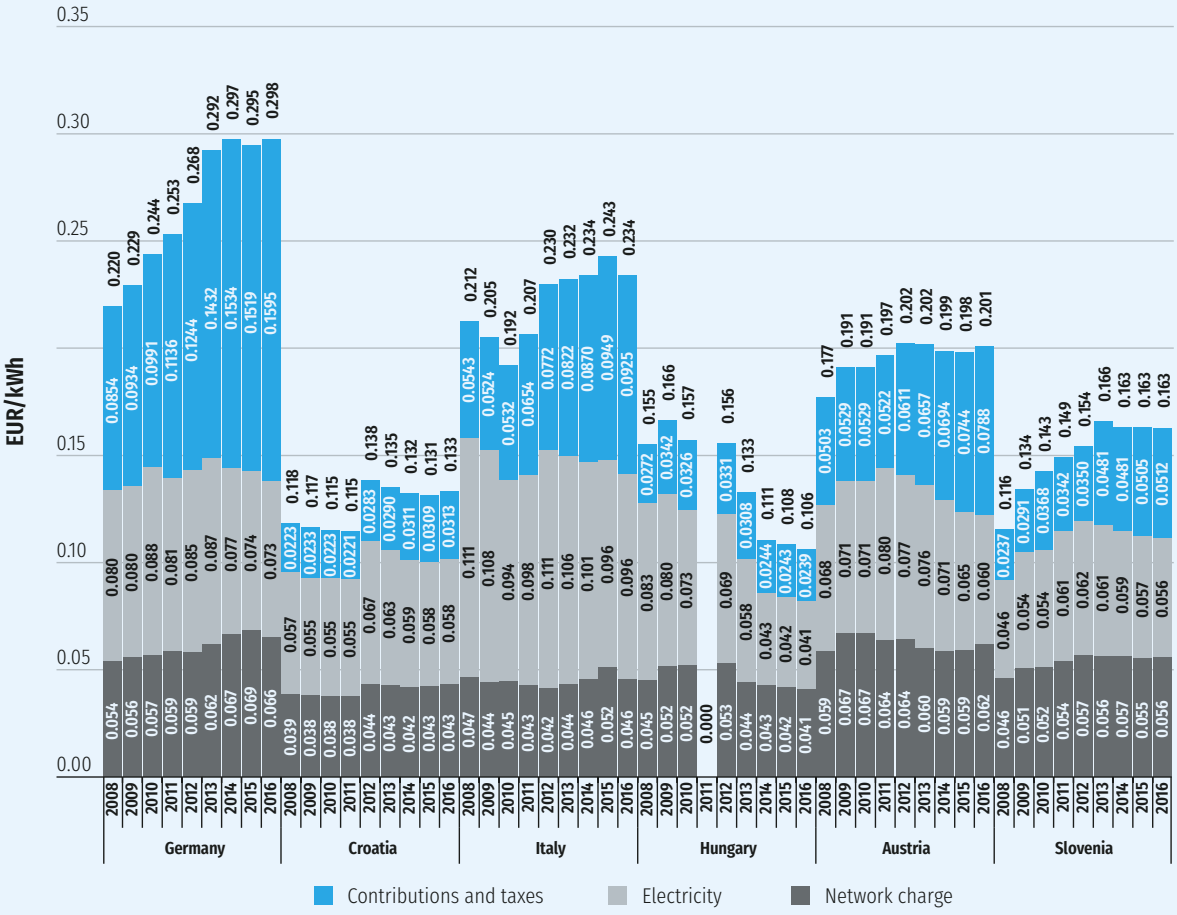
INDICATOR OF ESTIMATED POTENTIAL SAVINGS FROM SWITCHING SUPPLIER



The shares of the network charge, electricity as a commodity and other contributions and levies in the final price of electricity supply have been changing significantly in recent years. From the ACER and Eurostat reports is evident that increases in network charge and other contributions are manly a consequence of the lower price of electricity in almost all markets. Additional reduction in the share of the network charges is a result of subsidy programmes and policies of subsidizing generation from RES, which is indicated in various contributions. In some countries, these contributions are increasing significantly. The share of the network charge in the final electricity price for a typical household consumer in 2016 amounted to 34.3%, and was above the above the average share in the neighbouring countries; the absolute value of the network charge in these countries was comparable to the value in Slovenia.

Figure P1-6

OVERVIEW OF THE TOTAL PRICE MOVEMENT, ELECTRICITY PRICE, NETWORK CHARGES, CONTRIBUTIONS, AND TAXES FOR A TYPICAL HOUSEHOLD CONSUMER (WITH AVERAGE ANNUAL CONSUMPTION BETWEEN 2,500 AND 5,000 KWH)



Source: Eurostat

2.2 The development in the natural gas market

The consumption of natural gas in Slovenia increased in 2016 for the second consecutive year, namely by 4.5% compared to the previous year; at the end of the year, 133,439 consumers were connected to the transmission and distribution systems. The gas TSO transferred 9,275 GWh or 862 million Sm^3 of natural gas; more gas was also delivered to other transmission systems. The gas DSOs in 2016 distributed a total of 3,400 GWh or 316 million Sm^3 of natural gas. Total consumption of natural gas amounted to 9,309 GWh or 865 million Sm^3. Most of the gas was as in recent years imported from Austria.

In 2016, activities of DSOs, were performed by 15 entities; for gas DSOs legal unbundling of activities is not required since the number of connected consumers to an individual system does not exceed 100,000 consumers, nevertheless, they must prepare separate annual financial statements.

The level of the wholesale market concentration is high. In the balancing market in 2016 there were out of 17 registered balance group leaders seven regularly active, and six of them completely inactive. Favourable effects of the new balancing rules were already shown, since almost all quantities for balancing were sold or purchased at the trading platform.

The activities within the virtual trading point have been developed; the trading point is aimed to transactions of natural gas, the operation of the trading platform for balancing of balance group leaders and the provision of a bulletin board.

In the retail market the prices of natural gas decreased for the fifth consecutive year, and reasons for that are the changed situation in the wholesale markets, increased market activities and competition among natural gas suppliers. There were 22 natural gas suppliers active, of which two of them were new.

Ten years of an open natural gas market for household consumers

The full opening of the natural gas market in 2007 was for household consumers an important milestone. While consumers connected to the transmission system had already fulfilled all conditions for third-party access to the network, the consumers connected to the distribution systems still did not fulfil all the conditions to ensure the full market opening. The accounting separation of gas distribution and supply was ensured, as well as the separation of the final gas price to a regulated part (the network charge) and market share (the natural gas as commodity), but the general terms for the supply and distribution for the distribution networks, which among other issues govern switching a supplier, were not yet implemented. All the requirements for switching a supplier at household consumers were introduced after the implementation of Regulation on the operation of the natural gas market, with which the Government set the relationships among market participants, balancing rules, switching procedures, consumers' protection, and the implementation of general conditions for the supply and consumption. Immediately after natural gas market opening, it was established a web application for comparison of suppliers providing information on gas supply offers. In a decade, this tool was on the Energy Agency's website by consumers used more than 107,000 times.

The number of natural gas household consumers slightly increased in the recent years, since the number of local communities has increased, in which the service of general economic interest of gas distribution is carried out; more precisely from 68 in 2007 to 79 in 2016. In the same period, the length of distribution pipelines has also increased.

Figure P2-1

NUMBER OF LOCAL COMMUNITIES WITH THE NATURAL GAS DISTRIBUTION SYSTEMS AND DSOs

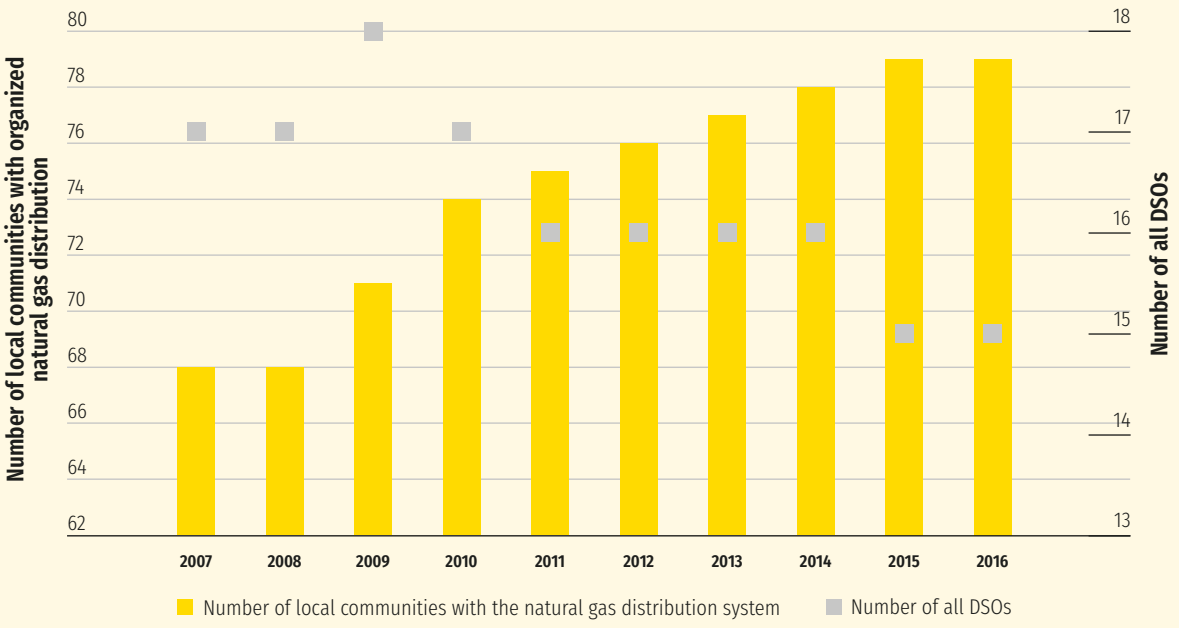


Figure P2-2

NUMBER OF CONSUMERS AND THE LENGTH OF THE DISTRIBUTION PIPELINES

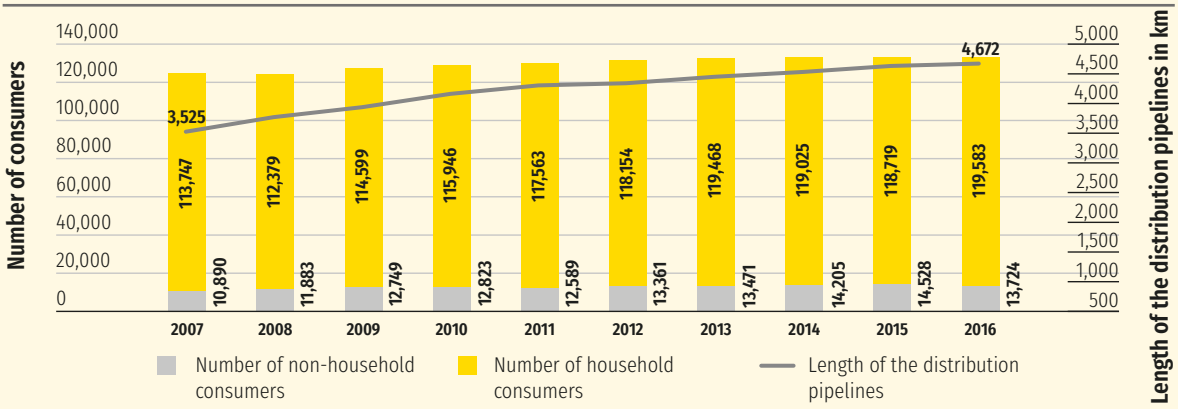
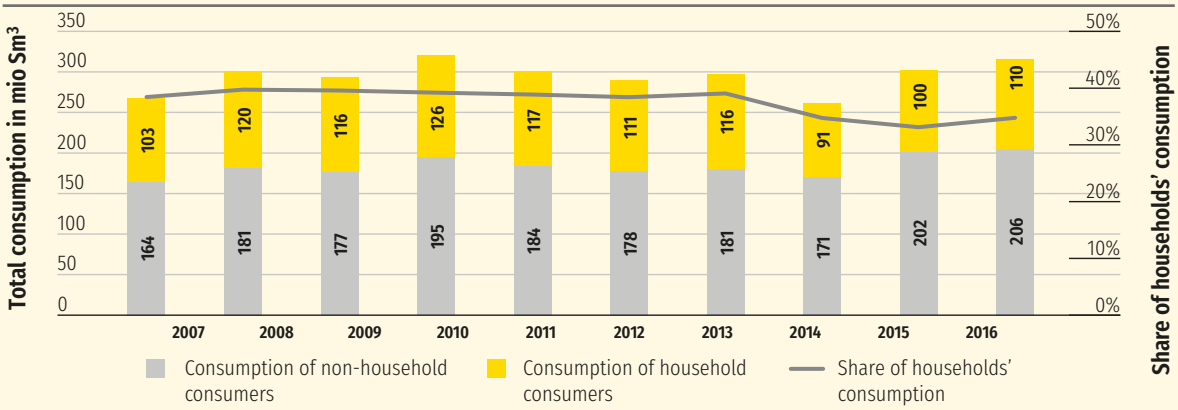


Figure P2-3

CONSUMPTION OF ALL CONSUMERS AND THE SHARE OF HOUSEHOLDS' CONSUMPTION



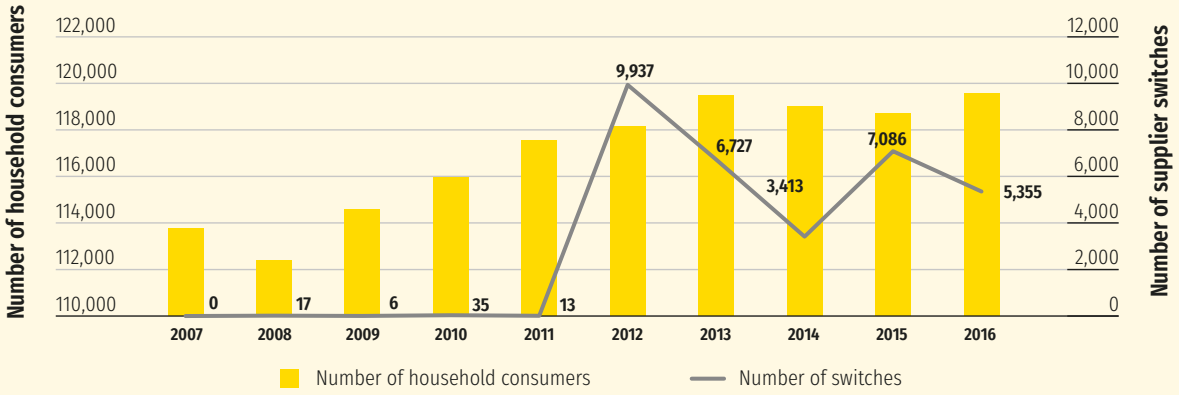
In 2008, a new importer of gas for the transmission system and balance group leader entered the market, while on the distribution network there were no new gas suppliers to the household consumers.

By 2012, when a new supplier entered the market, not many changes of supplier happened. The annual share of switching was between 0.01 and 0.03%. The natural gas market actually came alive in 2012 with the entrance of the new supplier (which was at the same time an importer of gas and the balance group leader), GEN-I, and on the basis of more competitive offers enabled consumers to significantly reduce their supply costs. These new offers had been reflected in a gradual reduction in the prices and activities of the current suppliers, who wanted in that period at least to retain their market shares. At the time of these activities in the market also natural gas consumers became more active, among which many of them recognized the potential possible savings. Increased activities of suppliers and consumers were demonstrated in a large number of supplier switches; in 2012 a very high level was reached, almost 9%. In the last two months of this year a supplier was changed by more than 11,300 consumers, of which were almost 10,000 households. With 2012, the supply of natural gas became more dynamic, and the opportunities were also recognized by new companies that did not supply gas before. The entry of the new supplier in the second half of 2012 was followed by the three new suppliers in 2013, and additional two in 2015. New suppliers were as a rule existing suppliers of electricity, which offered to consumers bundled offers of natural gas and electricity.

The first switches of supplier were carried out in 2008, when 17 household consumers (out of 68 switches on the distribution system) changed their supplier.

Figure P2-4

CHANGES IN THE NUMBER OF SUPPLIER SWITCHING AMONG NATURAL GAS HOUSEHOLD CONSUMERS

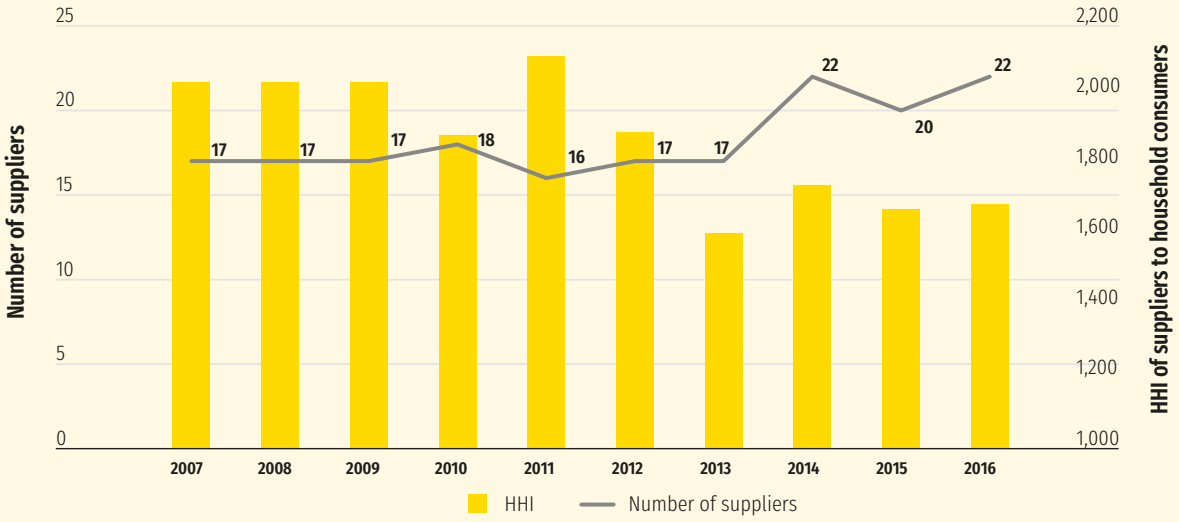


The changed situation in the natural gas market and the availability of new sources have been manifested in an increased number of new suppliers. By introducing competition, the Slovenian market became liquid and comparable with the neighbouring markets. In a decade, the supply was terminated by one supplier, who was also a DSO, and it ceased to carry out both activities. In the same period, two suppliers merged.

While in 2017 there were 17 suppliers to household consumers and HHI of natural gas suppliers was 2,041, in 2016 22 suppliers were present in the market, and HHI was 1,695. This means that in the supply of natural gas to household consumers the market shares of the three largest suppliers changed. The market share of the largest supplier, Energetika Ljubljana, was in 2007 40%, and in 2016 30%. The number of suppliers to household consumers and the level of competition is shown in Figure P2-5.

Figure P2-5

NUMBER OF SUPPLIERS TO HOUSEHOLD CONSUMERS IN THE RETAIL NATURAL GAS MARKET



Regardless of switching a supplier and consequently different providers of supply and distribution of natural gas, household consumers were enabled even after changing a supplier to pay for the natural gas supply with one invoice settled to a supplier.

Natural gas consumption of household consumers mainly depends on the purpose of the use, and weather conditions, but of course, the number of consumers and their consumption is also influenced by the price of natural gas. After market opening in Slovenia we did not have regulated prices of natural gas, they were set by the market. In the initial years after market opening in Slovenia until the entrance of the new supplier in 2012 suppliers' prices followed the prices determined by the long-term-contracts and the prices of oil and oil products. Only after the entry of the new supplier, who was buying gas at market hubs and did not depend on the long-term contracts, the prices of gas significantly decreased since they followed the price on the international stock exchanges.

Since the market opening the structure of the final price has also changed. At the beginning of 2008 the share of gas was 54% of the final price, and in January 2017 only 49%. In the figure P2-6 is shown a detailed structure of the final price for the gas supply in January for a typical household consumer with an annual consumption around 1,000 Sm³ connected to the distribution system in the City municipality of Maribor.

Figure P2-6

STRUCTURE OF NATURAL GAS SUPPLY COSTS FOR A TYPICAL HOUSEHOLD CONSUMER WITH ANNUAL CONSUMPTION AROUND 1,000 Sm³ IN JANUARY

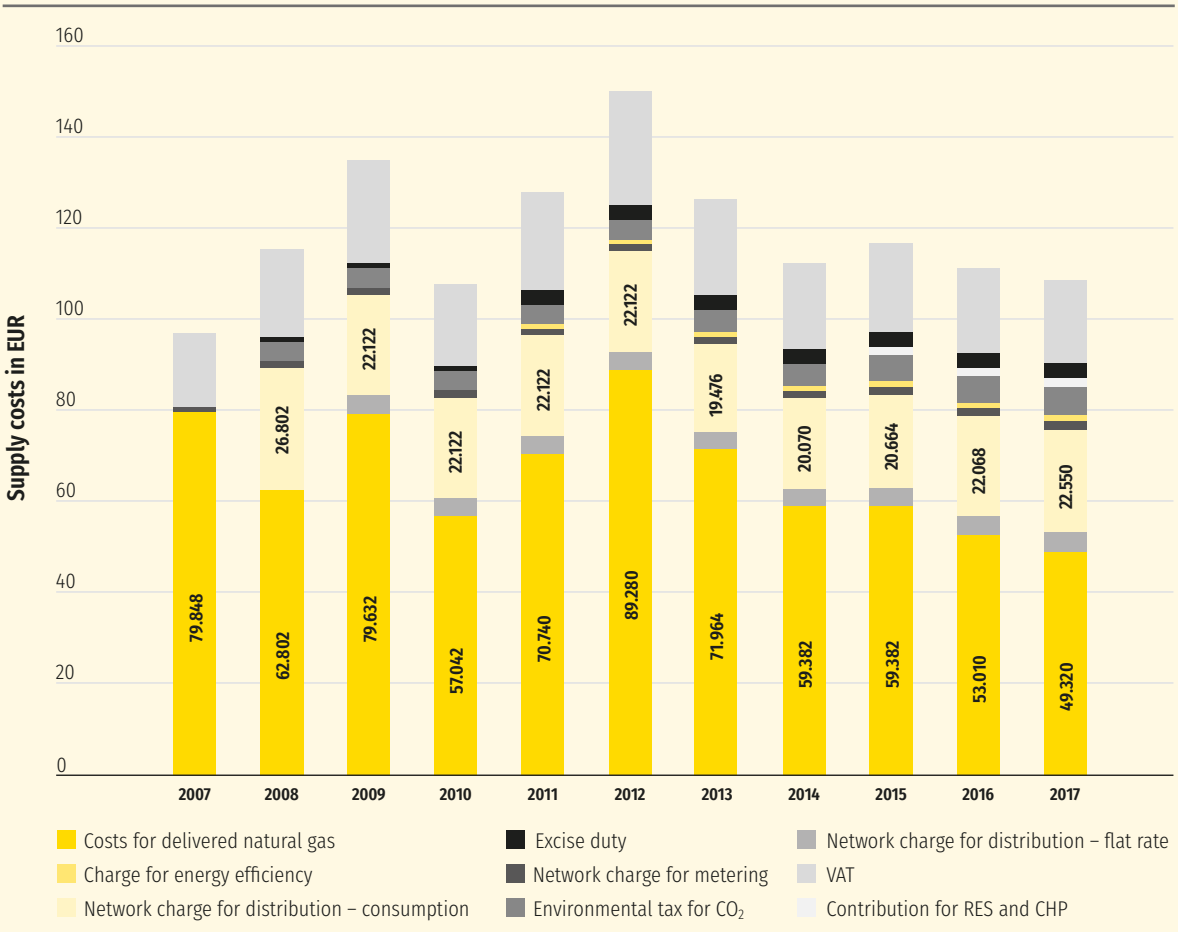
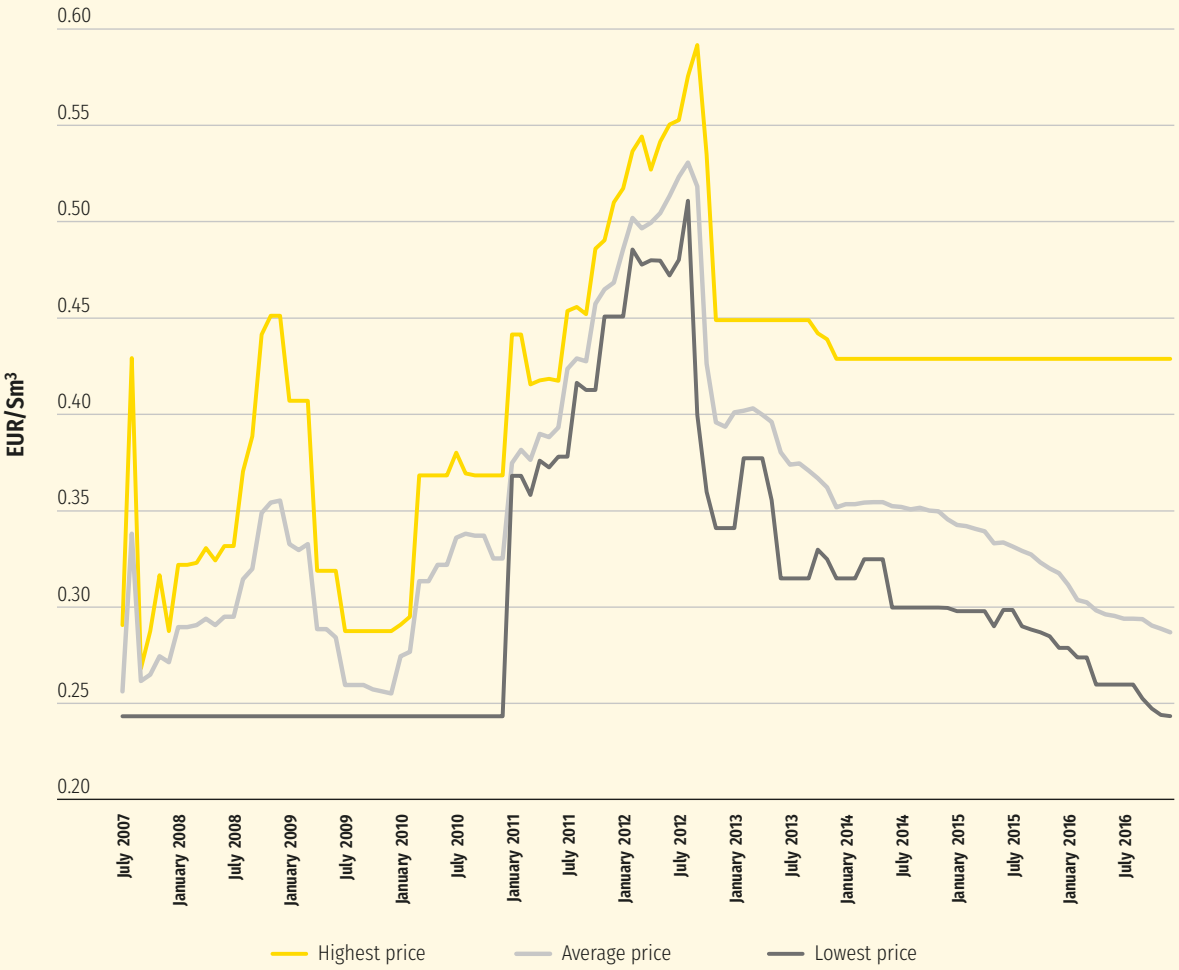


Figure P2-7

MOVEMENT OF RPI FOR A TYPICAL HOUSEHOLD CONSUMER



After ten years from the natural gas market opening new suppliers, which are not at the same time DSOs, supply almost a third of all quantities to consumers on the distribution systems and deliver gas to around 18% of all household consumers.

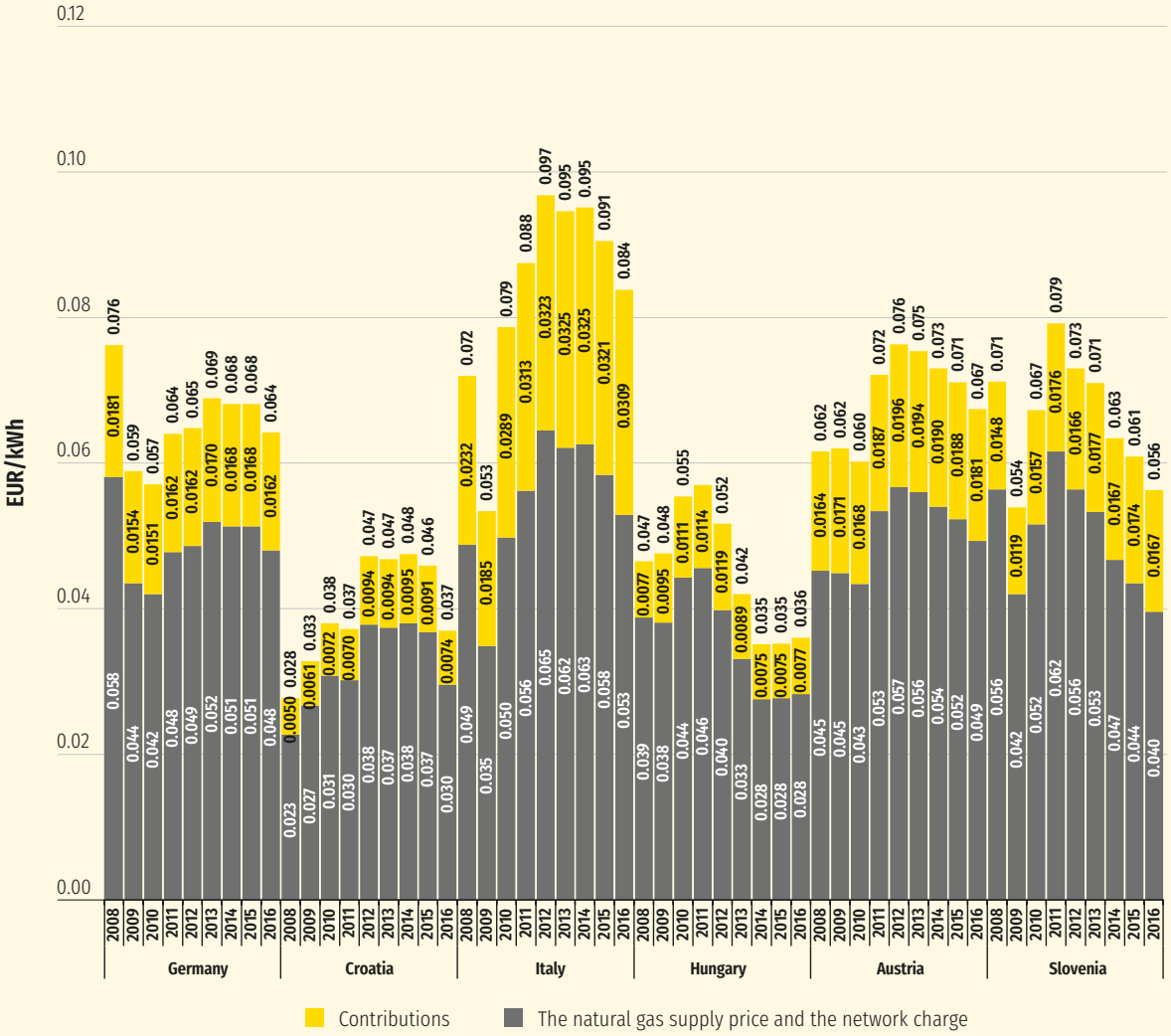
The data collected show that the market is developing and offers many opportunities to consumers and other participants. Nevertheless, consumers must be aware that their active role is crucial for the operation of a competitive market, and that means more extensive monitoring and selection of the best suppliers or offers result in a reduction of prices at more expensive suppliers.

In the first four years after the market opening for household consumers the final supply of natural gas still largely followed the prices of oil products on international markets. In the next years, the formation of the market price was importantly influenced by the growing share of trading on the international power exchanges, which also led to a reduction of prices for Slovenian consumers.

The share of supply and the network charge in the final price has over a decade decreased from the initial 79% to around 70%, and the share of contributions and other charges increased. While in 2007 a natural gas consumer for consumed gas paid the network charge and VAT, in 2016 the price included excise duty, environmental tax, contributions for RES and CHP, and charge for energy efficiency. Nevertheless, due to the situation in the natural gas markets and competition, the final price of natural gas over the period 2001–2016 decreased by 29%.

Figure P2-8

AN OVERVIEW OF THE TOTAL PRICE, THE NATURAL GAS SUPPLY PRICE, THE NETWORK CHARGE, CHARGES AND TAXES FOR A TYPICAL HOUSEHOLD CONSUMER (ANNUAL CONSUMPTION BETWEEN 20 AND 200 GJ)



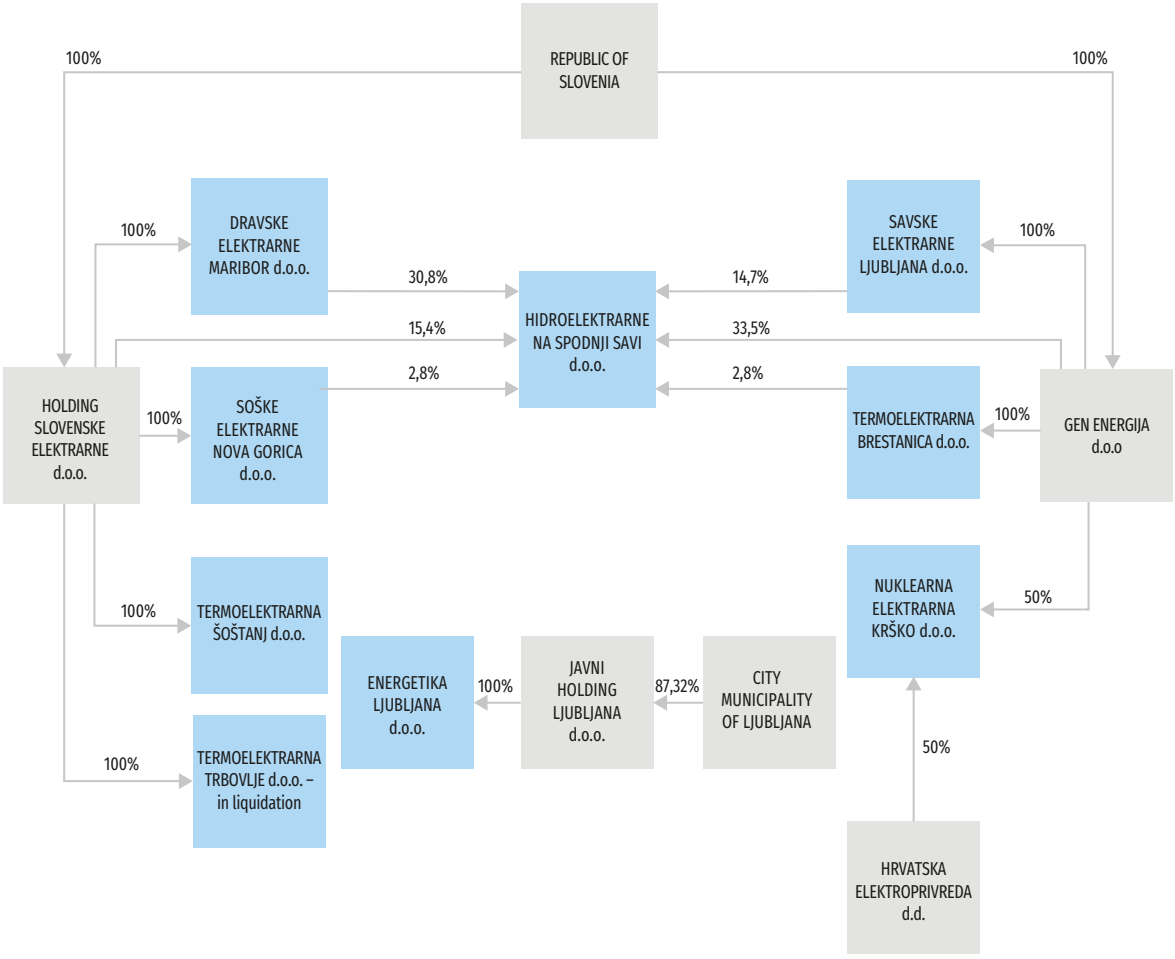
Source: Eurostat

2.3 Ownership relations between companies providing services to networks users

There are changes in numbers of suppliers, their services and in their integration or ownership relations. In recent years, the number of suppliers, which provide the supply with electricity and gas, has increased. The competitiveness and transparency of the energy market is also influenced by the ownership structure of these companies. Figure 1 and 2 show the ownership structure of electricity producers and electricity and natural gas suppliers in Slovenia in April 2017. Included are the suppliers to final consumers. More about market transparency is described in the chapter on electricity (3.3.1.2 in 3.3.2.2) and gas (4.3.1.2 in 4.3.2.2) wholesale and retail market transparency.

Figure 1

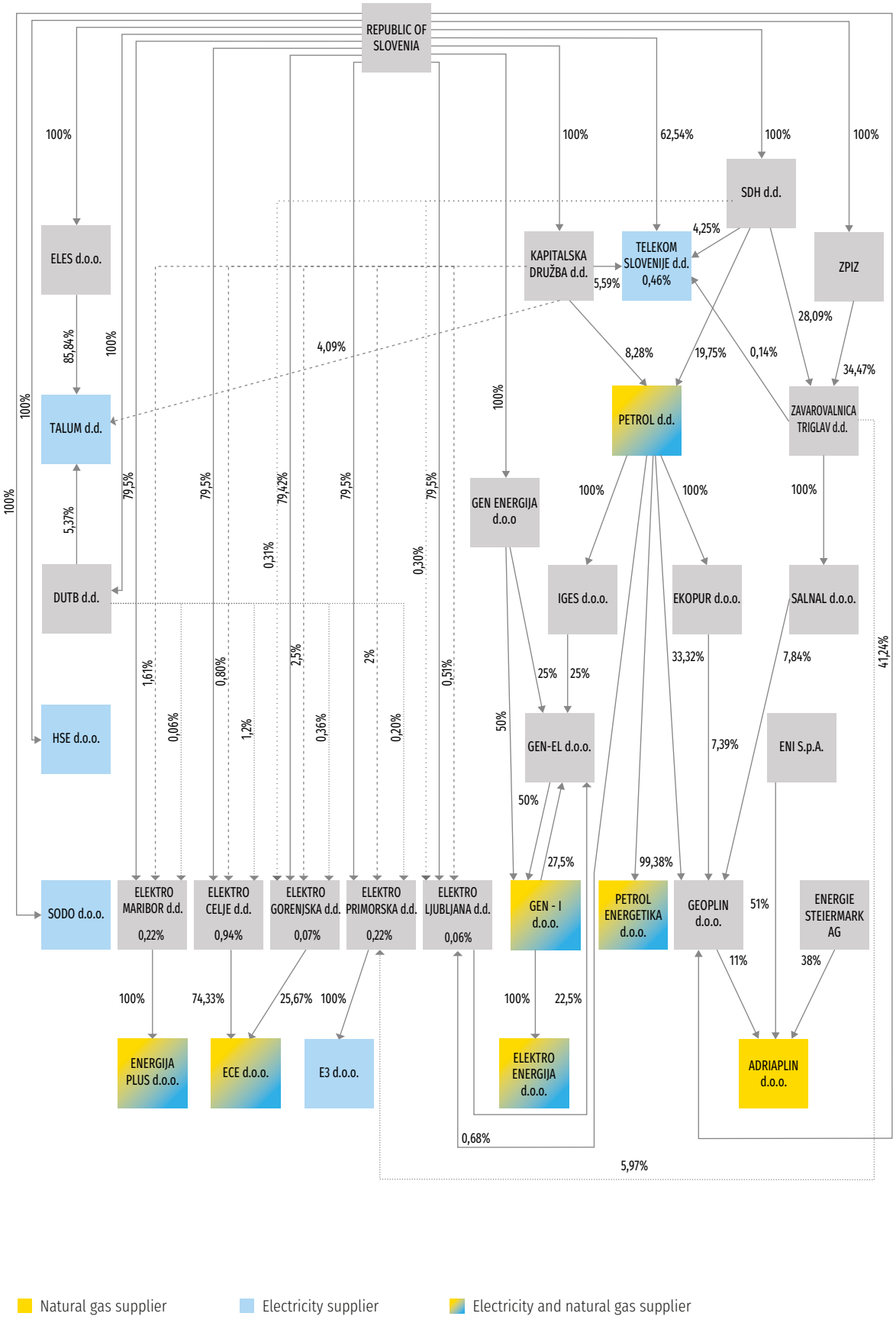
OWNERSHIP STRUCTURE OF ELECTRICITY PRODUCERS WITH INSTALLED CAPACITY MORE THAN 10 MW – IN APRIL 2017

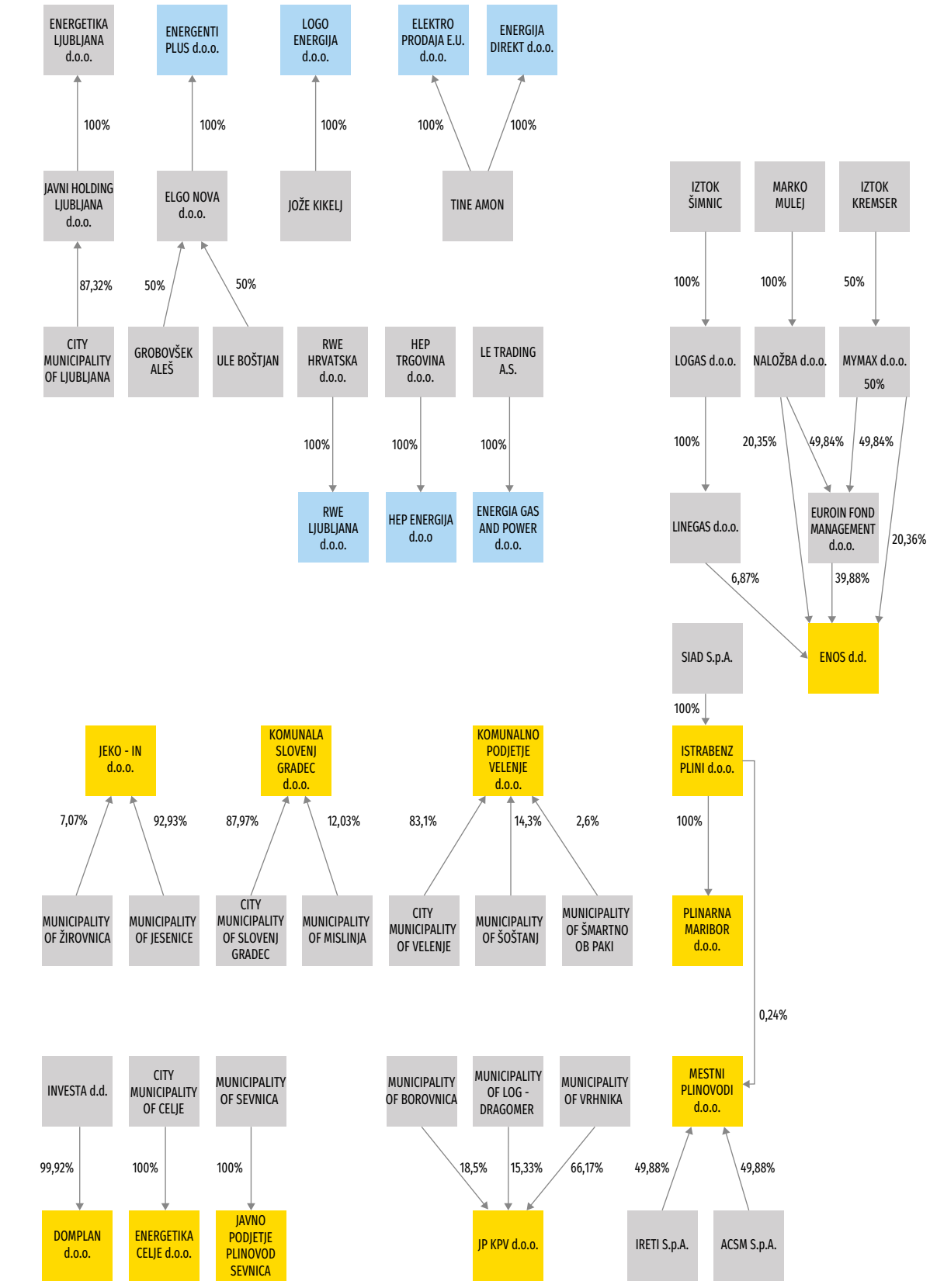


Source: gvin.com

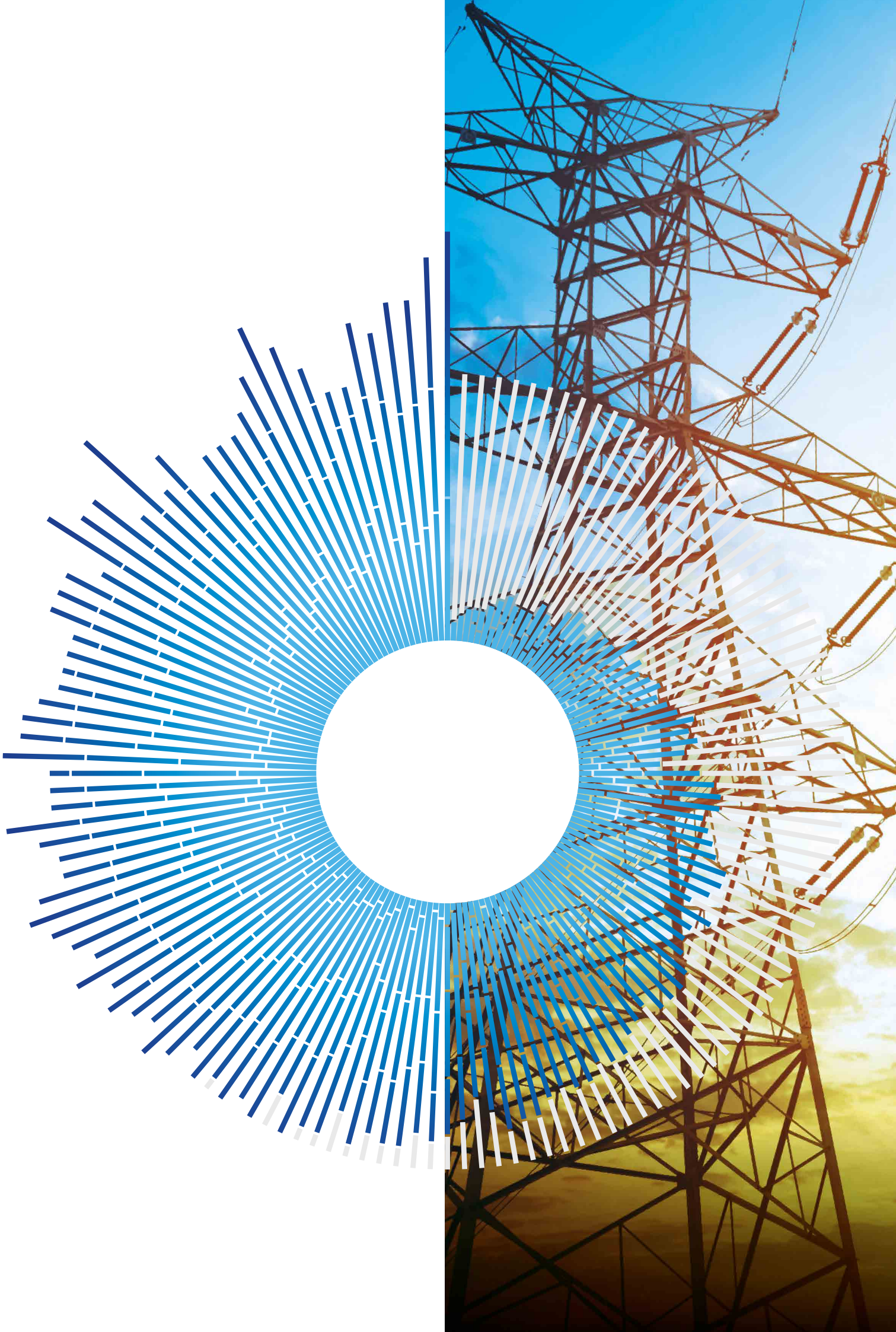
Figure 2

OWNERSHIP STRUCTURE OF ELECTRICITY AND NATURAL GAS SUPPLIERS – IN APRIL 2017





Source: gvin.com



03

Electricity

In 2016, the total electricity consumption was higher by almost 2% in comparison to the previous year. In Slovenia, 36% of electricity generated in the nuclear power plant, 34% in facilities using RES, and 30% in power plants burning fossil fuels.
The wholesale market is well developed and transparent. Market coupling on the Slovenian-Austrian border for day-ahead trading and markets coupling on the Slovenian-Italian border for intraday trading were successfully implemented.

7.7%
of the total produced electricity in Slovenia, or 1003.5 GWh were generated in power plants included in the support scheme.

12%
was import dependency of Slovenia since 88% of the Slovenian consumption was covered by domestic sources.

3.1 The balance of electricity supply and demand

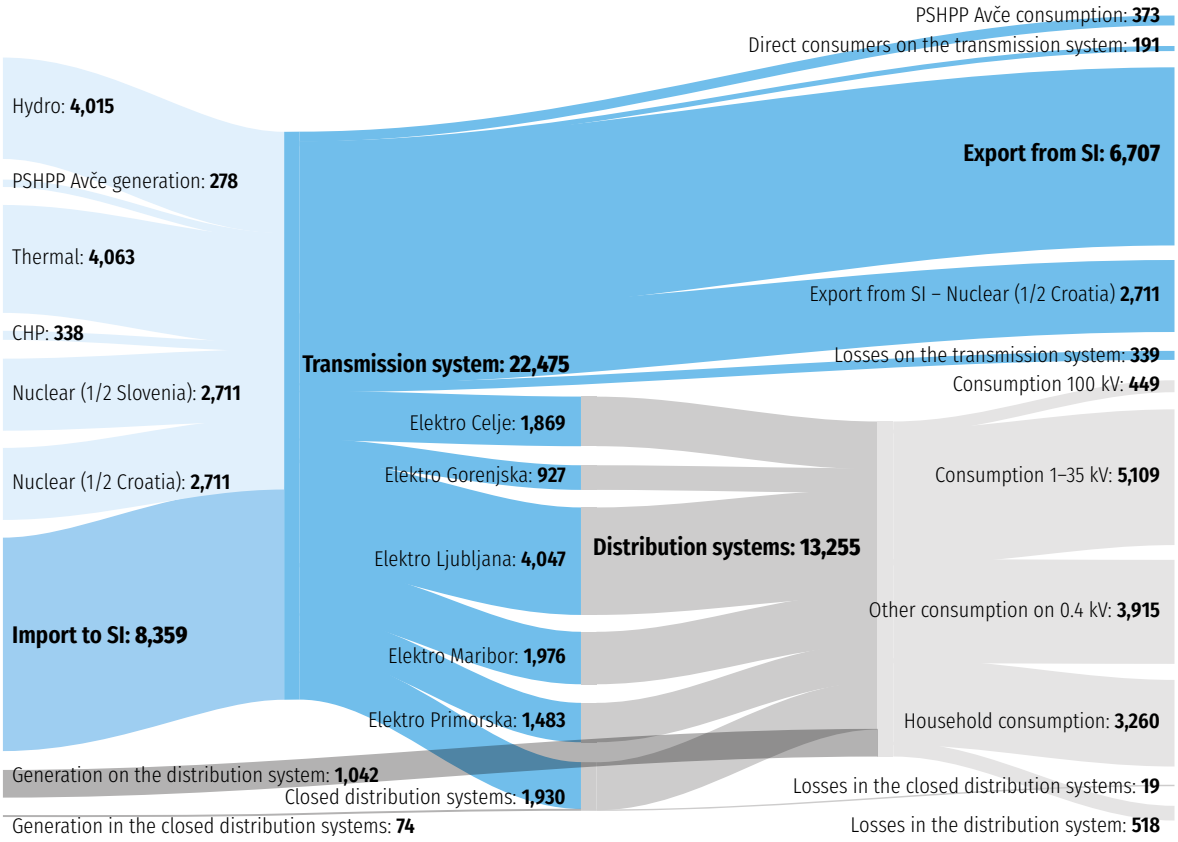
In Slovenia, in 2016 to the transmission and distribution system 15,233 GWh of electricity was delivered, which is 1,279 GWh more than in 2015. The delivery from generating plants using RES was 5,221 GWh, which was 626 GWh more than the previous year, generating plants using fossil fuels contributed 4,589 GWh, or 592 GWh more than the year before. The nuclear power plant Krško delivered 5,423 GWh to the transmission system, or 61 GWh more. These quantities are taken from the balance sheets of electricity producers on the basis of physical flows.

15,233 GWh
of electricity delivered, of which 5,221 GWh or 34% were produced from RES

In 2016, to the distribution system 1,116 GWh of electricity was delivered. In addition, in internal consumers' networks additional 341 GWh of electricity was used, or 24% of all generated electricity in the distribution system, which is one percentage point more than in 2015.

Figure 3

BALANCE OF ELECTRICITY SUPPLY AND DEMAND ON THE TRANSMISSION AND DISTRIBUTION SYSTEMS IN 2016 IN GWh



Sources: Electricity system operators, Energy Agency

To the Slovenian power system for 5.8 MW of new generating capacity was connected. These were mainly smaller generation facilities, connected to the distribution system. The largest share had generation facilities using biogas with a total power of 2.5 MW. A significant share belonged to new solar power plants, whose total power added in 2016 amounted to around 1 MW. There were no major shutdowns of existing generation facilities.

Table 1

ELECTRICITY DELIVERED TO THE TRANSMISSION AND DISTRIBUTION SYSTEMS IN 2016

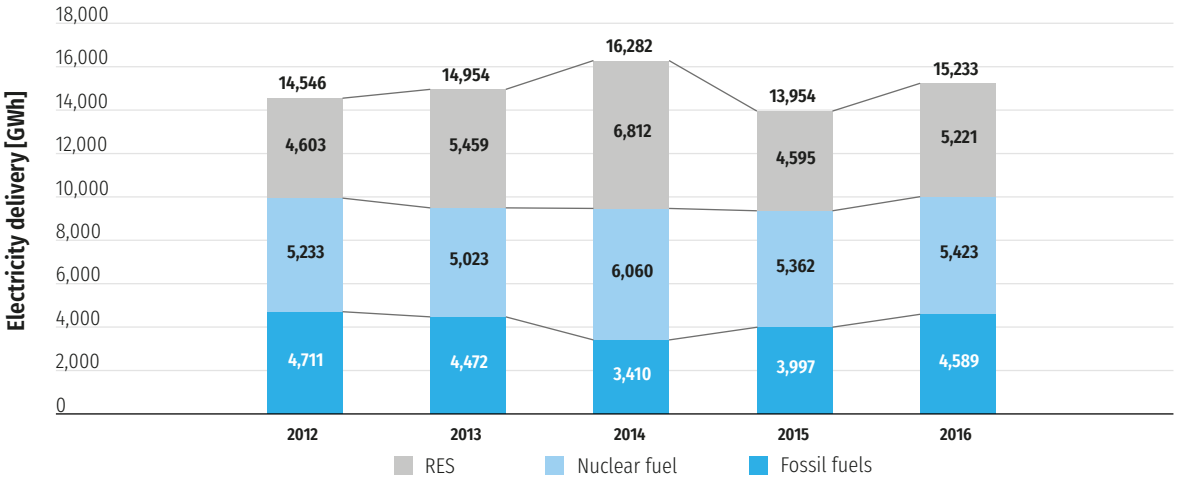
Electricity delivered to the transmission system	**GWh**
Dravske elektrarne Maribor	2,826
Savske elektrarne Ljubljana	342
Hidroelektrarne na spodnji Savi	392
Soške elektrarne Nova Gorica	455
PSHPP Avče generation	278
Total Hydro	**4,293**
TPP Šoštanj	4,061
TPP Brestanica	3
TPP Trbovlje	–2
Javno podjetje Energetika Ljubljana	338
Total TPP and CHP	**4,401**
Nuclear PP	5,423
Total Nuclear	**5,423**
Electricity delivered to the transmission system	**14,117**

Electricity delivered to the distribution system	**GWh**
HPP up to 1 MW	201
HPP over 1 MW	183
Facilities using wood biomass	53
Wind-powered plants	6
Solar power plants	235
Facilities using biogas	116
Waste-to-energy plants	9
Facilities using other RES	126
Total RES	**928**
Total conventional sources	**188**
Electricity delivered to the distribution system	**1,116**
Total electricity delivery	**15,233**

Sources: Electricity system operators, Energy Agency

Figure 4

ELECTRICITY DELIVERED TO THE TRANSMISSION AND DISTRIBUTION SYSTEMS IN THE PERIOD 2012–2016



Sources: Electricity system operators, Energy Agency

The share of electricity generated in hydro power plants and plants using other RES annually varies, depending on hydrological and other conditions, and the investments in new generating facilities using RES. In 2016, this share was around 34% of all generated electricity in Slovenia, which is one percentage point more than the previous year. Plants using fossil fuels contributed to the total production around 30%, which is also by one percentage point more than the year before, and the nuclear power plant 36% of all generated electricity.

Table 2

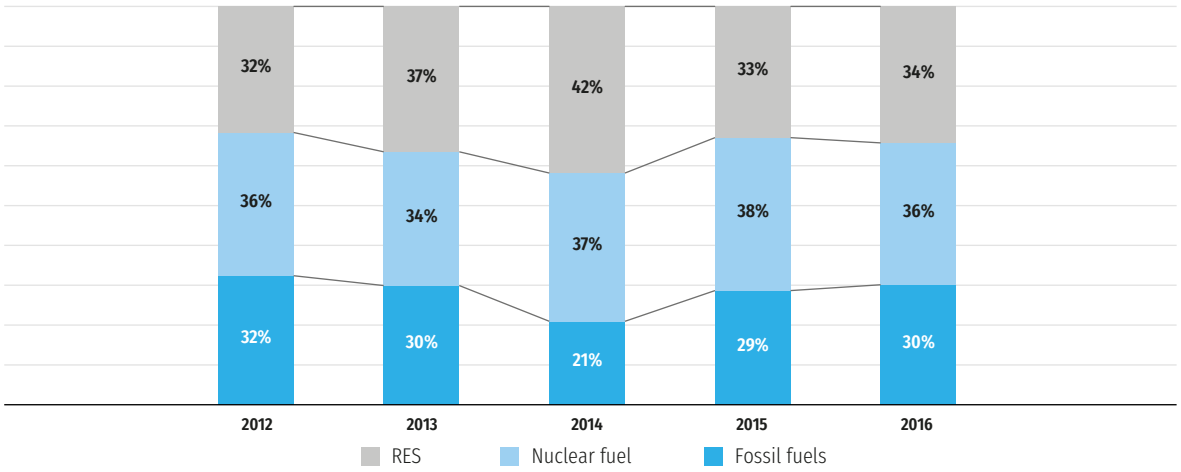
PRIMARY ENERGY SOURCES FOR ELECTRICITY GENERATION IN 2016

Primary energy sources for electricity generation	GWh	Share
Fossil fuels	4,589	30%
Nuclear fuel	5,423	36%
RES	5,221	34%
– hydro	4,677	
– wind	6	
– solar	235	
– biomass	304	
Total delivery of electricity	**15,233**	

Sources: Electricity system operators, Energy Agency

Figure 5

SHARES OF PRIMARY ELECTRICITY SOURCES IN THE PERIOD 2012–2016



Sources: Electricity system operators, Energy Agency

At the end of 2016, a total of 945,422 electricity consumers were connected to the power system. In comparison to 2015, the number of consumers increased by 4653, or 0.5%. The number of household consumers with two-tariff metering consumption increased by 1.4%, and by 1.5% decreased the number of household consumers with single tariff metering.

0.5%
more consumers of electricity than in 2015

The number of business consumers on the transmission system did not change compared to the previous year. Three business consumers are connected to the transmission system on five delivery points.

To the transmission system were in 2016 connected four new operators of the closed distribution system on five locations; they supplied electricity to 221 business and 63 household consumers.

Table 3

NUMBER OF CONSUMERS BY THE TYPE OF CONSUMPTION IN 2015 AND 2016

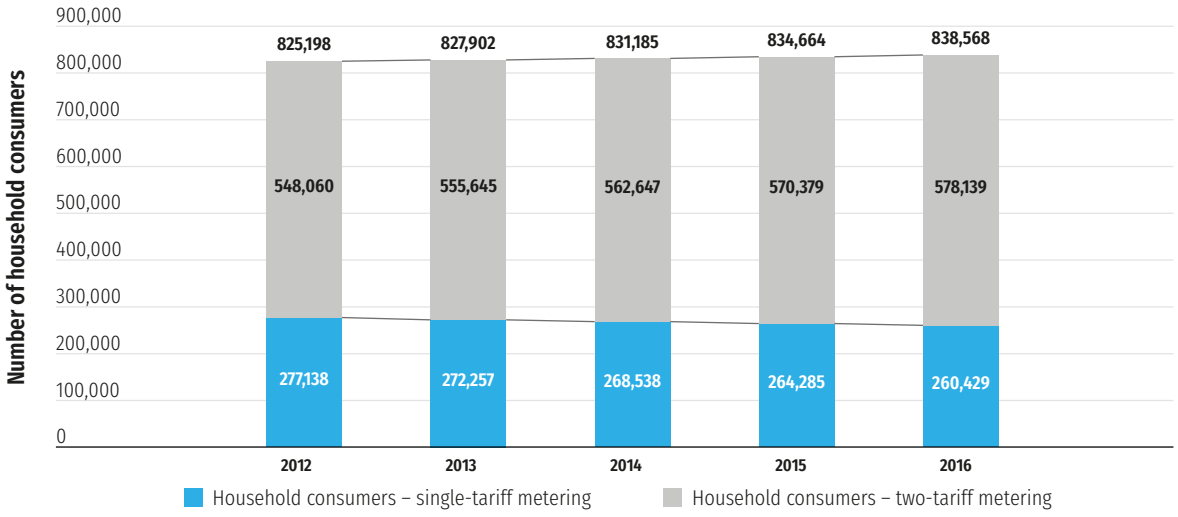
Number of consumers by the type of consumption	2015	2016	Index
Business consumers connected to the transmission system	3	3	100.0
Consumption of PSHPP Avče	1	1	100.0
All consumers connected to the transmission system	**4**	**4**	**100.0**
Business consumers connected to the distribution system	106,121	106,649	100.5
Household consumers	834,664	838,505	100.5
– single tariff metering	264,285	260,407	98.5
– two-tariff metering	570,379	578,098	101.4
All consumers connected to the distribution system	**940,785**	**945,154**	**100.5**
Business consumers connected to the closed distribution systems	–	221	–
Household consumers connected to the closed distribution systems	–	63	–
All consumers connected to the closed distribution systems	**–**	**284**	**–**
All consumers	**940,789**	**945,442**	**100.5**

Sources: Electricity system operators, Energy Agency

Figure 6 shows the numbers of household consumers in the period 2012–2016. The total number of household consumers has been growing throughout the period on average by 0.4%. The number of consumers with two-tariff metering is increasing permanently, on average by 1.3%, while the number of consumers with single tariff metering is permanently decreasing. The data show the increasing share of consumers with two-tariff metering, who can adjust their consumption during low-tariff hours and with that reduce their costs for the electricity supply. In that way, especially by using modern measuring equipment, consumers can adapt their consumption to the low-tariff hours between 10 p.m. and 6 a.m. during the working week as well as at weekends and national holidays, which is for consumers an additional incentive for savings.

Figure 6

NUMBER OF HOUSEHOLD CONSUMERS IN THE PERIOD 2012–2016



Sources: Electricity system operators, Energy Agency

3.1.1 Electricity generation

In 2016, in Slovenia the following nine companies were operating large facilities with a capacity of over 10 MW:

- Termoelektrarna Šoštanj (TEŠ);
- Nuklearna elektrarna Krško (NEK);
- Dravske elektrarne Maribor (DEM);
- Savske elektrarne Ljubljana (SEL);
- Soške elektrarne Nova Gorica (SENG);
- Hidroelektrarne na spodnji Savi (HESS);
- Termoelektrarna Brestanica (TEB);
- Javno podjetje Energetika Ljubljana (JPEL);
- Termoelektrarna Trbovlje – in liquidation (TET).

Production companies in Slovenia use different primary energy sources for electricity generation. Companies DEM, SEL, HESS, and SENG, generate electricity in hydroelectric power plants (HPP), NEK in a nuclear power plant (NPP), TEŠ, and TET in thermoelectric power plants (TPP) running on coal, TEB produces electricity from liquid and gaseous fuels, and the JPEL Ljubljana cogenerates heat and electricity in a cogeneration process using coal.

Within the company Holding Slovenske elektrarne (the HSE), which represents the first energy pillar in the Slovenian wholesale market, the companies DEM, SENG, HESS, TEŠ, and TET were operating. The second energy pillar of the wholesale market was formed by the group of GEN energija, in which companies SEL, TEB and in accordance with an intergovernmental agreement between Slovenia and Croatia 50%

of the Nuclear power plant (NEK) were included. At the same time, the group GEN-I owns 51% of HESS, while the remaining part of this company belongs to the HSE group. JPEL company is 100% owned by the Javni Holding Ljubljana company. Thermal power plant Trbovlje in 2016 did not produce electricity since at the end of 2014 the company's General Assembly initiated the decision on regular liquidation of the company. TET was operating within the HSE group. The ownership structure of production companies is presented in Figure 2.

Table 4 shows the data on the installed power and the amount of generated electricity in 2016. It also presents the share of individual producer on the basis of the installed capacity and generated electricity in Slovenia.

Table 4

INSTALLED CAPACITY IN THE PRODUCTION FACILITIES AND ELECTRICITY GENERATION IN 2016

Producer	Installed capacity [MW] (50 % NPP)	Share – all producers in SI (%)	Generation (GWh)	Share – generation of all producers in SI (%)
HSE	**2,082**	**58.9%**	**8,172**	**62.7%**
HPP	1,039		4,050	
TPP	1,043		4,121	
GEN energija	**764**	**21.6%**	**3,066**	**23.5%**
HPP	119		343	
TPP	297		8	
NPP*	348		2,715	
Javno podjetje Energetika Ljubljana	**118**	**3.3%**	**383**	**2.9%**
Other small producers (on the transmission network)	**33.0**	**0.9%**	**124**	**0.9%**
Small HPP	8,7		49	
Solar power plants	6,8		7	
CHP	17,5		68	
Other small producers (on the distribution network)	**539.25**	**15.2%**	**1,285**	**9.9%**
Small HPP	103.90		383	
Solar power plants	263.74		270	
Wind-powered plants	3.31		6	
Facilities using biomass	2.20		0	
Geothermal power plants	0.00		0	
Facilities using landfill gas	7.30		13	
Facilities using gas from purification plants	1.29		4	
Facilities using biogas	30.93		114	
CHP facilities using wood biomass	14.39		76	
CHP using fossil fuels	110.50		418	
Other	1.70		0	
Total in SI	**3,537**	**100%**	**13,030**	**100%**
– on the transmission network	**2,997**			

* the 50-% share of the installed capacity and generation of the NPP Krško

Sources: Companies' data

In addition to the production in large power plants connected to the transmission network, the Slovenian electricity system also includes dispersed production facilities connected to the distribution network. In Slovenia, with respect to dispersed sources are important the production in small hydroelectric power plants, solar power plants and the production in industrial facilities for the cogeneration of heat and electricity (CHP). In comparison with 2015, the generation of electricity in dispersed production facilities did not change significantly.

According to the bilateral agreement between Slovenia and Croatia, half of the production from the Krško NPP belongs to Croatia, which reduces the share of the Krško NPP in the Slovenian production of electricity. Thus, in 2016 the Slovenian power plants produced a total of 15,745 GWh of electricity, but the actual Slovenian production was lower, amounting to 13,030 GWh. Electricity generation in comparison to 2015 increased by 1.3 TW as a result of a higher generation of hydroelectric power plants, thermal power plants, and nuclear power plant. The largest share of electricity production in Slovenia was contributed by the thermoelectric power plants, in which was generated 34.6% of all electricity for the Slovenian market. This share is followed by the share of hydroelectric power plants with 33.7%, and by 20.9% of the nuclear power plant.

Production of electricity from RES and CHP

In 2016, 1003.5 GWh of electricity were generated in production facilities, which are included in the support scheme. The support scheme is aimed to promote the production of electricity from RES and CHP. As presented in Table 5, the share of this production has increased in comparison to 2015. An important part of this increase is a consequence of good hydrological conditions, and consequently increased production in hydroelectric power plants. Higher production of facilities included in the support scheme is also a consequence of increased generation in facilities using biogas and biomass. Although the production of these facilities increased, the share of production in these plants with regard to the total electricity production in Slovenia decreased by 0.7 percentage point, more precisely from 8.4% in 2015 to 7.7% in 2016. Good hydrological conditions also had an impact on higher production in hydroelectric power plants, which are not included in the support scheme. Total growth of production in these plants and thermal power plant Šoštanj thus reduced the share of electricity production of the facilities included in the support scheme.

The total installed capacity in 2016 did not change significantly in comparison to 2015, however, the share of installed capacity of facilities, included in the support scheme, decreased considerably. This share fell by 0.5 percentage point – that is to 11.7%.

Table 5

SHARE OF THE INSTALLED CAPACITY AND GENERATED ELECTRICITY INCLUDED IN THE SUPPORT SCHEME

Year	Installed capacity included in the support scheme (MW)	Total installed capacity in SI (MW)	The share of installed capacity included in the support scheme	Generated electricity included in the support scheme (GWh)	Total generated electricity in SI (GWh)	The share of generated electricity included in the support scheme
2012	307.990	3,260.367	9.4%	654.0	12,250.1	5.3%
2013	393.230	3,273.570	12.0%	802.9	12,913.2	6.2%
2014	411.967	3,834.470	10.7%	905.9	13,597.5	6.7%
2015	432.752	3,542.229	12.2%	980.8	11,740.9	8.4%
2016	412,025	3,536,603	11.7%	1003.5	13,029.5	7.7%

Sources: Borzen, Energy Agency

In 2016, in accordance with Regulation on self-supply of electricity from the renewable energy sources 136 production facilities for self-supply were connected with the total installed capacity of 1100.8 kW. The average capacity of a connected facility is 8.1 kW, and according to energy source mainly solar power plants are in question (131 solar and five small HPPP). Most of the production facilities were connected in the second part of 2016, so at metering points of these facilities in the accounting period significantly more electricity was consumed than delivered; 411,346 kWh were consumed, and delivered 193,487 kWh.

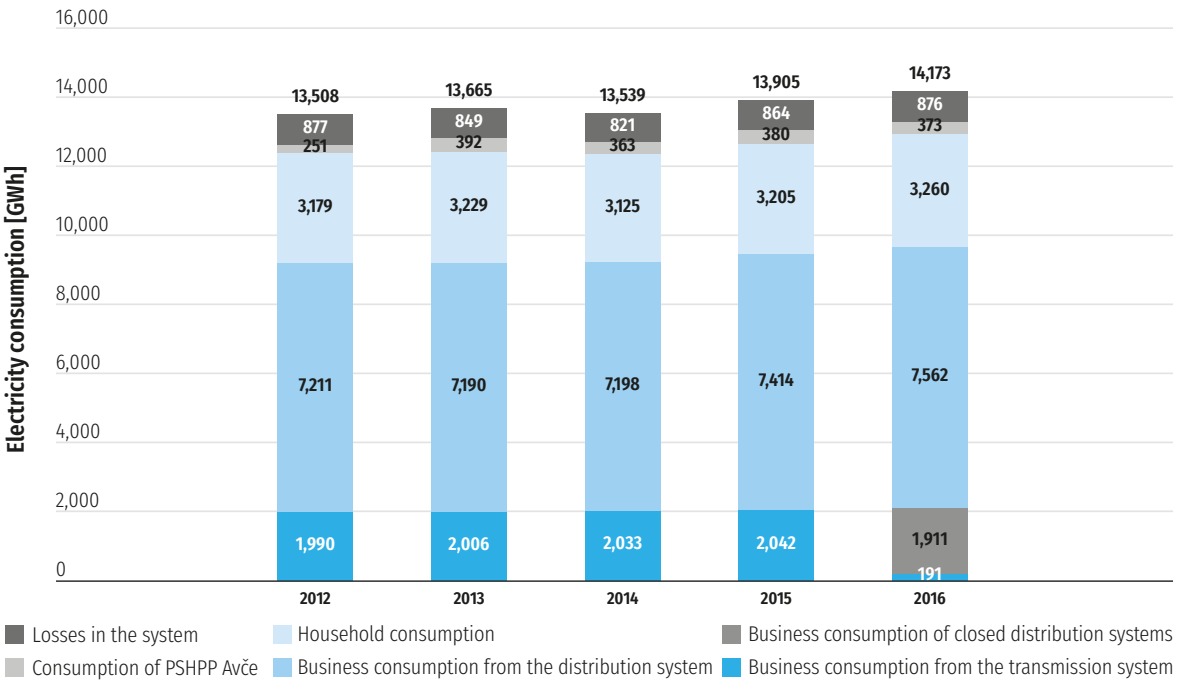
3.1.2 Electricity consumption

Total electricity consumption in Slovenia amounted to 14,173 GWh or 13,297 GWh without taking into account the losses on the transmission and distribution systems. In comparison to 2015, the total consumption was higher by 268 GWh or 1.9%. Three consumers, connected directly to the transmission system, consumed 191 GWh of electricity. Consumption of customers, connected to the distribution system, was higher by 1.9%, and amounted to 10,822 GWh, and consumers inside closed distribution systems together consumed 1911 GWh of electricity. Pumped storage hydro power plant AVČE used 373 GWh for pumping water for energy storage, which is slightly less than in 2015. Losses in the transmission and distribution systems amounted to 876 GWh of electricity, including losses due to transit, import and export of electricity.

1.9%
higher electricity consumption than in 2015

Peak load of the transmission system amounted to 1,978 MW, which is 74 MW less than in 2015. It was reached on 20 December in 12th hour (between 11 a.m. and 12 a.m.).

Figure 7
ELECTRICITY CONSUMPTION IN THE PERIOD 2012–2016



Sources: Electricity system operators, Energy Agency

Table 6

ELECTRICITY CONSUMPTION IN 2015 AND 2016

Electricity consumption [GWh]	2015	2016	Index
Business consumption from the transmission system	2,042	191	9.4
Business consumption from the distribution system	7,414	7,562	102.0
Business consumption from the closed distribution systems	–	1,911	–
Total business consumption	**9,456**	**9,664**	**102.2**
Household consumption	**3,205**	**3,260**	**101.7**
– single tariff consumption	898	892	99.3
– two-tariff consumption	2,307	2,367	102.6
Consumption of PSHPP Avče	380	373	98.2
Total consumption of end consumers	**13,041**	**13,297**	**102.0**
Losses in the transmission and distribution systems	864	876	101.4
Total electricity consumption	**13,905**	**14,173**	**101.9**
Export abroad	9,094	9,419	103.6
Total	**22,999**	**23,592**	**102.6**

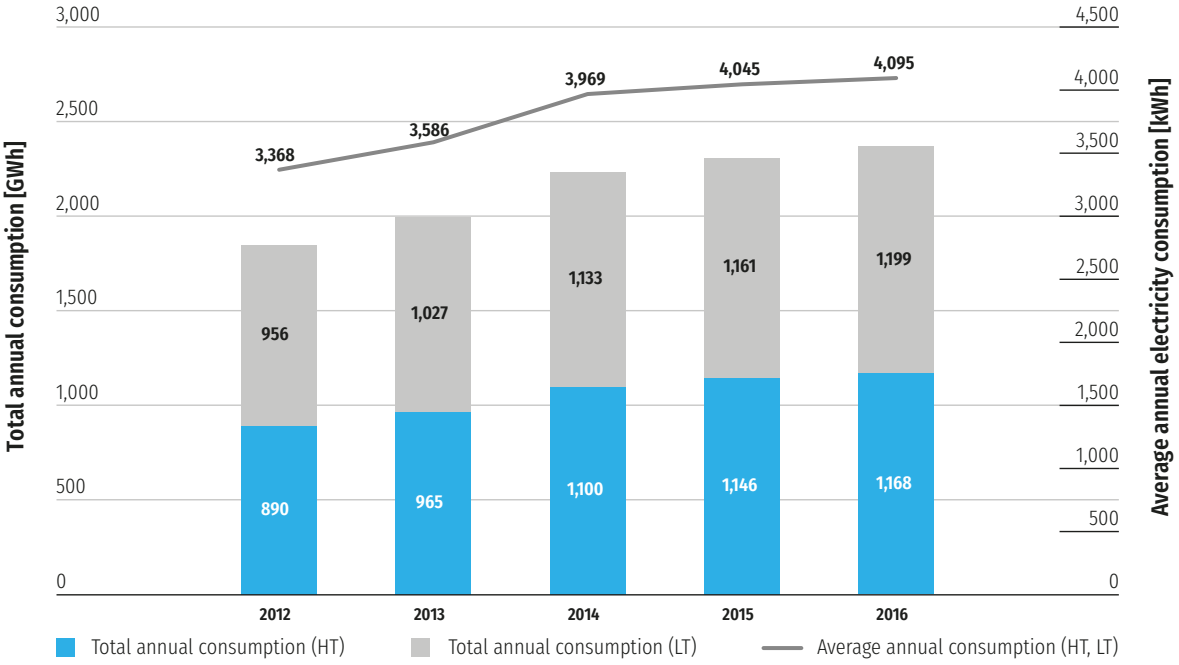
Sources: Electricity system operators, Energy Agency

The consumption, including losses in the network, and taking into account the 50-percent share of installed capacity of the Krško Nuclear Power Plant, which belongs to Slovenia, was not completely covered by the production sources in Slovenia. The Slovenian consumption was covered by the domestic sources in total of 88%. Through the transmission and the distribution networks 9,419 GWh of electricity was exported, out of these 2,711 GWh half of the generation in the nuclear power plant, and we imported 8,359 GWh of electricity.

Figure 8 and 9 show the total and average electricity consumption of household consumers with a single tariff and two-tariff metering. Figure 8 shows the steady growth of the total and average annual consumption for the last five years by household consumers with two-tariff consumption. Figure 9 presents the movement of electricity consumption by household consumers with single tariff metering in the period 2012–2016. In 2016, the total consumption of these consumers has not changed significantly in comparison to the previous year, but the average annual electricity consumption increased. The number of consumers with a single tariff metering decreased by 1.5 percentage point.

Figure 8

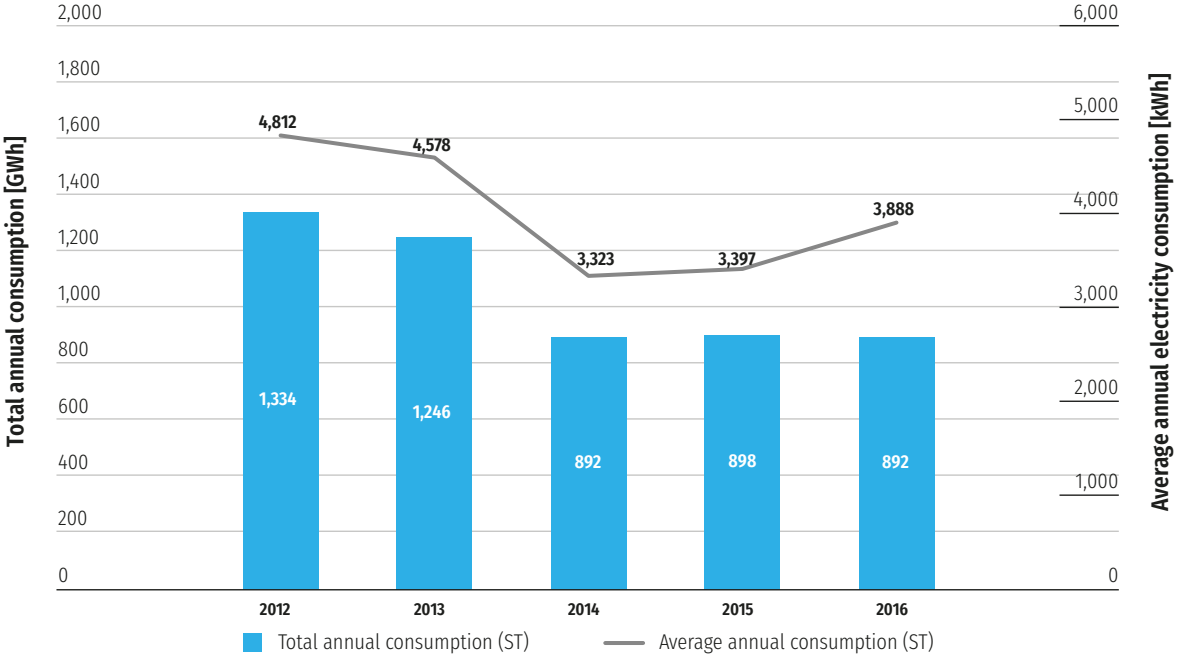
TOTAL AND AVERAGE ANNUAL CONSUMPTION OF HOUSEHOLD CONSUMERS WITH TWO-TARIFF METERING IN THE PERIOD 2012–2016



Sources: Electricity system operators, Energy Agency

Figure 9

TOTAL AND AVERAGE ANNUAL ELECTRICITY CONSUMPTION OF HOUSEHOLD CONSUMERS WITH SINGLE TARIFF METERING FOR THE PERIOD 2011–2016



Sources: Electricity system operators, Energy Agency

3.2 The regulation and regulated activities

3.2.1 The unbundling of services

Electricity companies engaged in transmission and distribution activities have to provide for the separate management of accounts for transmission and distribution activity as if these activities would be carried out by separate companies.

The service of general economic interest of the electricity system operator (the company ELES) is carried out in the legal entity, which in addition to the electricity transmission provides activities not related to the electricity power sector. In its annual report, ELES provides for the separate management of accounts for them, as well as the criteria for the allocation of assets and liabilities, costs, expenses, and incomes, which are used for the preparation of accounting records and separate accounts.

The activity of services of general economic interest – electricity distribution system operator (the company SODO, d.o.o.) is carried out in separate legal entities, and electricity distribution is the only activity that it is performed. For the regulation, SODO does not prepare separate accounts.

Following the consent of the Government of the Republic of Slovenia, SODO had transferred the activity of services of general economic interest of electricity DSO to the distribution companies. Electricity companies are in addition to electricity distribution engaged in other non-energy related activities. For this reason, DSOs in their annual reports provide separate accounts and prepared separate accounting records for electricity distribution and non-energy related activities. Electricity DSOs in their annual reports provided for the separate management of accounts for them, as well as the criteria for the allocation of assets and liabilities, costs, expenses, and incomes, which are used for the preparation of accounting records and separate accounts.

3.2.2 Technical functioning

3.2.2.1 The provision of ancillary services

Ancillary services are the services provided by a system operator to safeguard the normal operation of the network. The ancillary services relating to the entire Slovenian electricity system are provided by the electricity TSO – ELES. This section addresses only those ancillary services that were in 2016 financed from the network charge for the ancillary services. These services are the following:

- the control of frequency and power (secondary and tertiary control);
- the voltage control,
- the provision of a black start (system restart).

For 2016, ELES planned the next scope of the ancillary services:

- the reserve for secondary control of frequency and power: ±60 MW;
- the reserve for tertiary control of frequency and power: +348 MW, –185 MW.

Smaller needs for tertiary control reserve due to the agreement on cooperation between the TSOs of Slovenia, Austria, and Croatia

For 2016, ELES planned the reserve for secondary control in the amount of ±60 MW, the same as in 2015, but 20 MW less than in the previous years. These values are based on facts that there are no suitable production units in the system to provide a larger amount of reserve; at the same time, the requirements for this reserve slightly decrease after the establishment of the agreement on cross-system exchange between the Slovenian and Austrian TSOs, signed in 2013. This agreement enables an exchange of energy of current imbalances in cases when the control areas deviate in opposite directions, and there is no available transmission capacity between them. In 2016, to this agreement also joined the Croatian TSO.

In the area of required reserve for tertiary control in 2016, there were no changes in comparison to previous years. Despite the operation of Unit 6 of the TPP Šoštanj the required positive reserve remained at the level that represents half of the capacity of the nuclear power plant Krško, and the required

negative reserve at the level of the potential system outage of PSHPP Avče in the pumping regime. The reason that the required positive reserve for tertiary control in 2015 did not need to be increased to 546 MW, which is the power of Unit 6 of the TPP Šoštanj, was due to the fact that ELES concluded an appropriate agreement with TSOs of Croatia and Bosnia and Herzegovina, according to which all three TSOs that operate within the regulation block of these three countries participate with its own share in joint provision of the required reserve for the tertiary control.

Since ELES had already at the end of 2013 signed agreements on the provision of most of the ancillary services for the period 2014–2018, and in addition in 2014 the agreement on supply for the remaining positive reserve for tertiary control, in 2016 with new agreements only 154 MW of additional positive reserve for tertiary control and 180 MW of negative control was necessary to provide.

The remaining positive reserve for tertiary control ELES divided to two products, whereby the first product was a classical reserve of 134 MW in the production facilities (Product 2016), and the second one 20 MW with including disperse production and demand side response (or demand-side management/DSM). The other bidders were chosen at two public actions. The first auction was carried out on 4 December 2015, and the auction for DSM on 25 November 2015.

An overview of all reserve products for providing positive tertiary control is shown in Table 7.

Table 7

PRODUCTS FOR THE POSITIVE TERTIARY RESERVE IN 2016

Product	Product 14–18	Product 15–18	Product 2016	Product DSM
The lease period	2014–2018	2015–2018	2016	2016
Quantity (MW)	144	50	134	20
Source of the reserve	Slovenia	Slovenia	Slovenia	Slovenia
Activation time	≤5 min	≤15 min	≤15 min	≤15 min
Time to announce changes in activation	≤15 min	≤15 min	≤15 min	≤15 min
Number of activations	Unlimited	Unlimited	Unlimited	Unlimited, but no more than 2 times per day
Time of unavailability after activation	0 min	≤30 min	≤30 min	≤10 h
Duration of one activation	≤6 h	≤6 h	≤4 h	≤2 h

Source: ELES

The outcome of public auctions for the lease of individual products for the tertiary reserve in 2016 is shown in Table 8. In addition, the results of the public auction for the reserve for tertiary control in the period 2014–2018, carried by ELES on 18 November 2013, and for the period 2015–2018, done on 10 December 2014, are also presented.

Table 8

AUCTIONS RESULTS FOR THE LEASE OF TERCIARY CONTROL RESERVE FOR 2016

Product	Leased capacity (MW)	Lease price (EUR/MW)	Energy price (EUR/MWh)
Product 14–18			
Bidder 1	10	55,000.00	145.79
Bidder 2	134	68,300.00	107.79
Product 15–18			
Bidder 1	50	47,000.00	151.22
Product 2016			
Bidder 1	134	35,000.00	240.00
Product DSM			
Bidder 1	15	37,500.00	230.00
Bidder 2	5	28,980.00	235.00

Source: ELES

For values shown in Table 8, it has to be noted that costs for the lease of reserve capacity are covered by the network charge for ancillary services, while energy costs in activating the reserve are covered by the imbalance settlement.

For 2016, ELES also carried out a lease of a reserve for providing negative tertiary control in the amount of –185 MW in case of an outage of the largest consumption unit of the system, which is PSHPP Avče in the pumping regime. At the public auction, the bidder was selected, who offered the entire service for 42,500.00 EUR/MW, with the price of energy for activation amounting to –180.00 EUR/MWh.

The providers of ancillary services for secondary control of frequency and power, the voltage control and the provision of a black start for the period 2014–2018 were chosen by ELES on the basis of direct negotiations with potential providers of these services already at the end of 2013. Due to the nature of remaining ancillary services, only providers with production resources located within Slovenia could be selected.

In the implementation of secondary control of frequency and power, ELES in 2016 activated 50.8 GWh of positive and 105.4 GWh of negative energy. Here should be added that under the agreement on cross-system exchange in 2016, ELES exported 114.2 GWh for the settlement of positive imbalances, while imported 34.0 GWh for the settlement of negative imbalances. In implementing positive tertiary control, ELES engaged 8,880 MWh of energy, which is 1,316 less than in 2015.

3.2.2.2 **The balancing and imbalance settlement**

Electricity TSO is responsible for balancing deviations from announced schedules of the electricity power system in Slovenia. When current situations of production and consumption in the system deviate from the operation schedule, the TSO must change the ratio between the production and consumption. Most often this means to increase or decrease the production of electricity. For minor deviations in the system is automatically used secondary control, and in cases of large deviations the reserve for tertiary control must be activated, or the energy must be sold or purchased in the balancing market. Balancing services incur costs to the TSO; these costs must be paid by the party responsible for costs. For this purpose, in Slovenia the balance scheme is established, which consists of balance groups, within which an unlimited number of subgroups are active. Balance group and subgroups are the members of the balance scheme represented by the balance group leader (a balance group responsible party). The rules on the operation of the electricity market determine that balance group leaders are responsible for maintaining marketing plans and

The average price of positive imbalances was lower by 18.7, and for negative by almost 36.1%

operation schedules of their groups in the framework of for forecasted values. The trading plan represents the sum of all signed closed contracts of the balance group member and operating schedule the forecasted supply and consumption of delivery points, for which a balance group member has the signed open contracts. The accounting period in the Slovenian organised electricity market is one hour. When in a given hour the realization of the balance group member is not in compliance with the value determined by the trading plan and operating schedule, we talk about imbalances of a balance group member. If the realization of the balance group member is lower than forecasted (energy deficit), we talk about positive imbalances, and vice versa. Imbalances of individual group members of balance scheme are often mutually eliminated. The price of imbalances depends on costs incurred to the TSO. In accounting periods, when the entire system is imbalanced ant the TSO has additional costs, the prices are higher than in cases when the system due to the mutual balancing of individual balance groups from forecasted schedules does not deviate entirely.

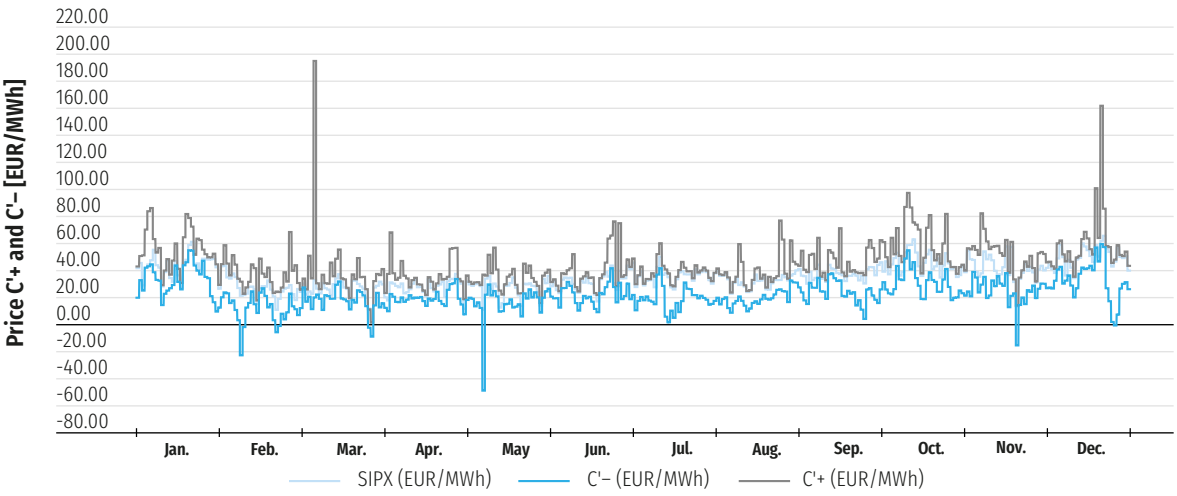
In Slovenia, Borzen is responsible for imbalance settlement. The market operator determines the total amount of imbalances for each balance group and for each accounting interval. Later it prepares financial value of these imbalances, taking into account the actual costs for imbalances incurred by ELES, and hourly index of electricity on the Slovenian power exchange. In that way, basic prices of imbalances, C'+ and C'– are determined. C'+ refers to positive deviations, and C– refers to negative imbalances. The market operator carries out a correction of basic prices of imbalances every month in way that revenues and expenses of imbalance settlements of balance groups, without penalization, cover all costs of ELES for balancing services. In that way, basic prices of imbalances, C'+ and C'– are determined. On the basis of all settlements in all accounting periods and corrections of C+ in C– the market operator every month carries out the financial settlement of imbalances.

On 1 January amended Rules on the operation of the electricity markets came into force, which brought a change in determination of imbalance price. A new provision regarding the price of balancing price from the inter-system balancing. In every accounting interval this price was limited by the value of the hourly price index on the Slovenian power exchange SIPX. For each accounting interval the values of hourly price index is calculated separately for positive and negative imbalances, so that the price for positive imbalances is higher or equal to the hourly price electricity index SIPX, and the price for negative imbalances lower or equal the hourly price electricity index SIPX.

Figure 10 shows the prices of imbalances C'+ in C'– and price index in the Slovenian electricity power exchange SIPX in 2016.

Figure 10

AVERAGE DAILY VALUES OF BASIC PRICES OF IMBALANCES C'+ IN C–' AND INDEX SIPX IN 2016



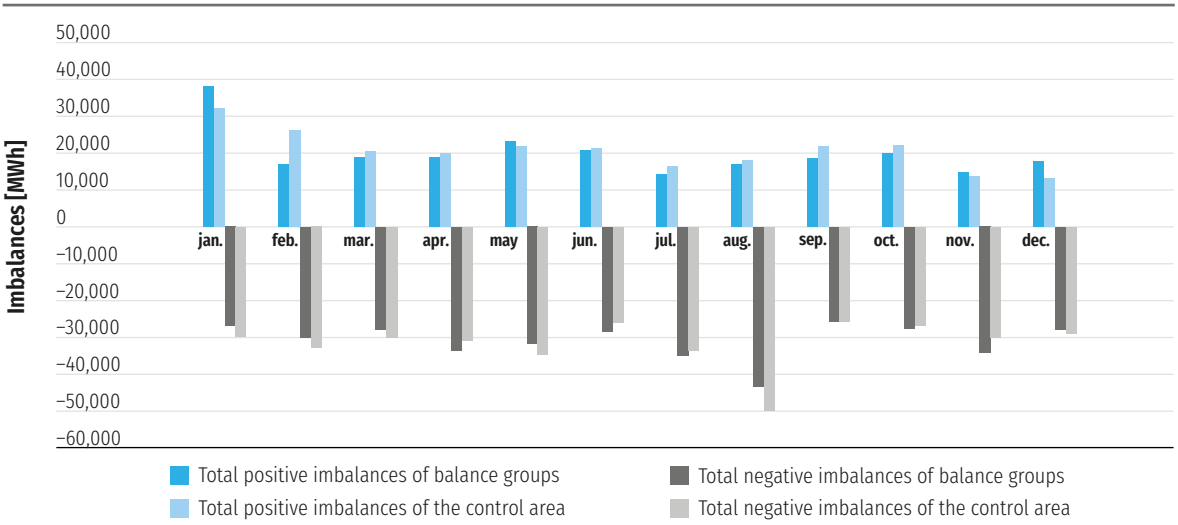
Source: Borzen

For the calculation basic prices of imbalances C'+ and C'–, and consequently for the calculation of derived prices of imbalances, C'+ and C'–, Slovenian Stock Exchange Index SIPX is used. In the period from January to the end of December the average derived price for positive imbalances C'+ was 44-64 EUR/MWh, and for C'– 22.60 EUR/MWh. The maximum value of SIPX occurred on 7 March in the 20th hour, amounted to 2,151.29 EUR/MWh, and for the C'– the maximum value 97.65 EUR/MWh on 21 January in the 18th hour. The lowest value of C'+ was reached on 27 March in the 4th hour, when it was –7.78 EUR/MWh, and the lowest value of C'– on 8 May in 16th hour, when it was –668.52 EUR/MWh. In comparison with the previous year the average prices of imbalances in 2016 significantly decreased. The average price of positive imbalances was lower by 18.7%, and for negative for almost 36.1%.

In Figure 11 the total amounts of positive and negative imbalances of all balance groups in Slovenia in 2016 are shown as well as total positive and negative imbalances of the Slovenia regulated area.

Figure 11

ALL IMBALANCES OF THE SLOVENIAN ELECTRICITY POWER SYSTEM IN 2016



Sources: Borzen, ELES

The highest positive imbalances of balance groups were recorder in January and the highest negative in August 2016. The total annual imbalances of the regulated area amounted to 247,527 MWh, and negative 378,773 MWh. At the same time the total annual imbalances of all balance groups amounted to 239,765, and negative 371,020 MWh. In comparison with the previous years, positive imbalances at the level of the regulated area as well as at the level of all balance groups decreased, while negative imbalances at the level of regulated are increased.

Table 9

MOVEMENTS OF ALL IMBALANCES OF BALANCE GROUPS AND THE REGULATED AREA OF SLOVENIA IN YEARS 2012–2016

	2012	2013	2014	2015	2016
Total positive imbalances of balance groups (MWh)	306,370	301,777	299,692	300,292	239,765
Total positive imbalances of the regulated area (MWh)	132,460	161,056	232,311	258,325	247,527
Total negative imbalances of balance groups (MWh)	–430,519	–397,808	–330,305	–387,450	–371,020
Total negative imbalances of the regulated area (MWh)	–255,025	–234,919	–292,514	–346,660	–378,773

Sources: Borzen, ELES

Decreasing of positive imbalances in 2016 in comparison to 2015 can be partially attributed to the new method of determining the price of imbalances, which encourages a balance group responsible party to forecast market plans and operation schedules more accurately. This, however, cannot be claimed for negative imbalances, which in 2016 remained at almost the same level as in 2015. A large share of negative imbalances is primarily a consequence of growing share of unpredictable electricity production from renewable sources.

In 2016, eight new members joined the Balance Scheme, four foreign and four domestic companies. At the same time, 17 members left the Balance Scheme due to different reasons. Most of the departures happened due to business reasons, such as merging of companies or termination of the Slovenia Stock Exchange membership. To the decrease in a number of members also contributed a new way of purchasing electricity for losses in the distribution system, which was in 2016 carried out for the entire Slovenian power system in separately for each of the five DSO. Consequently, the number of Balance Scheme members decreased by four members. Thus, at the end of 2016 in Slovenia were registered 17 domestic and 37 foreign companies, and 21 balance subgroups – 18 domestic and three foreign companies. The total number of Balance Scheme in 2016 decreased by nine members, which is also the first decrease in the number of Balance Scheme members after 2010.

3.2.2.3 **Security of operation and quality of supply**

In order to ensure reliable and safe operation of the network, in Slovenia the n-1 criterion is used for the transmission network. By using n-1 criterion, it is guaranteed that in case of outage of any component of the system, overloading, limits exceeding, or supply interruptions are avoided. The same criterion is used for planning and operation of MV- distribution network. The difference with regard to the transmission network is only in operation since the outage of the element in the distribution network can cause a shorter interruption needed for manual switch and setting up the power supply from the other side of the network.

At the system level, with the implementation of appropriate regulation using quality of supply standards the level of already achieved supply quality is trying to be improved or maintained with optimal costs. When considering the quality of supply, various activities are present, such as monitoring, reporting, analysis, and assessment of the data of the following observed levels: continuity of supply, commercial quality and voltage quality. For the continuity of supply the Energy Agency in 2016 started the audit of reported data.

In the execution of their duties, electricity system operators and distribution companies use international standards, Slovenian standards and technical reports which are implemented in the Slovenian standardization system. For continuity of supply and voltage quality the international standard SIST EN 50160 - Voltage characteristics of electricity supplied by public distribution networks.

Continuity of supply

The data on the continuity of supply are collected, reported, and analysed by the uniform methodology. In this way, the mutual comparability of data on quality of supply among distribution companies is ensured, and also international comparability of achieved parameters of continuity of supply on the EU level.

Gradual improvement of the quality of supply level, the supply of electricity was on average discontinued 2.5 times in the total duration of 192 minutes

Interruptions caused by electricity system operators or distribution companies are classified into internal events. When interruptions are caused by third person, they are classified among external events. Force-majeure can cause interruptions, especially at unexpected or not foreseeable events, which are in many cases the consequences of extremely bad weather conditions. On the basis of the SAIDI and SAIFI relating to individual distribution company, the Energy Agency calculated the aggregate value of SAIDI and SAIFI indicators on the basis of the number of all consumers in Slovenia. Monitoring of SAIDI and SAIFI in the observed period indicates gradual improvement of quality of supply; in 2016 the supply to a Slovenian consumer was on average interrupted 2.5 times in a total duration of 192 minutes. Also, the quality of supply, for which is directly responsible the system operator, has

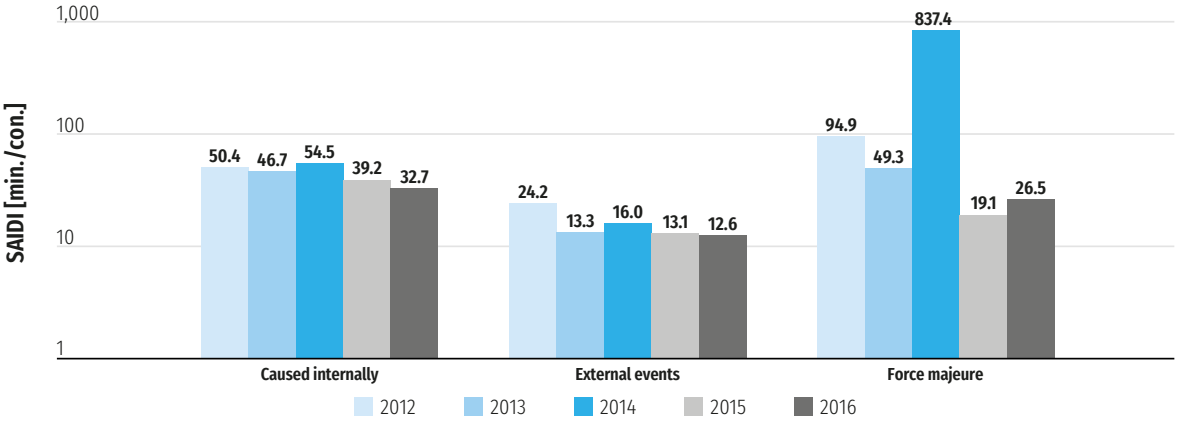
been improving since the analysis of continuity of supply parameters shows the gradual decrease of both indicators, except for 2014, which was marked by the extreme weather conditions in winter (glaze ice). In 2016 we again recorded a slight increase in the force-majeure parameters.

The Energy Agency also monitors the short-term interruptions parameters MAIFI, which is calculated similarly to parameter SAIFI and which is based on short-term interruptions, shorter than three minutes and are not separated by reasons. Also in 2016, similar to the multi-year average, the value of MAIFI parameter was more than six short-term interruptions experienced by a system user, with an exception of 2014, when the value of MAIFI was more than nine short-term interruptions to an average system user.

Figure 12 and 13 show SAIDI in SAIFI in the period 2012–2016 for unplanned long-term interruptions, separated by causes of interruptions to internal, external or force majeure, and Figure shows MAIFI for the same observed period.

Figure 12

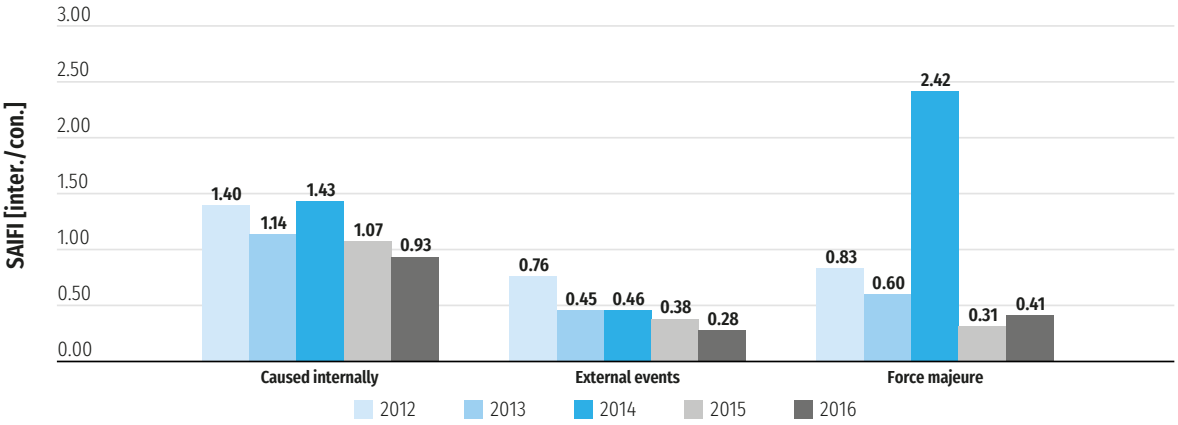
SAIDI FOR UNPLANNED LONG-TERM INTERRUPTIONS, SEPARATED BY CAUSES IN THE PERIOD 2012–2016



Source: Energy Agency

Figure 13

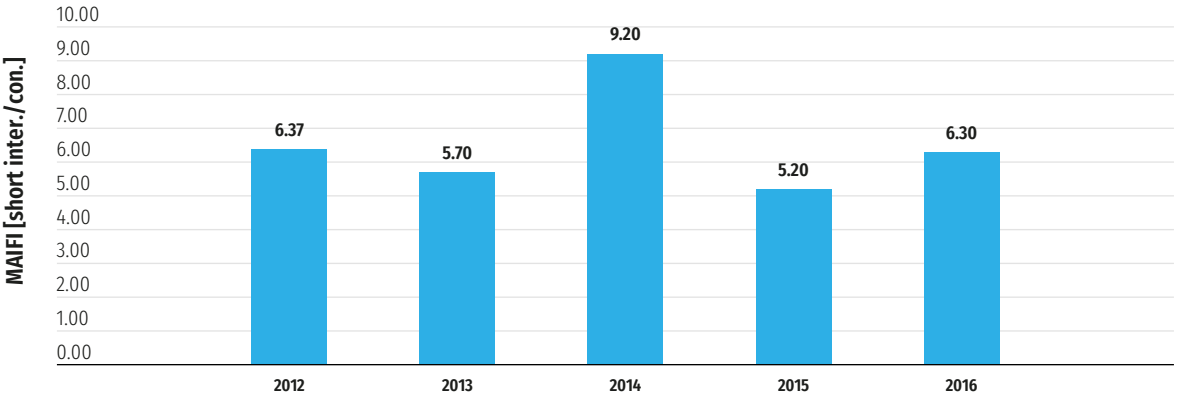
SAIFI FOR UNPLANNED LONG-TERM INTERRUPTIONS, SEPARATED BY CAUSES IN THE PERIOD 2012–2016



Source: Energy Agency

Figure 14

MAIFI IN THE PERIOD 2012–2016

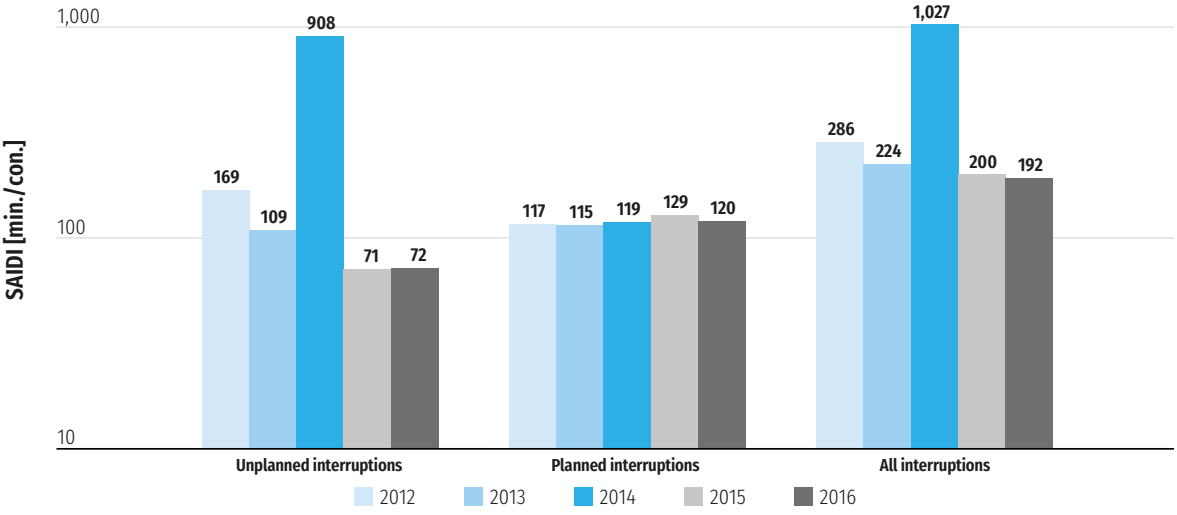


Source: Energy Agency

In Figures 15 and 16 are shown the total values of indicators SAIDI and SAIFI for the period 2012–2016 for unplanned, planned and all interruptions in Slovenia.

Figure 15

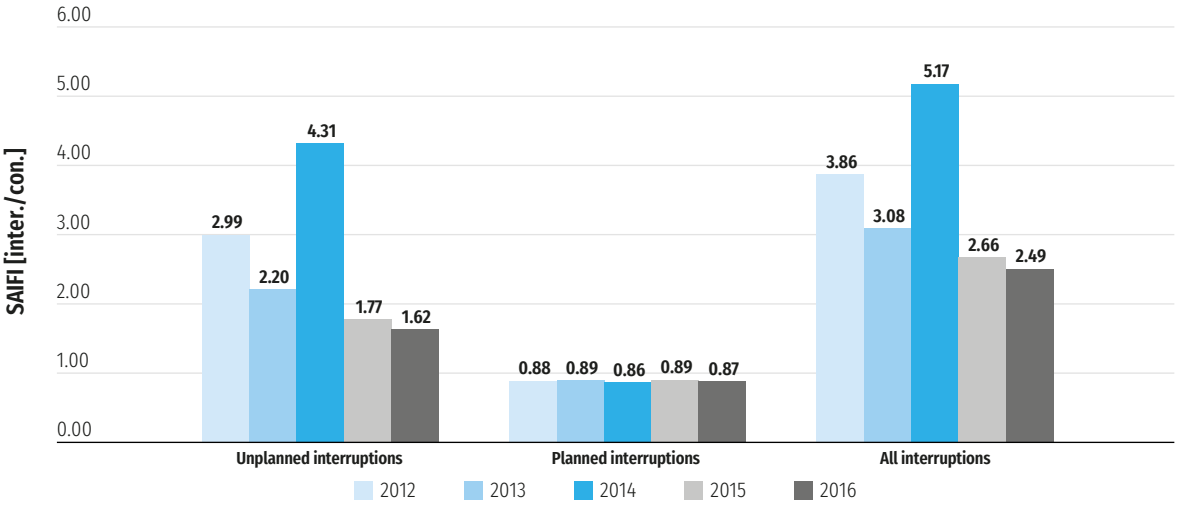
PARAMETER SAIDI FOR ALL LONG-TERM INTERRUPTIONS, SEPARATED BY CAUSES IN THE PERIOD 2012–2016



Source: Energy Agency

Figure 16

SAIFI FOR ALL LONG-TERM INTERRUPTIONS, SEPARATED BY CAUSES IN THE PERIOD 2012–2016



Source: Energy Agency

In 2016, the Energy Agency started to monitor the data on supply continuity in closed distribution systems (hereinafter referred to as CDS). CDS Talum and CDS Jesenice in 2016 did not record any power failure, and in CDS Acroni had one unplanned power failure due to their own causes, which lasted 12 hours, and 56 planned power failures in a total duration of 990 hours. In the CDS Petrol Energetika, which covers two geographical areas, Ravne na Koroškem and Štore, power failures were recorded in the location of Štore, 12 unplanned failures due to own causes in a total duration of 38 minutes and one unplanned interruption caused externally and which lasted 35 minutes. CDS Petrol Energetika in the same location recorded one planned interruption in a total duration of 720 minutes and two short interruptions. Due to power failure, CDSs did not receive any complaints from users.

Commercial quality

The level of commercial quality is determined by the system standards and the guaranteed standards for the commercial quality. If the guaranteed standards for the commercial quality, which are defined by the legislation or set by the energy regulator, are not met, an individual service provider may have to face financial consequences, i.e., the compensations paid out to the customer concerned. A consumer can expect a certain quality on the basis of the system standards, as they indicate the average level of the service quality in the system or the share of the customers provided with a particular service. In 2016, we did not record any compensation payment for violation of commercial standards.

Maintaining the level of commercial quality

The analysis of the commercial quality parameters shows that on average the level of services is maintaining the quality, since for the majority of indicators only smaller fluctuations in the values achieved in comparison with the previously observed period. In Table 10 the ranges (minimum and maximum values) of commercial quality parameters are presented in the period 2014–2016.

Table 10

RANGE OF THE COMMERCIAL QUALITY PARAMETERS IN THE PERIOD 2014–2016

Commercial quality parameters	2014		2015		2016	
	Min.	Max.	Min.	Max.	Min.	Max.
Connection-related services						
Average time required for issuing the approval for connection [days]	6.93	22.80	6.68	24.72	6.86	20.00
Average time required for issuing cost estimation or proforma invoice for simple works [days]	1.38	5.50	1.49	6.64	1.90	3.55
Average time required for issuing the contract for the connection on LV system [days]	2.00	8.00	1.00	6.10	1.00	6.56
Average time required for activating the connection to the system [days]	2.09	4.60	1.70	4.60	1.50	5.80
Customer service						
Average response time to consumers written questions, complaints or enquiries [days]	3.60	6.40	1.67	4.80	2.11	4.51
Average hold time in the call centre [s]	33.33	121.00	24.56	94.66	18.00	122.00
Call centre performance indicator [%]	64.00	90.00	84.00	90.90	84.67	90.90
Technical services						
Average time until the restoration of supply in case of following a failure of current limiting device (06:00–22:00) [h]	0.99	2.10	1.01	2.43	1.00	2.17
Average time until the restoration of supply in case of following a failure of current limiting device (22:00–06:00) [h]	1.05	3.59	0.88	2.78	0.60	1.81
Average time for answering the voltage complaints [days]	11.10	33.39	8.37	29.04	13.70	21.50
Average time required for resolving voltage quality deviations [months]	0.18	81.25	0.25	30.30	0.83	41.00
Metering and billing						
Average time required for elimination of meter failure [days]	2.80	6.30	0.24	5.40	2.55	6.00
Average time for restoration of power supply following disconnection due to non-payment [h]	0.10	2.50	0.52	4.70	0.15	8.35

Source: Energy Agency

For the commercial quality data on complaints are also collected on the basis of a unified procedure. From the data is evident that system users mostly complained to the DSOs due to exceeding the maximum time to resolve voltage quality deviations and delays issuing the approval for connection. In 2016, fewer complaints addressed to DSOs were received as in the previous year. The DSO received 22 complaints or 363 less than the year before. A significantly higher number of complaints were addressed to the electricity suppliers; in more detail this issues is presented in the chapter related to consumer protection. The share of justifiable complaints can indicate consumers' awareness of their rights, which their system operator is obliged to provide within the performance of its services.

Table 11

NUMBER AND SHARES OF JUSTIFIED COMPLAINTS RELATING TO COMMERCIAL QUALITY IN 2016

Reason for a complain	Number of all complaints	Number of justifiable complaints	Share of justifiable complaints
Quality of supply			
Exceeding the maximum time for elimination of deviations of supply voltage	10	6	60%
Metering			
Missing of yearly number of meter reading by the designated company	1	0	0%
Metering, billing, and recovery of costs			
Delay in time for response to written questions, complaints and other consumers' claims	1	1	100%
Connection to the system			
Delay in issuing the contract for connecting to the system	8	2	25%
Customer service			
Untimely information about planned interruptions	2	2	100%

Source: Energy Agency

Also closed distribution systems (CDS) in 2016 started to monitor commercial quality. To CDS Talum system users addressed three legitimate complaints, of which one was related to metering and two to issued invoice for electricity supply. CDS Acroni in 2016 did not receive any complaints from the system user. CDS Jesenice received two complaints related to the quality of supply and three requirements for changing a fuse. CDS Petrol Energetika dealt only with one application for issuing a connection approval for the location of Štore, and there were no complaints from the system users.

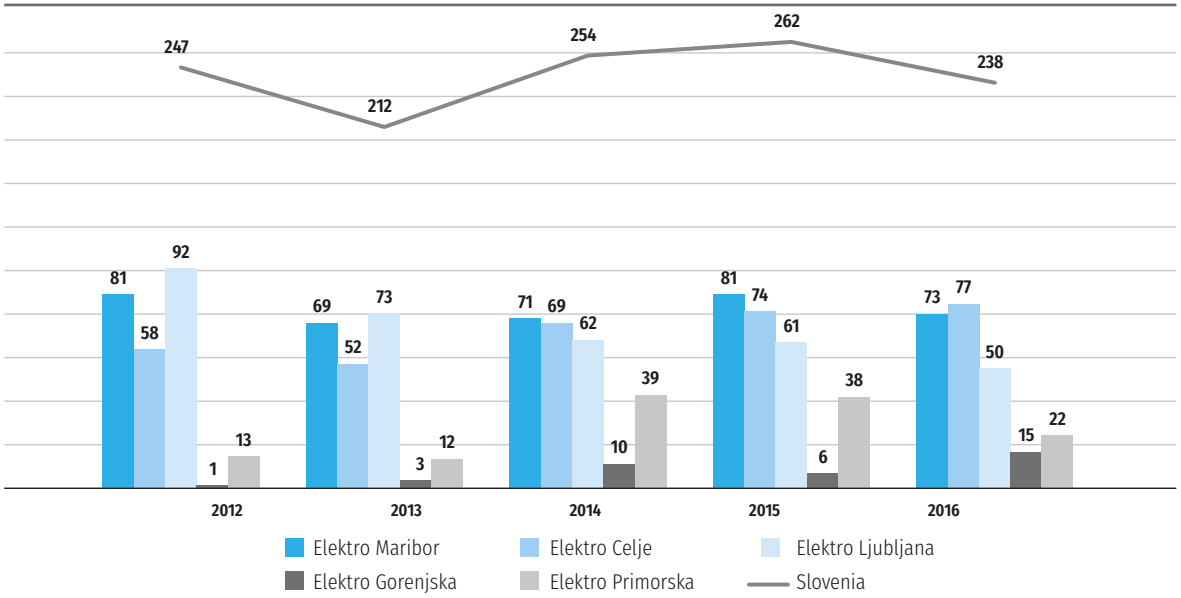
Voltage quality

In accordance with the legislation, system operators and distribution companies must carry out regular monitoring at the border of transmission and distribution networks at delivery points of all large users. Occasional monitoring is carried out according to the predetermined plan. In dealing with a consumer's complaint the monitoring of voltage quality is performed, which lasts at least a week. The monitoring of voltage quality is carried out in the procedure for connection approval when the issuer of the approval in this way checks the voltage quality conditions.

In Figure 17 the number of complaints related to voltage quality by individual distribution companies is shown and for Slovenia. Although the total number of complaints addressed to DSOs and TSO in 2016 in comparison to the previous year, the number of justified complaints increased as evident from Figure 18.

Figure 17

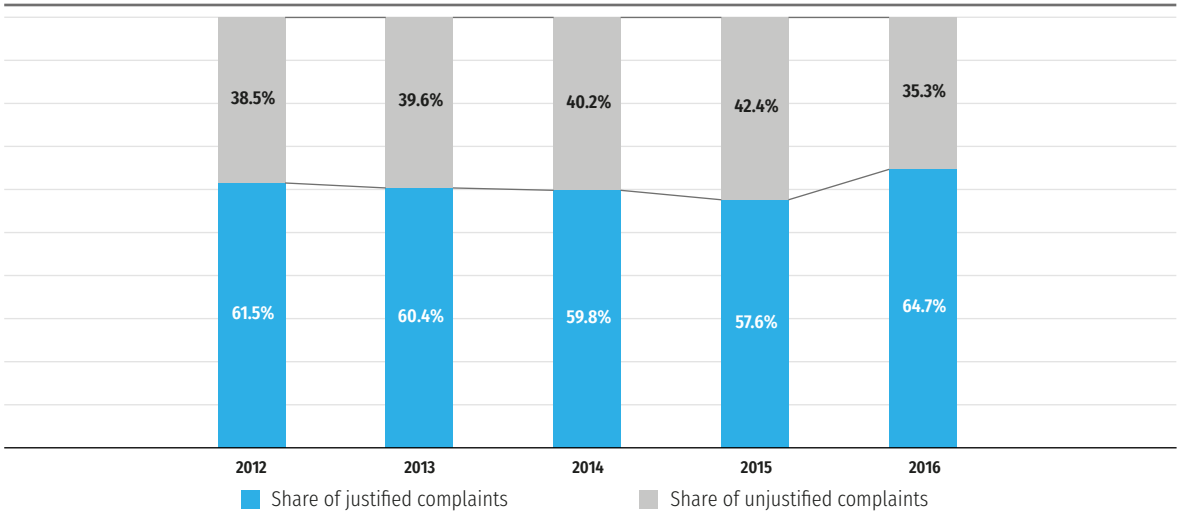
NUMBER OF COMPLAINTS RELATING TO VOLTAGE QUALITY BY DISTRIBUTION COMPANIES AND SLOVENIA IN THE PERIOD 2012–2016



Source: Energy Agency

Figure 18

SHARES OF JUSTIFIED AND UNJUSTIFIED COMPLAINTS RELATED TO VOLTAGE QUALITY IN THE PERIOD 2012–2016



Source: Energy Agency

ELES carried out a permanent monitoring of the voltage quality of the high-voltage network at 187 connection points between the distribution system, producers, and direct consumers). In some measuring points, slight deviations from the standard were recorded, namely the size of the supply voltage and flicker. Because of the supply voltage variations, deviations according to SIST EN 50160 standard were detected in eight metering points. The same as in the year before, in 2016 most violations of the standard were connected with the occurrence of flicker. Flicker was detected in 166 metering points. Compared to 2015, voltage imbalance in one of the metering point and frequency deviations in nine metering points were detected. The monitoring of voltage quality will continue at the remaining connection points between the transmission system and its users, where permanent monitoring is not yet established, as well as at the connection points with transmission systems of Croatia, Austria, and Italy. In addition to

the indicators used for continuity of supply in the distribution system (SAIDI, SAIFI, MAIFI), in the transmission system some other indicators are used, which are based on the amount of undelivered energy (AID, AIT; AIF and ENS). In more detail, the continuity of supply for the TSO is presented in the report on the quality of supply, which is every year prepared by the Energy Agency.

Some closed distribution systems (CDS) already in 2016 performed a permanent monitoring of the quality of supply in line with SIST EN 50160 standard and is some the system of permanent monitoring has been setting up. In the CDS Talum the system for permanent monitoring was implemented in December 2016 and, if necessary, they have at their disposal the data which are at these metering points provided by ELES. CDS Acroni in 2016 did not carry out a permanent monitoring, but they acquired appropriate metering equipment, which is being installed, and they also performed a training for the implementation of measurements. In December 2016, the CDS Acroni carried out one occasional monitoring. The CDS Jesenice performed a permanent monitoring of voltage quality in three metering points; limit values according to SIST EN 50160 were exceeded in case of the flicker, but on which the CDS Jesenice on high voltage level has no influence. The CDS Petrol Energetika at both locations (Ravne na Koroškem and Štore) performed a permanent monitoring of voltage of supply in two metering points of high voltage level and ten metering points of the medium voltage level.

3.2.2.4 **Multi-year development plan of the electricity network**

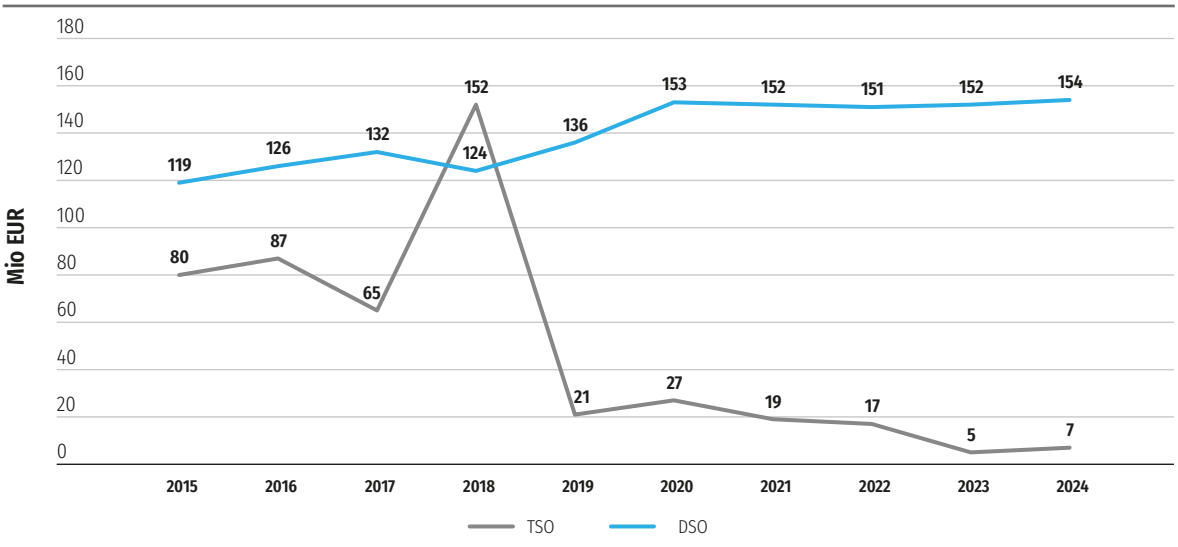
For the period 2015–2024 the system operators are planning to invest EUR 481 million in the transmission system and EUR 1,398 million in the distribution system

Development of the power system is based on 10-year development plans for the electricity distribution and transmission system, which the system operators must prepare every year and obtain the consent of the minister, responsible for energy. The plans must be harmonized and must consider national energy policies. In strategic planning, the system operators use the prescribed methodology, which takes into account consideration long-term supply forecast, analysis of expected operational conditions, the level of the security of supply, economic analysis as well as the potential location of new production sources. The TSO in addition considers the methodology of ENTSO-E, which determines different visions and scenarios of the development of technical and technological parameters, utilization rates, energy efficiency, the introduction of RES and other parameters based on assumptions about macroeconomic development.

In the current development plans the system operators by the 2024 are planning the investments in the power system in the amount of EUR 481 million for the transmission system and EUR 1,398 million for the distribution system.

Figure 19

ASSESSMENT OF THE INVESTMENTS FROM THE ELECTRICITY SYSTEM OPERATORS' DEVELOPMENT PLANS FOR THE PERIOD 2015–2024



Sources: ELES, SODO d.o.o.

The development plan of the electricity TSO up to 2024 is based on the construction of new connection lines with neighbouring systems, the control of unwanted energy flows and adequate voltage conditions, as well as a reliable and safe operation in accordance with the recommendation and set criteria by ENTSO-E. The most important investment in coming years is the construction of transmission lines 2 × 400 kV Cirkovce–Pince, which will significantly increase the import capacity of the Slovenian transmission system and allow the import of cheaper electricity from Eastern Europe, as well as improve the reliability of power supply in Slovenia. This investment is together with the project of the transition of existing 220 kV TL to 400 kV voltage level on the direction Divača–Beričevo–Cirkovce–Podlog, the project of new HVDC link to Italy, and SINCRO.GRID project also included in the PCI list endorsed by the European Commission. The partners of the SINCRO.GRID project are the TSO and DSO of Slovenia and Croatia; the project will with the use of the most advanced technologies in power sector of both countries among other things help to control more and more demanding voltage conditions, improve integration of dispersed production sources and provide for ancillary services as well as dynamic monitoring of transmission capacity.

The most important investment of the transmission network in coming years will be the connection with Hungary, i.e. the construction of 400 kV Cirkovce–Pince transmission line

In the development plan of the DSO is dominated by the construction of new and reconstruction of existing MV network, which is the weakest link of the continuity of supply in the power system, especially overheads lines. In the construction of new networks underground cables prevail, and at reconstructions of overhead lines the replacement of bare electricity cables with half insulated ones or self-supporting cables. Basic development orientations of the DSO are the investments in the development of network operating systems, which include meshed MV network, automation and control, neutral point connection and network cabling as well as improving the quality of supply by introducing smart grids and smart metering.

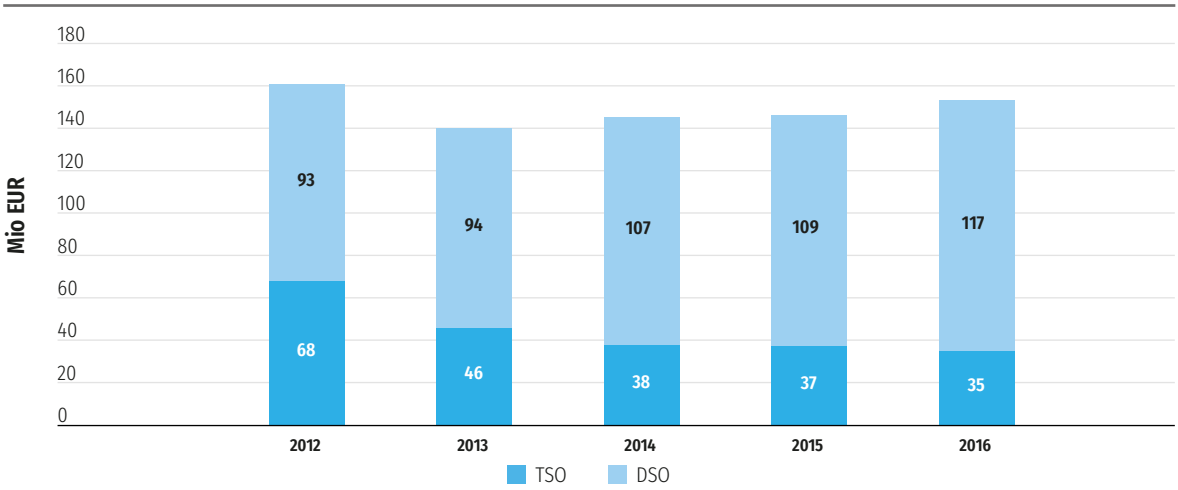
Control over the electricity system operators' development plans

Figure 20 presents the investments of both system operators for the period 2012–2016, whereby the investments in new assets and the reconstruction of existing ones are included. The trend of gradual increase in the DSO's investment continues, which can be associated with the economic growth. The TSO's investments are as a rule the highest only in year when large projects are carried out, otherwise, in the past year we can record a decline in investments in the transmission system.

In 2016, EUR 34.6 million were invested in the transmission system and EUR 117 million in the distribution system

Figure 20

INVESTMENTS OF THE TSO AND DSO

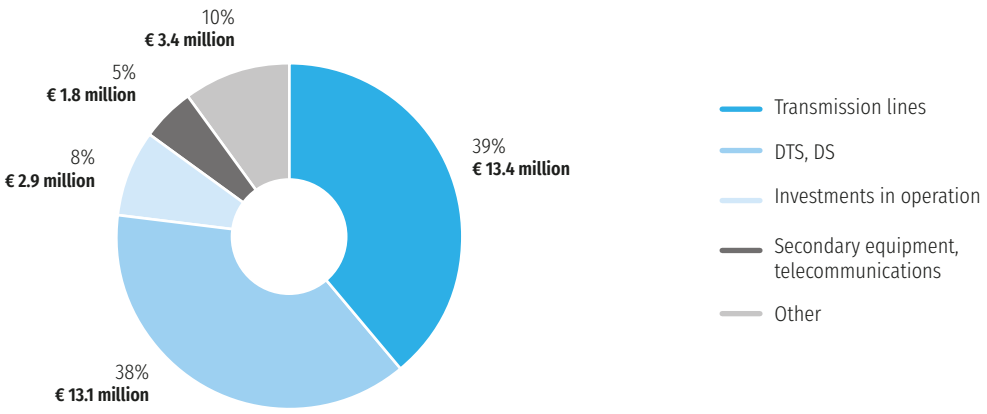


Sources: ELES, Electricity DSO

ELES in 2016 allocated EUR 34.6 million for investments, which represents only around 40% of funds planned in the development plan, or 50% of funds planned in the regulatory framework. The main reason for deviations from the plan is a delay in the acquisition against payment of the network under the Regulation on the division of the 110 kV network into the distribution and transmission systems; other reasons for lower realization are mainly the result of legislation, coordination with local communities, inaccurate land register, and the difficulties in the execution of public tenders. No major new investment was finished, most of the funds, around EUR 4.5 million were allocated for investments in 2 x 400 kV Cirkovce–Pince transmission lines, and for the construction of connections lines for hydro power plants Krško, Brežice, and Mokrice. In a case of major investments in new assets should be mentioned the investment in the second transformer and corresponding equipment of DTS 400/110 kV Divača, and DTS 110/20 kV Slovenska Bistrica in the total amount of EUR 4 million. In the reconstructions stand out the investments in 2 x 110 kV Dravograd–Radlje transmission lines worth around EUR 2.3 million, the replacement of HV and secondary equipment in the regulation station 110 kV Hudo, amounted to EUR 1.9 million, and the investment in cable-climbing systems also in amount of around EUR 1.9 million. Within the investments in smart grids under the SINCRO.GRID project the investments in the dynamic thermal rating (DTR) system, cross-border virtual control centre, drafting the documentation and studies for reactive power compensation devices, and electricity storage systems (battery storage) in amount of around EUR 1.5 million.

Figure 21

INVESTMENTS OF THE TSO IN 2016

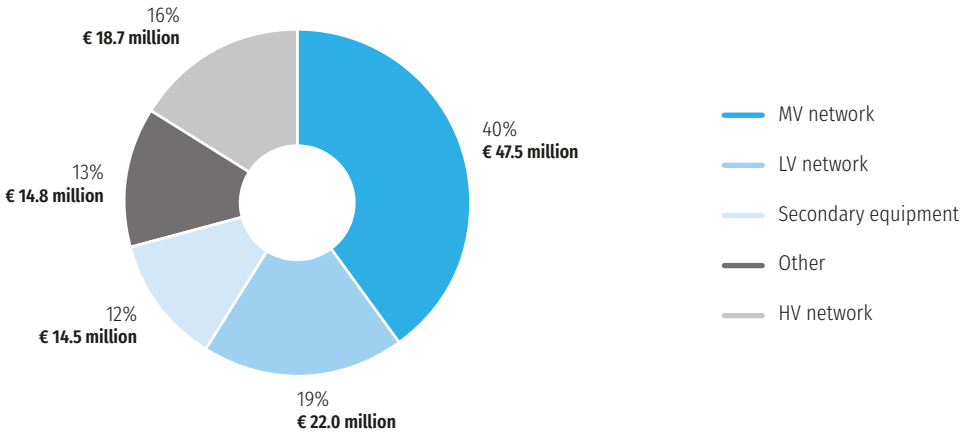


Source: ELES

The electricity DSO and the owners of the distribution network for the investments in electricity infrastructure in 2016 allocated EUR 117.9 million, which is almost 109% of funds planned in the regulatory framework, and almost 97% of funds planned in the development plan. Of the total realized investments EUR 65.6 million were earmarked for new investments, EUR 46.6 million for reconstructions, and EUR 9.4 million for other necessary investments. Most funds were allocated for the investments in MV networks, more precisely for the constructions of new MV cables and replacing overhead lines with underground lines to increase the robustness and reliability of operation in extreme weather conditions. Important share of investments are also assets earmarked for the replacement of electricity metering devices with advanced metering systems.

Figure 22

INVESTMENTS OF THE ELECTRICITY DSO IN 2016



Source: Electricity DSO

Table 12

TRANSMISSION AND DISTRIBUTION ELECTRICITY INFRASTRUCTURE IN SLOVENIA AT THE END OF 2016

Transmission system	
Lines 400 kV	669 km
Lines 220 kV	328 km
Lines 110 kV	1,866 km
DTS HV/HV	27
DS 110 kV, TS 110 kV, EPS 110 kV	3
Distribution system	
Lines 110 kV	908 km
Lines 35 kV, 20 kV, 10 kV	17,798 km
Lines 0,4 kV	46,546 km
DTS 110 kV/MV	90
DTS MV/MV	10
DS MV	89
TS MV/LV	17,928

Sources: Electricity system operators, distribution companies

Development of advanced metering systems in Slovenia

Advanced metering of electricity could have a significant impact on the development of the energy market and services related to it, as well as promoting energy efficiency and the development of energy networks of the future. The European Union on the basis of the third energy package calls upon the Member States to introduce advance metering systems, which should enable and promote active consumers' participation in the energy supply market. For many years in Slovenia, the deployment of advanced measuring devices is ongoing, which at introducing appropriate information and communi-

At the end of 2016, half of the consumers connected to the distribution system were equipped with smart meters, one–fifth of them complies with the technical requirements set in the legislation

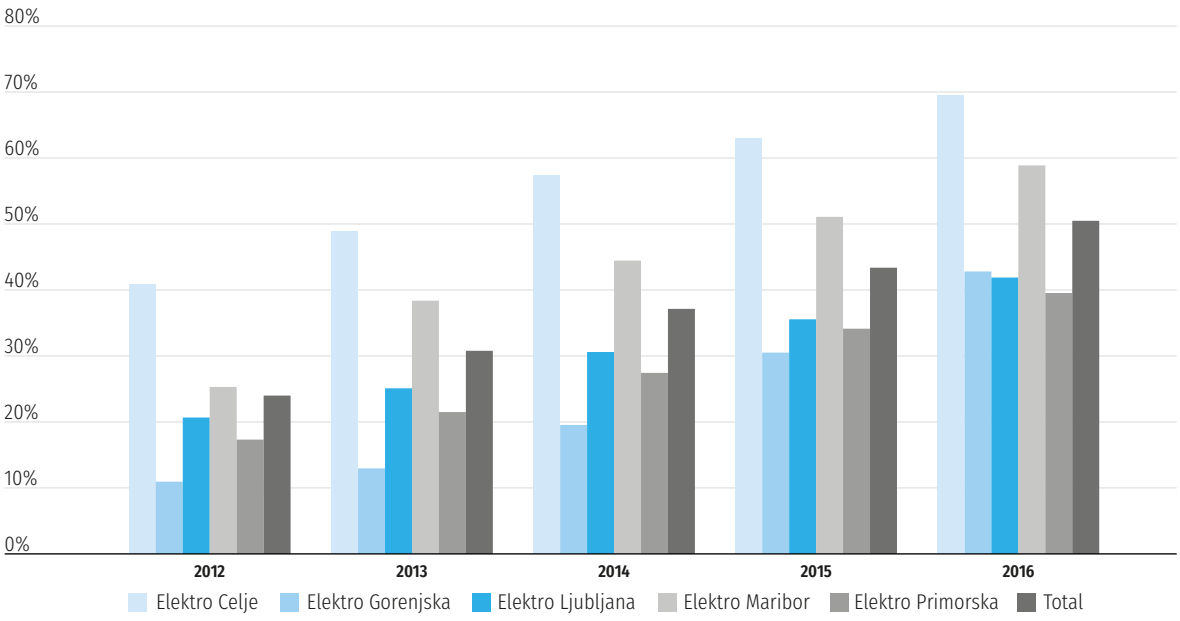
cation systems allow remote monitoring, management of data on electricity consumption, forecasting, development, and implementation of new energy services.

In the middle of 2016, SODO in accordance with a government Regulation on measures and procedures for the introduction and interoperability of advanced electric power metering systems published the Advanced metering infrastructure plan for the Slovenian power sector, in which the introduction of the advanced metering infrastructure for all system users in Slovenia is determined.

At the end of 2016, half of the consumers connected to the distribution system were equipped with smart meters, only slightly less, namely 46%, were actually connected to the remote data acquisition. Of all embedded smart meters about one–fifth complies with the technical criteria, which are determined in executive regulations or advanced metering infrastructure plan. In accordance with government regulation, all built-in smart meters must comply with all the requirements by 2025.

Figure 23

TREND OF DEPLOYMENT OF ADVANCED METERING SYSTEMS



Sources: Electricity distribution companies

Development and regulation of smart grids

In the last few years, the electricity networks are developing rapidly. The reasons are mainly in the implementation of the European environmental policy, the result of which is the increase in the production of electricity from RES. The electricity network of the future will be cost-effective and sustainable, merging producers, consumers, and entities, which are both (prosumers). Such network will have to be smart; it will include ICT systems and process intelligence systems. These systems will enable communication between the elements of the network and data processing in real time and thus improve the network performance.

The DSOs' activities related to the development of smart grids are mainly carried out within FP7 and Horizon 2020 - the European Union's Research and Innovation funding programmes, and also within other partners' projects.

We are presenting the projects notified to the Energy Agency by the electricity system operators. The Energy Agency had started to pursue intentional investments in smart grids in the regulatory period 2013–2015 and continued in the regulatory period 2016–2018. For the investments in smart grids in 2016 two types of incentives were available – for the investment and pilot projects.

Investment projects are the projects that solve specific problems in a certain part of the network, such as for example the problem of the integration the production from RES or the voltage quality. The Energy Agency has precisely defined these areas and determined the minimum investment limit in the amount of EUR 200,000 as one of the key conditions for the project to be included in the incentive scheme. Another key condition is a positive result of cost-benefit study prepared under the European Commission recommendations. A project that qualifies for the incentive scheme is recognized one-off incentive in the amount 3% of carrying amount of operating fixed asset on 31 December of the year, in which the asset was activated within an individual project. The sum of incentives is limited up to 10% of the net benefits of the entire project, which are defined in the study of the project.

Two investment projects are candidates for additional incentives approved by the Energy Agency, and an implementation incentive was approved to two pilot projects in the area of smart grids

The purpose of the pilot projects is to answer the key development issues of smart grids and prove that a certain solution can be successfully used in ordinary activities. In the incentive scheme can be included only pilot projects of the distribution system. An incentive for the regulatory period 2016–2018 is a special dynamic tariff (critical peak tariff), which is earmarked for demand response projects. It is an implementation incentive designed to eliminate regulatory obstacles to the implementation of innovative measures, which are not possible under the existing legislation governing the network charges.

Under the established incentive scheme for the investment projects in 2016 two projects were qualified, implemented on the transmission network (dynamic thermal rating of the transmission system and more efficient secondary regulation).

In 2016, the following investment projects were submitted for the approval of the funds:

- SUMO (ELES – project promoter), within which a modular system for dynamic thermal rating (DTR) of the transmission system is developed. The aims of the project are to increase transmission capacity, decrease maintenance and operating costs and increase reliability of the transmission of electricity. The system is already integrated in some parts of the transmission system and it is used in regular operation;
- SINCRO.GRID[1] (ELES – project promoter); the partners of this project are the TSO and DSO of Slovenia and Croatia. The project is ranked among the PCI and co-financed by the European Union. It solves the problems of overvoltage on the transmission level and problems with the integration of RES in the network. Within the project the connections between the control centres of transmission and distribution systems of both countries will be established and new technologies such as dynamic thermal rating for the assessment of the transmission capacity will be introduced; that is the system developed under SUMO project.

The notification of the projects was possible by the end of June 2017, therefore the Energy Agency has not yet decided on eligibility for incentives.

In the implementation incentives scheme for demand response by using dynamic pilot network tariff on the basis of the Energy Agency's evaluation[2] at the end of 2016 two projects entered:

- Peak consumption adjustment/demand response in the area of DTS Breg (project promotor – DSO Elektro Maribor), implemented under NEDO agreement, a large-scale project in the field of smart grids involving companies and institutions from Japan and Slovenia;
- Flex4Grid[3] (project promotor – DSO Elektro Celje) is also a part of a large project run by the VTT Technical Research Centre of Finland. A part of the project, implemented is Slovenia, is performed by Elektro Celje.

1 https://www.eles.si/projekt-sincro-grid/ozadje
2 https://www.agen-rs.si/web/portal/-/vzpostavljeni-pogoji-za-uporabo-pilotne-dinamicne-omrezninske-tarife
3 https://www.flex4grid.eu/

Both pilot projects are based on the implementation of critical peak tariff for the network charge, which will be used when the system is the most heavily loaded. This tariff is much more expensive than other tariffs. Customers will be timely informed about the use of this tariff and will adjust to it by significantly decrease the consumption. This will relieve the network at peak consumption and help to reduce peak load. Peak load is the crucial for network planning, which means that the investments in network expansion can be shifted to the future. The projects are expected to be implemented in the second half of 2017 and ended in 2018.

Under consideration is another project related to smart grids that was submitted to the Energy Agency by the DSO Elektro Primorska to obtain incentives for the projects which are funded by EU or EC:

– SUNSEED - Sustainable and Robust Networking for Smart Electricity Distribution[4] (project promotor – DSO Elektro Primorska); the project will include integration of advanced measurement system WAMS (Wide Area Measurement System). Collected data will be used as an input information for advanced functionalities of ADMS (Advance Distribution Management System). To cover data collection from the HV part of the grid right to the each individual consumer, communication networks of Electrical and Telecommunication System operator will be merged. Such system will enable improved network visibility and better management.

In the development and research activities of system operators ELES in 2016 started to coordinate one of the most recognizable project in the EU, FutureFlow[5], the project involving 12 partners from eight European countries. The aim of this project is to design and perform pilot testing of the regional platform that will provide advanced consumers and disperse production an access to a cross-border balancing market and possibility of re-dispatching. The Energy Agency will monitor these and other development and research activities in the context of system operators' investment regulation and smart grid regulation with the described incentive scheme.

Cyber security of the power system

Simultaneously with the development of smart grids, an adequate level of cyber security of the electricity system must also be ensured. On the initiative of the Energy Agency in 2016, a professional dialogue on cyber security within the framework of the SEVF - Slovenian Energy Security Forum was established with energy market participants and state authorities. In this context, the Energy Agency, in cooperation with the IPET Section organized the first consultation on cyber security in the energy sector. The SEVF framework focuses on topics of particular importance for the energy sector: the cyber security strategy of Slovenia and the energy sector, cyber threats to energy infrastructure, the safety of industrial control systems, the security of smart energy networks and smart meters, the EU 2016/1148 NIS Directive and information security of data flows. Domestic and foreign cyber security experts presented their views on the topic.

First forum on cyber security in the power sector

The TSO is introducing new standards and business models. Information security is managed according to the ISO 27001:2013 standard, certification of which they recently renewed. At the beginning of 2016, the TSO in cooperation with the Jožef Stefan Institute, the Institute for Corporate Security Studies and partners in the European Union, began to actively participate in the European project Defender. The goal of the project is to establish a system for determining interdependence and implementation of data generated at all levels and types of infrastructure, and the company's services (system operator, critical infrastructure, critical services). On this basis, a model of the interdependence of data will be established, their analysis will be carried out, and a model of complex response to a given scenario will be implemented by including all societal factors and related stakeholders.

In 2016, the DSO launched activities to improve cyber security and privacy protection internally as well as in electricity distribution companies. Processes for the introduction and operation of security mechanisms are being prepared in accordance with safety recommendations, which enable adequate security of communications between system counters, data collectors and measuring centres. Changes

4 https://sunseed-fp7.eu/

5 http://www.futureflow.eu/

are planned in the measurement centres of electricity distribution companies, HES/MDM software and system meters in the field. Within the business informatics, the electricity distribution companies and the DSO commenced with the activities for the ISO 27001 standard implementation.

Amongst the activities of electricity distribution companies, the following areas can be highlighted; security checks of networks along with security event analysis, up-to-date upgrading of system software, providing of audit trails, renewing of perimeter or central network elements, introduction of mechanisms for authentication of end devices, redundant data centre services, implementation of testing, personal data protection, user training, internal controls, feasibility studies, network renovation and modernization of control centres.

3.2.3 The network charges for the transmission and distribution networks

3.2.3.1 Setting the network charge

The Energy Agency regulated the activities of electricity system operators on the basis of regulated network charge. With this method the Energy Agency determines the network charge and other revenues, and by taking into account the surplus of the network charge from the previous years the system operators the covering of all eligible costs of the regulatory period and the deficit of the network charge from previous years is ensured. The Energy Agency encouraged cost-effectiveness of service providers, guarantees permanent and stable business operation of electricity system operators as well as stable and predictable environment for investors, owners and users of the system.

In the regulatory period 2016–2018 for the TSO EUR 490.9 million, and for the DSO EUR 840.1 million of eligible costs

With the regulatory framework the costs necessary for carrying out the activities of electricity system operators' are covered. These costs include costs of operation and network maintenance, costs of ancillary services, depreciation costs and regulated return on assets. In determining the network charge, the Energy Agency took into account also other incomes form operating activities as well as surpluses or deficits form the previous years.

The methodology for setting the network charge is also based on incentives, which depend on the recognized eligible costs, the achieved level of the quality of supply, and investments in smart grids.

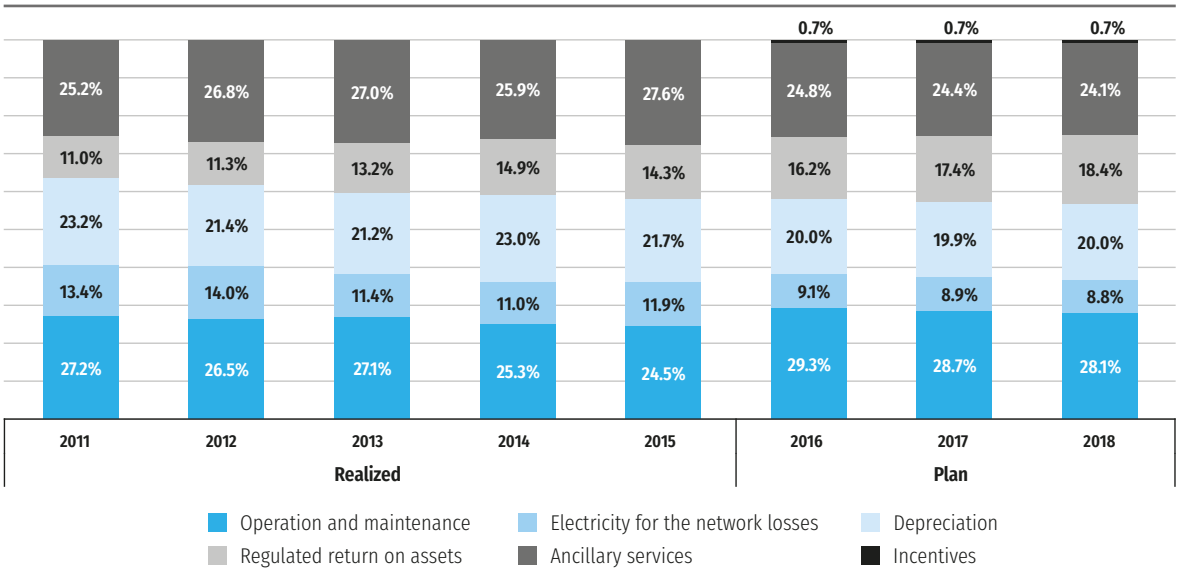
After the end of each regulatory period, derogations from the regulatory framework are identified as the difference between the actual eligible costs of a system operator and actual financing sources for covering eligible costs. The actual eligible costs and sources for covering these costs are calculated on the basis of criteria for their determination. Within the determination of deviations is also checked the eligibility to incentives. The Energy Agency issues a separate decision if deviations from the regulatory framework, which are established by the system operator, are not calculated in accordance with the methodology. Derogations are reflected in a deficit or surplus of the network charge. The method of regulated network charge determines the system operator obligation to consider the surplus of the network charge as dedicated revenue for covering deficits of the previous years or eligible costs of the following years. At the same time, the method of regulated network charge allows the system operator to enforce the network charge deficit in establishing the network charge in coming years. The regulatory framework can be modified during the regulatory period if the Energy Agency establishes that significant changes occur within the operation of the system operation.

On 1 January 2016 the new three-year regulatory period started, which will last by 31 December 2018. The Energy Agency in 2015 issued Act on the methodology determining the regulatory framework and network charge for the electricity system operators. Under this Act in 2015 the Energy Agency by issuing the decisions for the TSO and DSO determined the regulatory framework for the period 2016–2018, and also set the network charge tariffs.

For that period the Energy Agency set the planned eligible costs in the amount of EUR 490.9 million. The planned eligible costs of the TSO increased in this period by 16.5% in comparison with actual eligible costs of the previous regulatory period. This increase is mainly a result of higher planned costs for operation and maintenance, and higher planned regulatory return on assets. This is also evident from the structure of eligible costs presented in Figure 24.

Figure 24

STRUCTURE OF THE TSO'S ELIGIBLE COSTS



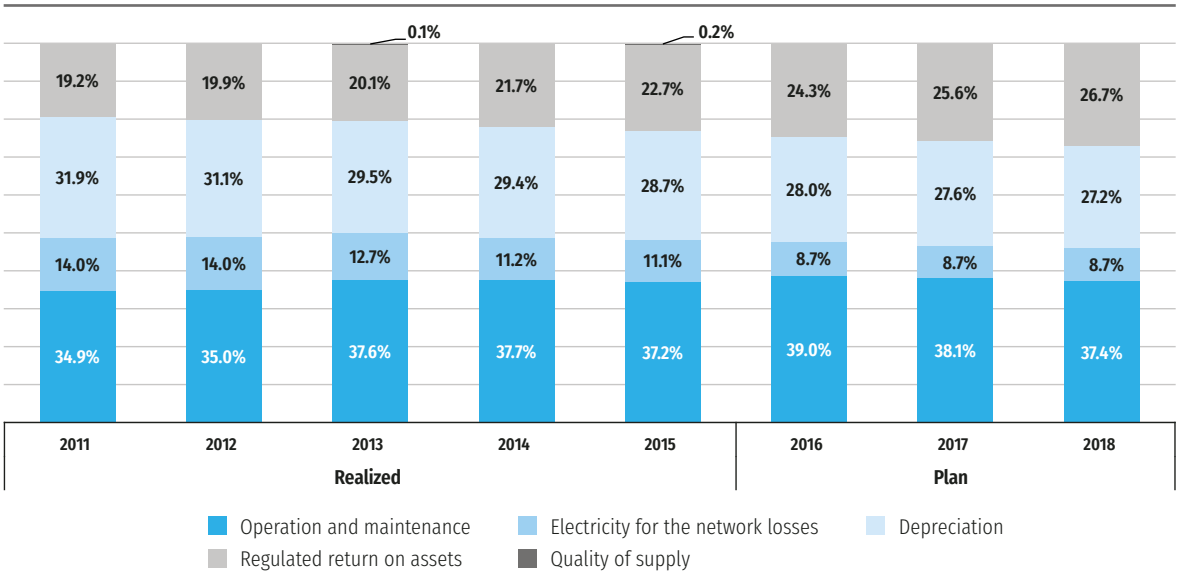
Source: Energy Agency

For the DSO in this regulatory period the planned eligible costs are determined in the amount of EUR 840.1 million. With the decision on the regulatory framework are on the basis of planned eligible costs of the DSO also determined the planned payments for renting the system and carrying out the tasks for distribution companies.

The planned eligible costs of the DSO in this regulatory period increased by 2.3% in comparison with the previous regulatory period. The change is mainly due to an increase in the planned regulated return on assets the reduction in planned costs of electricity for network losses. This is also evident from Figure 25.

Figure 25

STRUCTURE OF THE DSO'S ELIGIBLE COSTS



Source: Energy Agency

3.2.3.2 **The charging for the network charge**

To determine the charging for the network charge, the Energy Agency uses a non-transaction postage-stamp method, which means that, with respect to charging for the network charge, the tariffs and average costs for making a connection are uniformed for the whole territory of Slovenia within the framework of individual consumer groups. For the calculation of tariffs, the planned network charges for the transmission and distribution system are considered as the costs of the system divided across different voltage levels to which consumers are connected.

To divide the costs across different voltage levels the gross approach with respect to calculating the network charges for the transmission and distribution networks. To ensure efficient and rational use of the network the method for setting the binominal tariff is used – that means according to the achieved capacity charge and consumed electricity. Such calculation allows demand response during the peak demand when the system is more loaded. Consumers can by lowering the maximum power significantly impact the level of the network charge, and thereby, contribute to the security of supply.

For covering the eligible costs of the system operator that are funded from the network charge, the Energy Agency determines the network charge tariffs for individual consumers' 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;
- the network charge for connected load.

The electricity system operator classifies the final consumer in the consumer group with respect to the voltage level (HV, MV, LV), the type of connection (busbar, feeder), operating mode (operating hours) and type of consumption.

At final consumers with power metering the network tariffs for the transmission and distributions systems are seasonally differentiated:

- High season – from January to March and from October to December;
- Low season – from April to September.

Dependent on the time of day the network tariffs for the transmission and distributions systems are divided to:

- Peak daily tariffs during peak time (for final consumers on HV and MV level with metering of 15-minute interval during peak demand);
- Higher daily tariffs during high tariff, charged from Monday through Friday from 6 a.m. to 10. p.m.;
- Low daily tariffs during low tariff, charged in the remaining week hours and during weekends and non-working days the whole day.

The capacity charge is based on nominal fuse amperage at both – final consumers on the LV level without power metering and household consumers regarding to the connection type (single-phase or three-phase connection).

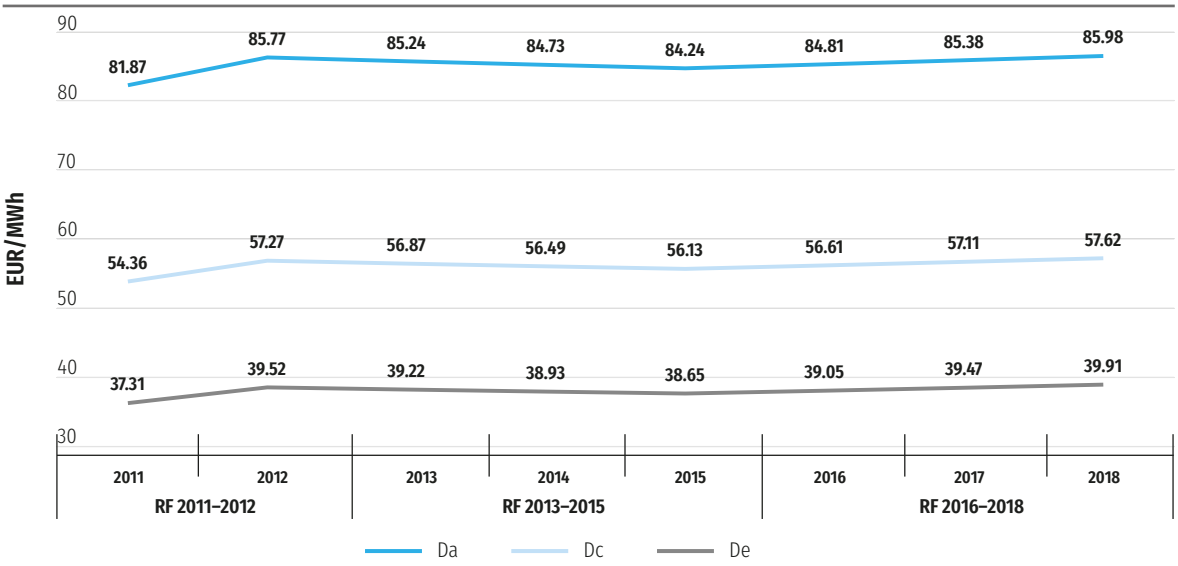
Figures 30 and 31 show the network charge for the transmission and distribution systems in the past years (in the regulatory frameworks) and the currently valid regulatory framework for 2016–2018 for some typical household and business consumers, classified into the groups with the following characteristics:

- Household consumers:
  - Da (consumption 600 kWh, single tariff, power 3 kW);
  - Dc (consumption 2,200 kWh in high tariff, and 1,300 kWh during low tariff, power 7 kW);
  - De (consumption 5,000 kWh in high tariff, and 15,000 kWh during low tariff, power 10 kW).

- Business consumers:
  - Ib (power 50 kW, annual consumption 50 MWh (tariffs ratio HT : LT = 60 : 40), consumption group LV T < 2,500 h, seasons average);
  - Ie (power 500 kW, annual consumption 2 GWh (tariffs ratio HT : LT = 55 : 45), consumption group MV T >= 2,500 h, seasons average);
  - Ig (power 4 MW, annual consumption 24 GWh (tariffs ratio HT : LT = 55 : 45), consumption group MV T >= 2,500 h, seasons average).

Figure 26

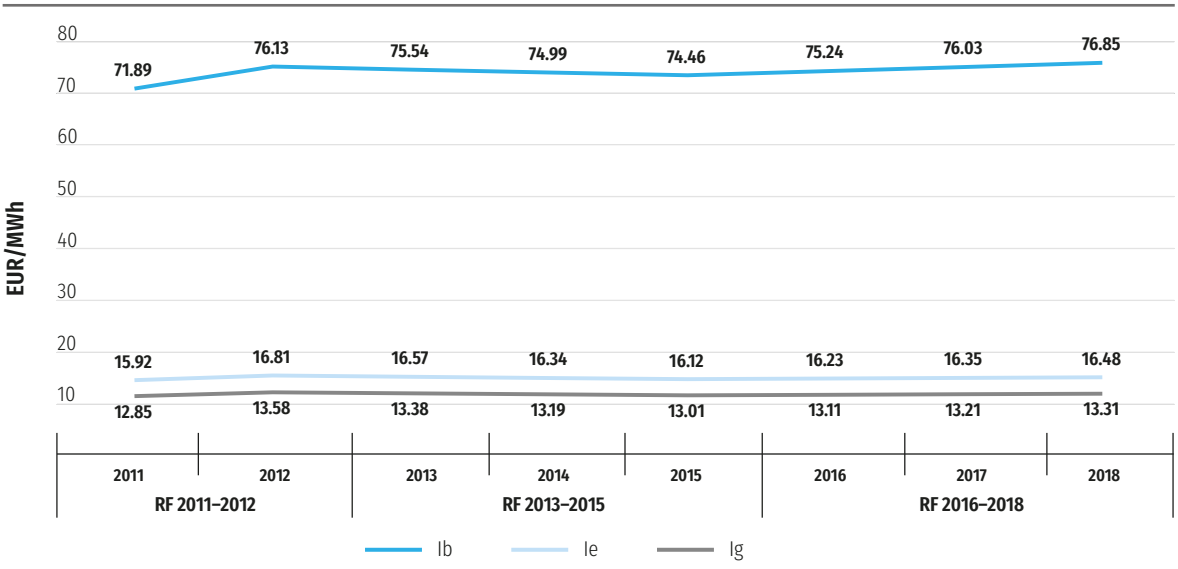
NETWORK CHARGE FOR HOUSEHOLDS IN THE PERIOD 2011–2018



Source: Energy Agency

Figure 27

NETWORK CHARGE FOR BUSINESS CONSUMERS IN THE PERIOD 2011–2018



Source: Energy Agency

After the network charge increase in the regulatory framework 2011–2012, a period of progressive reduction of the network charge for the period 2013–2015 followed. Taking into account the criteria for determining the network charge and the method of calculation the elements of the regulatory framework for the period 2016–2018 is again expected increase in the network charge.

3.2.4 Cross-border transmission capacity

The Slovenian transmission system is with interconnectors connected with the neighbouring systems of Austria, Italy and Croatia. Capacities of these interconnectors are limited, therefore it is necessary to establish the procedures for the access of all interested market participants in a non-discriminatory manner.

European legislation requires that the TSOs allocate the capacities of limited interconnectors among individual trading areas by using market-based methods. Market-based methods are the methods by which market participants pay for the access to the cross-border transmission capacities (hereinafter referred to as CBTCs). Prices paid for the CBTCs reflect the difference between the neighbouring trading areas or countries. To ensure equal opportunities for all participants the auctions are used. In the case of explicit auctions, market participants bid only for interconnectors capacities, while at implicit auctions held through trading on power exchanges participant bid at the same time for the energy and for CBTCs. Auctions of CBTCs are usually performed on annual, monthly or daily basis, and for other capacities within a day.

At the borders in the direction of Austria and Italy, where the utilization rate of CBTCs is the highest, with the introduced market coupling procedures the best price signals are achieved

The EU electricity target model foresees that allocation of the CBTCs on annual and monthly level would be carried out through explicit auctions, and for day-ahead and intraday through implicit auctions. All auctions should be coordinated and carried out through common trading platforms. The coordination begins already at the level of determining CBTCs, which is normally at first carried out on annual level, and after that in the period which is as close as possible to the delivery time. The explicit auctions on an annual and monthly level should take place on a single pan-European platform, and implicit allocation for day-ahead and intraday should be carried out with coordinated use of single European market coupling algorithms. The electricity target model will be fully identified by the Network Codes. Already in 2015, the Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management came into force, which covers determination and allocation of CBTC for day-ahead and intraday. In 2016, the Commission Regulation of 26 September 2016 establishing a guideline on forward capacity allocation was implemented, which covers forward capacity allocation - meaning the attribution of long-term cross-zonal capacity through an auction before the day-ahead time frame.

In 2016, the allocation of CBTCs at the borders of the Slovenian transmission system with the neighbouring countries was performed in compliance with the EU electricity target model. Important changes occurred in the middle of the year since market coupling for day-ahead was introduced on the Slovenian-Austrian border, and on the Slovenian-Italian border, a bilateral intraday market coupling by using complementary implicit auctions was implemented.

The Table 13 presents an overview of CBTCs allocation across the borders at the end of 2016.

Table 13

OVERVIEW OF THE ALLOCATION OF CBTCs IN 2016 BY BORDERS

Border	Period of the allocation of CBTCs	Methods of allocating CBTCs
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
sI-HR	Yearly	Explicit auctions
	Monthly	Explicit auctions
	Day-ahead	Explicit auctions
	Intraday	Non-market based allocation

Source: Energy Agency

The table shows that the situation at the Slovenian-Italian border is the nearest to the electricity target model. Although this allocation model envisages the allocation of CBTC through continuous trading, the Regulation 2015/1222 allows so-called complementary regional auctions. At this point, it should be mentioned that the target model for allocating CBTCs within the intraday framework has not yet been introduced in Europe since the development of an appropriate algorithm under the XBID project is still under way. From July 2016, with the exception of CBTCs within the intraday allocation, the circumstances at the Slovenian-Austrian border are in compliance with the target model. At the Slovenian-Italian border, the compliance with the target model is at the lowest level since the compliance is ensured only on annual and monthly allocation, while allocation of capacity for day-ahead by explicit auctions and within intraday by non-market based manner are not consistent with the target model.

The allocation of CBTCs for day-ahead at the borders with Austria and Italy is carried out within the interregional market coupling. In this coupling BSP Energy Exchange, based in Ljubljana participates as a power exchange; in December 2015 was under Regulation 2015/1222 designated as nominated electricity market operator (NEMO) for the Slovenian trading area. The company is entering the market under the trademark name BSP SouthPool. The power exchange in the Slovenian trading area also participates in the implementation of 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) with the headquarters in Luxembourg; JAO acts as a common European platform for explicit auctions for the allocation of CBTCs in accordance with Regulation 2016/1719.

Table 14 shows a review of the allocated CBTCs by an individual border and directions of flows, the total revenues from the auctions and the price for allocated megawatt hour.

Table 14

OVERVIEW OF ALLOCATED CBTCs AND THE REVENUES FROM THE AUCTIONS BY INDIVIDUAL BORDERS

Border	Allocated(MWh)	Gross revenues (EUR)	Average price of allocated CBTCs (EUR/MWh)	Net profit (EUR)
SI-IT	3,723,828	26,071,577	7.00	15,855,167
IT-SI	2,766,408	386,515	0.14	300,939
SI-AT	5,980,672	189,041	0.03	124,618
AT-SI	3,434,010	30,217,681	8.80	24,905,558
SI-HR	10,525,950	2,139,038	0.20	1,559,627
HR-SI	11,887,088	581,759	0.05	381,653

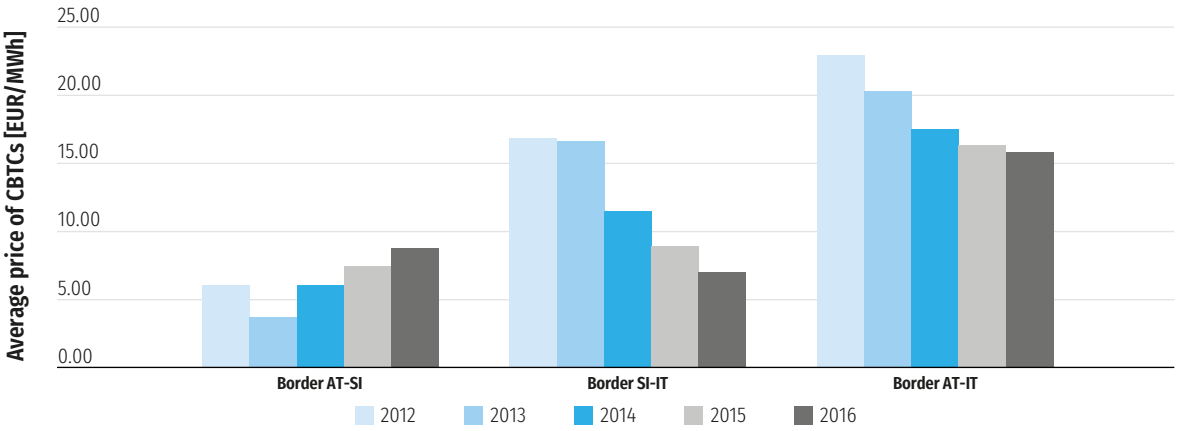
Source: ELES

Table 14 shows gross and net revenues from auctions. Net revenues are gross incomes minus the costs of the auctions conducted for the neighbouring system operators. The average price of allocated CBTCs for each border and direction of transmission are calculated as gross income divided by the total amount of allocated CBTCs.

The prices of CBTCs achieved at each border reflect the difference between the prices in individual markets. The Slovenian market is restrained by German-Austria market, in which the prices are the lowest, and the Italian market, which is characterised by high prices. Bearing in mind the average obtained price of CBTCs for both directions, we can assume that prices were not very different from the Slovenian ones. Based on the above we can conclude that in 2016 the most interesting for the traders was the possibility of selling electricity from Germany and Austria to Italy, which could be also inferred from the values of obtained average prices of CBTCs at individual borders. Figure 28 shows the movement of prices for CBTCs from Austria to Slovenia, from Slovenia to Italy, and the total price of CBTCs from Austria to Italy in the period 2012–2016.

Figure 28

MOVEMENTS IN THE AVERAGE PRICE OF CBTCs IN THE DIRECTION FROM AUSTRIA TO ITALY IN THE PERIOD 2012–2016



Source: ELES

The total price of CBTCs and the price of CBTCs from Slovenia to Italy in years from 2012 to 2016 were continuously declining, while during this period the price of CBTBs from Austria to Slovenia was increasing. To clarify these movements, we should compare price movements in the power exchange with the obtained prices of CBTCs.

Table 15

MOVEMENTS OF PRICE DIFFERENCES ON POWER EXCHANGES AND AVERAGE PRICES OF CBTCs IN THE YEARS FROM 2012–2015

Border	AT-SI		SI-IT		AT-IT	
Year	The difference between the prices in power exchanges* (EUR/MWh)	Average prices of CBTCs (EUR/MWh)	The difference between the prices in power exchanges (EUR/MWh)	Average prices of CBTCs (EUR/MWh)	The difference between the prices in power exchanges (EUR/MWh)	Average prices of CBTCs (EUR/MWh)
2012	10.55	6.08	20.66	16.86	31.21	22.94
2013	5.40	3.71	18.41	16.61	23.81	20.32
2014	7.66	6.02	9.92	11.51	17.58	17.53
2015	9.78	7.42	11.30	8.93	21.08	16.34
2016	6.64	8.80	7.05	7.00	13.69	15.80

* As the Austrian market price the price in the German EPEX DE is used

Sources: ELES, websites of power exchanges

Table 15 shows the difference between the power exchange price and the obtained average prices of CBTCs on the relevant borders that separate the trading areas of power exchanges. In comparison are used the prices of base load in trading for a day ahead in the individual power exchanges, i.e., the average price of all 8760 hours of trading per year. As the reference prices in the Austrian-German market, the prices for the trading area of Germany and Austria in the EPEX SPOT are used. From the data in the table, the high degree of correlation between the price difference on the power exchanges and the obtained price of CBTCs are evident, as well as a gradual impact of the implementation of market couplings. Before market coupling, CBTCs at all borders were allocated through explicit auctions. This means that traders when biding their capacity at the explicit auctions offered such values that an

adequate profit was gained after trading. Consequently, the prices of CBTCs were always lower than the price difference between individual power exchanges. Different conditions were first observed at the Slovenian-Italian border in 2014 when almost all the allocation of CBTCs at this border was transferred to the framework of market coupling. In 2016, due to market coupling, the situation changed also at the Slovenian-Austrian border along all the observed transmission direction from Austria to Italy, since the average difference between the prices in both markets was lower from the annual average price of CBTC. This change was primarily obvious at the Austrian-Slovenian border. The average price difference in both markets includes also the hours when the price in the Slovenian market was higher than in Austria, and the prices were equal in both markets. During these hours CBTCs were due to market coupling effectiveness allocated in the direction from Austria to Slovenia or were used only partially, but when the price was higher in the Austrian market, they were fully utilised. This may lead to the fact that the average annual price of CBTCs is higher than the average difference in price in power exchanges.

The access to CBTCs consists of two phases. The first phase is the allocation of the right of their use while the second is the nomination of the actual use. In the case of explicit auctions, these are two separate procedures, while in the case of implicit auctions (market coupling) obtaining of capacity automatically brings its nomination for both central counterparties. A network user who obtains CBTC in an explicit auction needs to nominate it to the TSO within the specified deadline. The network user can decide to use the whole CBTC, part of it or not to use it at all. In the latter case, the rule "use-it-or-sell-it" applies for the capacities obtained in yearly and monthly auctions, which means that the network user sells unused capacity back to the TSO who sells it in an auction for the shorter period. The network user gets this capacity paid by the TSO at the price achieved in this auction. For the capacities obtained in explicit auctions for the day-ahead timeframe the rule "use-it-or-lose-it" applies, which means that the market participant pays the whole capacity obtained in the auction at the achieved price, irrespective of whether this capacity is used or not. Because of the above-mentioned differences in prices, in 2016 the largest share of CBTCs utilization rate was at the border from Austria to Slovenia and from Slovenia to Italy. The high utilization rate was also in both directions at the border with Croatia; however, the revenues from CBTCs were relatively low because of a large amount of available CBTCs. Relatively high utilization of the direction from Slovenia to Croatia was the result of the fact that the half of the production in the nuclear power plant Krško belongs to Croatia. The use of CBTCs for all border in the period from 2012–2016 is shown in Table 16.

Table 16

UTILIZATION RATE OF CBTCs IN THE PERIOD 2012–2016

	Utilization rate of CBTCs (%)				
Border/Year	**2012**	**2013**	**2014**	**2015**	**2016**
SI-IT	94	96	91	87	79
IT-SI	8	7	9	3	10
SI-AT	11	28	16	12	17
AT-SI	92	75	92	96	89
SI-HR	67	49	58	46	46
HR-SI	35	54	33	36	37

Source: ELES

A comparison of the utilization rate of CBTCs at the individual borders shows that the direction from Austria through Slovenia was the most interesting one; therefore, the CBTCs in this direction were the most utilized. Since the Austrian-Slovenian border is used for the transit to and from the countries of the Western Balkan, situations in these countries during the years of favourable hydrological conditions were slightly changed in comparison with most of the remaining years. Such conditions were in 2013 when an increase in transits from Croatia to Austria was recorded. That is was the utilization rate of CBTCs from Austria to Slovenia is lower than in other years, and higher in the opposite directions.

For the same reason in 2013, the higher utilization of CBTCs in the direction from Croatia to Slovenia and lower in the opposite direction can be observed. In the period 2012–2016, a gradual decline in the utilization rate of CBTCs from Slovenia to Italy can be detected.

3.2.5 **Ensuring compliance with energy legislation**

In accordance with the Directive 2009/72/EC concerning common rules for the internal market in electricity the Energy Agency has to provide for the implementation of binding decisions of ACER and the European Commission, and in decision-making processes ensure the compliance with the provisions of this 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 approval to the rules of allocation and use of interconnections, the Energy Agency controls the compliance with the provision from Annex 1 to Regulation (EC) 714/2009. In 2016 the Energy Agency issued to the electricity TSO the approvals to the Rules for Daily Capacity Allocation on borders of CEE region and the borders Croatia-Hungary and Croatia- Slovenia. This change was necessary due to the inclusion of the Slovenia-Austrian border in multi-regional market coupling for the day ahead. In the last quarter of the year, the Energy Agency issued approvals also to the following rules applicable in 2017: Allocation Rules for Forward Capacity Allocation, Shadow Allocation Rules, and Rules for Daily Capacity Allocation on borders of CEE region and borders Croatia-Hungary and Croatia- Slovenia.

In monitoring the implementation of the provisions under EU regulations concerning internal electricity market, the Energy Agency did not find any violations

In 2016, the Energy Agency participated in participated in confirmation of proposals and the methodologies that have to be under Regulation (EU) 2015/1222 establishing a guideline on capacity allocation and congestion management approved by all the NRAs of the Member States, which have cross-border transmission connections with transmission systems of other Member States. In that way, the Energy Agency together with other NRAs approved the generation and load data provision methodology. In the same period, the NRAs together requested the amendments of the common grid model methodology and the plan on joint performance of MCO functions.

The Energy Agency was also monitoring the exercising the implementation of EU regulations concerning the internal electricity market, as well as whether the electricity companies fulfil the obligations arising from European legislation. No specific breaches of the legislation were found in 2016.

In 2015, the Energy Agency issued a decision on the certification of the electricity TSO, and the Government adopted a decision on designation of ELES as the electricity system operator. After the nomination, the Energy Agency monitors whether the TSO meets the legal requirements for certification, and at the same can in individual cases may ex officio initiate the review of the conditions for the certificate. The above-mentioned activities were also carried out in 2016, whereas no violations were identified.

3.3 Promoting competition

The Energy Agency monitors developments in prices (weighting factors, price trends, the impact of liquidity on prices, etc.), market transparency (access to information about prices, implementation of REMIT, wholesale market transparency), and market efficiency (openness and competitiveness). The Energy Agency analysis the situation and implement appropriate measure within their powers in order to eliminate current barriers for the development of competition. By encouraging a competition the market strengthening is ensured, and that is for the benefit of the final consumers of electricity.

3.3.1 **Wholesale market**

In the electricity wholesale market producers, traders and suppliers of electricity sell and purchase electricity from each other. They trade on the basis of closed contracts, in which the quantity and the time

profile of supply of contractual volumes of electricity are set in advance so that the price does not depend on the actual realization of the contracts. The wholesale market participants conclude their business by the bilateral transactions or at the exchanges in Slovenia and abroad. Power exchanges provide their market participants with Day-ahead and Intraday trading, and for the purpose of balancing the system. Trading of future products is also possible, covering time-periods longer than day-ahead.

The activity of the electricity exchange in the Republic of Slovenia is being carried out by BSP, Regional Energy Exchange, d.o.o., is entering the market under the trademark name BSP SouthPool. In 2016, in addition to established auction trading for day-ahead and continuous trading within a day the intraday market trading was possible. The intraday trading, introduced at the Slovenian-Italian border, extends existing day-ahead trading at this border. A novelty in 2016 was also the Slovenian-Austrian market coupling for day-ahead. With that, the SI-AT border was included in the Multi-Regional Coupling (MRC).

For both market segments, the process of registration in the system of accounting and financial settlement is also possible (OTC clearing). OTC clearing is defined as the bilateral exchange of trades concluded outside the exchange and the registration of those trades as OTC transactions on the BSP trading platform. The process of clearing and financial settlement starts after confirmation of a transaction between a trader and a buyer of electricity in the trading platform for continuous trading. The conclusion of transactions for OTC clearing takes place from 3 pm on the day before physical supply starts and up to one hour prior physical supply.

Borzen, the Slovenian Power Market Operator, is mandated to record all the closed contracts on an organized market. Thus, Borzen supervises the agreed contractual obligations in which electricity is bought or sold in Slovenia or is transferred across the regulated area. This includes the recording of all contracts between members of the balance scheme; all export and import closed contracts and closed business transactions on the exchange. In addition, the organizer of the market in the form of operational schedules of production and consumption keeps records of the contracts between the suppliers, the consumers and electricity producers.

3.3.1.1 **Electricity prices**

To ensure effective market monitoring, the Energy Agency monitors the level of wholesale prices in Slovenia and on relevant markets that affect prices in Slovenia. Information on wholesale prices in Slovenia is available on the BSP SouthPool website, as well as from commercial providers of analytical services and market information.

Electricity prices on power exchanges in Slovenia and foreign markets

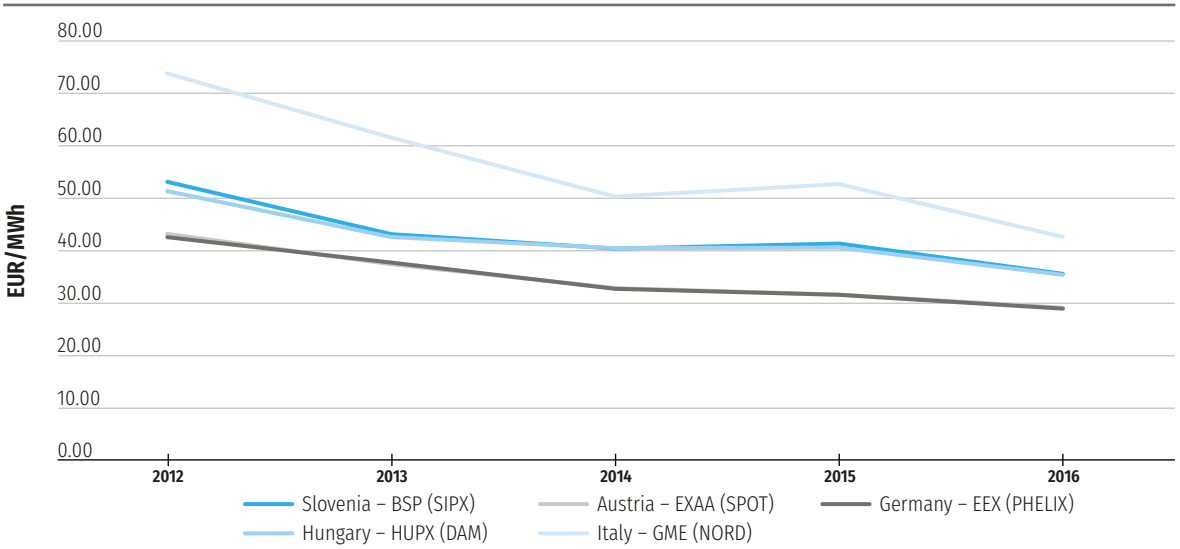
14%
lower was in comparison to 2015 the electricity Base price on the power exchange in Slovenia and the average Peak price almost 15%

The Slovenian power market is a part of the northern Italian and Central-East European regions. Because electricity cannot be stored, the electricity market is faced with a number of disparities between the supply and demand. Therefore, the electricity prices on power exchanges across Europe are subject to major fluctuations. The Slovenian market adjoins two very liquid markets (Italian and Austrian-German market), and very fragmented markets of South-East Europe which are not effectively connected, and due to that non-transparent and unpredictable in terms of power exchange trading.

Meteorological conditions have a significant impact on electricity prices (hydrological and wind conditions, number of sunny days). Due to high electricity production from RES, in recent years the prices of electricity on power exchanges in Slovenia and neighbouring countries are decreasing. In 2012, the average Base price on power exchange in Slovenia was 53.1 EUR/MWh, and in 2016 only 35.6 EUR/MWh. In comparison with 2015 (41.4 EUR/MWh) the price decreased by almost 14%. As we can see in Figure 29, the average annual prices in the Italian market are achieving the highest values among the observed markets and also at the EU level. The lowest prices, which are almost identical, are in the Austrian and German power exchanges. Similarly, the price movement is almost identical on the Slovenian and Hungarian power exchanges.

Figure 29

MOVEMENT OF THE AVERAGE BASE PRICE IN DAY-AHEAD MARKET IN SLOVENIA AND ON FOREIGN EXCHANGES IN THE PERIOD 2012–2016

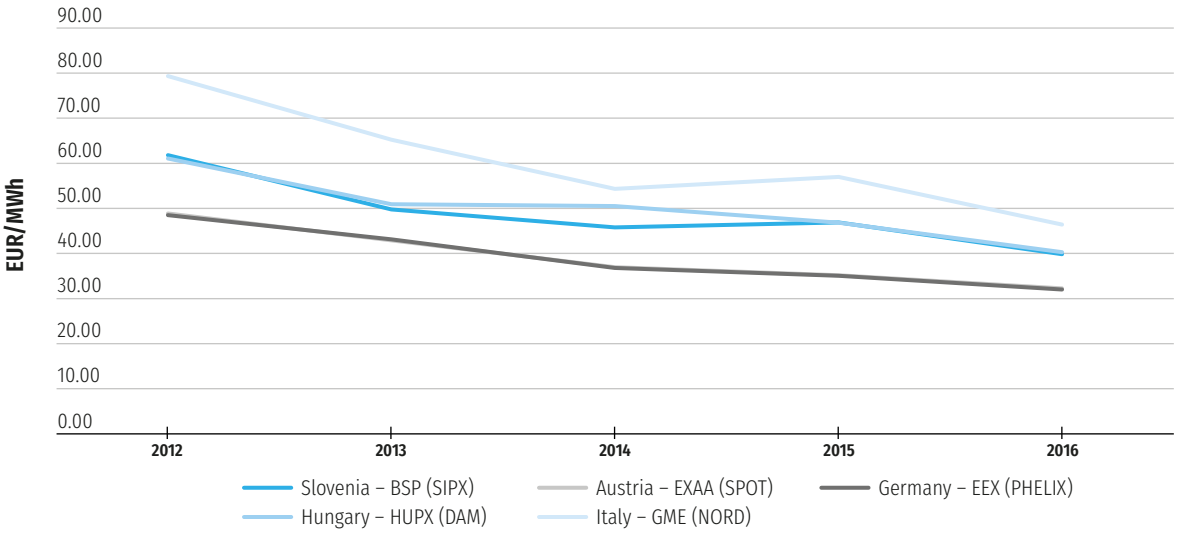


Source: Montel

Movements of Peak prices are almost the same, and also the correlation between the exchanges is similar. In 2012, the price of Peak in Slovenia was 61.8 EUR/MWh, and in 2016 was 39.8 EUR/MWh. Compared to 2015 (46.9 EUR/MWh) the price decreased by almost 15%. On foreign power exchanges the prices also decreased in comparison to 2015.

Figure 30

MOVEMENT OF PEAK PRICE IN DAY-AHEAD MARKET IN SLOVENIA AND IN FOREIGN EXCHANGES IN THE PERIOD 2012–2016



Source: Montel

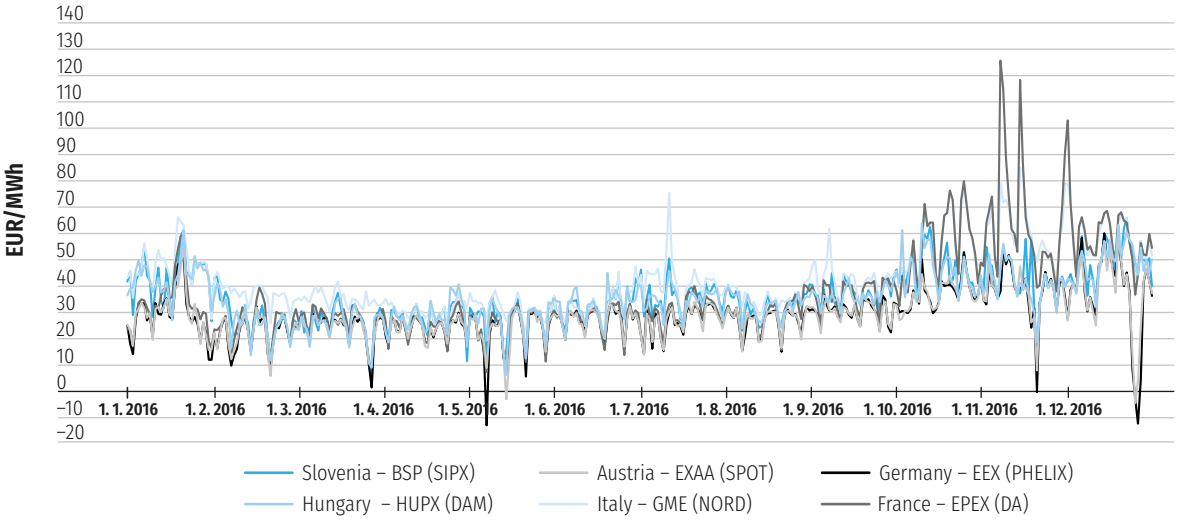
The highest price for a day-ahead was on the Slovenian power exchange in 2016 recorded on 22 December. Transmission capacities in the direction from Austria to Slovenia were on that day fully engaged. Highly utilized were also capacities from Slovenia to Croatia and Italy, which show higher demand for

energy not only in Slovenia but also in South-Eastern Europe and Italy. Energy for covering these demands came from Austria. Full utilization of transmission capacities at the Austrian-Slovenian border was an additional reason for high prices.

Figure 31 shows that on German and Austrian power exchanges prices were on certain days negative due to high production from RES. At the end of 2016, prices were very high on the French power exchange. The reason was the decision of the French Nuclear Safety Agency, which shut down 15 nuclear reactors due to safety reasons, leading to leading to a sharp increase in prices and also affect some EU markets, while the price on the Slovenian power exchange remained stable. France is namely in Europe the largest net exporter of electricity, which is produced in nuclear power plants.

Figure 31

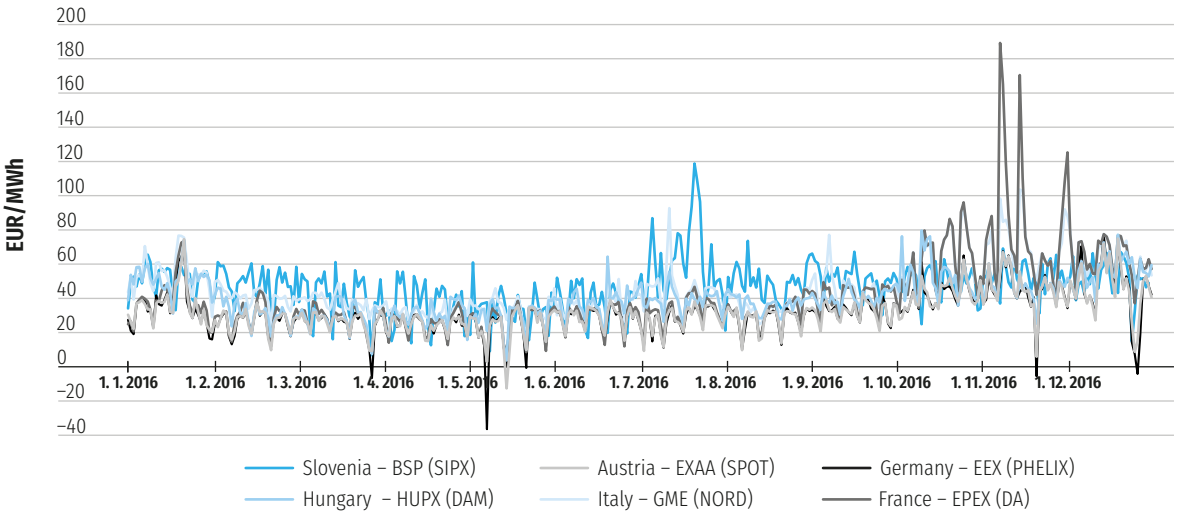
MOVEMENT OF BASE PRICE IN SLOVENIA AND ON THE NEIGHBOURING POWER EXCHANGES IN 2016



Source: Montel

Figure 32

MOVEMENT OF PEAK PRICE IN SLOVENIA AND ON THE NEIGHBOURING POWER EXCHANGES IN 2016

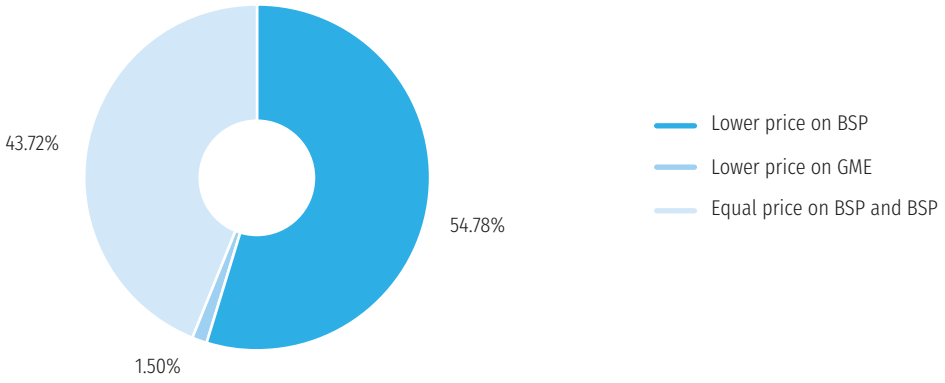


Source: Montel

From the market coupling point of view, an interesting analysis of the prices reached on BSP and GME is shown in Figure 33. Market price on BSP was in general lower than in Italy (GME); it was higher than in Italy in less than 1.5 percent of hours. In comparison with 2015, price rates between power exchanges were becoming equal, mainly due to high capacity available on new installed RES in Italy.

Figure 33

ANALYSIS OF THE PRICE COMPARISON ON BSP AND GME



Source: Montel

Estimated market price of electricity from the support scheme

In 2016, the electricity produced from RES and CHP, included in the support scheme, amounted to 7.7% of all electricity production in Slovenia; the year before this share was 8.4%. Because the share of electricity included in the support scheme in comparison to the total electricity production in Slovenia is approaching 10%, it is reasonable to monitor the development of the prices of this commodity on the market.

Within the Support Scheme (feed-in support scheme) power plants owners have the option of choosing between the operating premium (operating support) and guaranteed purchase. If the producer chooses operating premium electricity can be sold freely on the market, and if he chooses guaranteed purchase, the electricity is transferred to a separate balance group – Eco group operated by Centre of Support (Borzen). In 2014 and 2015, a part of this electricity was sold on annual auctions and a part on BSP. In 2016, Borzen for the first time carried out the transfer of electricity from Eko group to the balance group of balance scheme member, which at the auction offered the best purchase conditions.

The market price of electricity included in the support scheme in the period 2014–2017 has been formed on the individual level on the market, auctions, and power exchanges. When calculating the market price of electricity from the support scheme in 2014 and 2015 all three options were taken into account, and in 2016, when Borzen did not sell electricity on the power exchange, the price was formed only at the individual level and on auctions.

The estimated market price in 2014 and 2015 derives from the average of achieved prices on an annual level, achieved price at the auction, and average hourly price on BSP in an individual year. The estimated market price in 2016, however, derives from the average of the achieved prices on an individual level and auction price. Achieved prices taken into account in the calculation are weighted by the amounts of individual items.

The estimated market price of electricity included in the support scheme is higher than the price achieved on the power exchange, which indicates great interest in electricity from RES

In 2016, most of the electricity included in the support scheme was sold at an individual level, that is in the context of an operating support. The estimated market price is, thus, influenced by the price formed on the market at an individual level. The estimated market price of electricity included in the support scheme is together with the average hourly price on BSP for the period 2014–2016 presented in Table 17. The calculation indicates the great interest of consumers for electricity produced from RES and CHP since in all observed years the estimated price of this electricity is higher than the price achieved on the power exchange.

Table 17

COMPARISON OF THE ESTIMATED MARKET PRICE OF ELECTRICITY INCLUDED IN THE SUPPORT SCHEME WITH THE AVERAGE HOURLY PRICE ON BSP SOUTHPOOL

Year	The estimated market price of electricity included in the support scheme (EUR/MWh)	The average hourly price on BSP (EUR/MWh)
2014	43.58	40.43
2015	42.18	41.41
2016	39.04	35.62

Sources: Borzen, BSP

Emission allowances

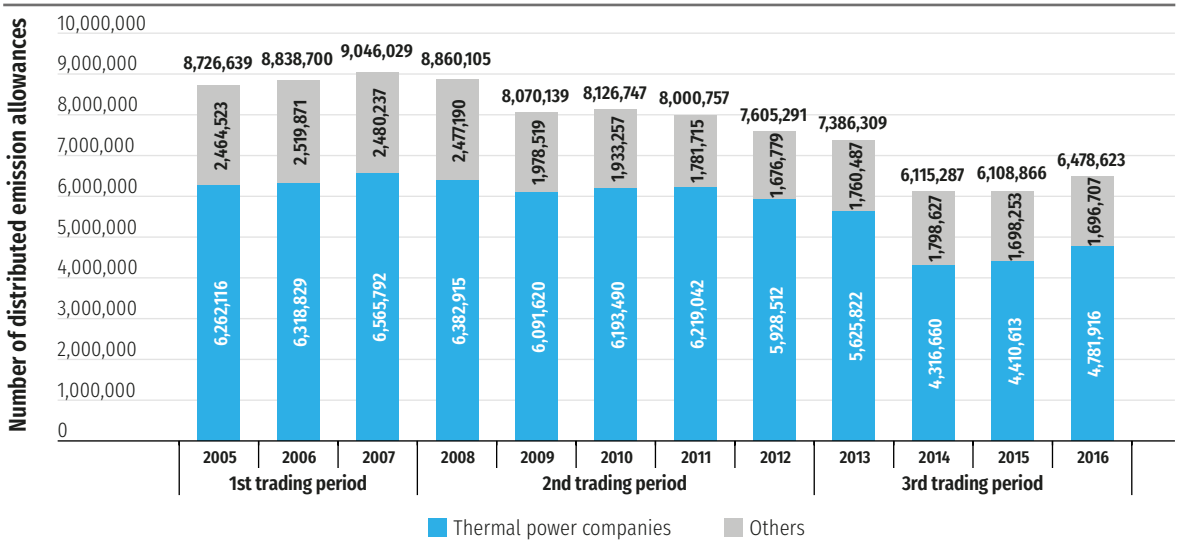
By ratifying the Kyoto Protocol, the Republic of Slovenia made commitments to reduce greenhouse-gas emissions. The objective of establishing the EU emissions' trading is one of the instruments for reducing greenhouse-gas emissions. Emission allowance is a general term for trading with a certificate or authorization to emit one tonne of carbon dioxide or other greenhouse gas equivalent in the atmosphere. The EU in 2005 implemented the European Emission Trading System (EU ETS). The goal of this implementation was to allow further operation of industrial and business processes, but with the trend of reducing emissions. This system includes factories, electricity producers and other facilities causing greenhouse gases. The system of trading with emission allowances includes the facilities with an input heat power of 20 MW, and, with respect to the energy sector, also the facilities with an input heat power of 15–20 MW.

6,1%
more allocated emissions allowances as in 2015

On the basis of the Environmental Protection Act, which requires the purchase of emission allowances, the Government of the Republic of Slovenia has adopted an Ordinance on the list of operators of installations emitting greenhouse gases for the period 2013–2020. The Ordinance contains a list of operators of installations that are in this period eligible for emission allowances without obligation to pay, a list of operators of installations that are no longer entitled to free emission allowances (Thermal Power Plant Brestanica and Thermal Power Plant Trbovlje in liquidation), and the list of operators of installations that are excluded from the trading system since they will perform equivalent measures.

Figure 34

MOVEMENT IN NUMBER OF DISTRIBUTED EMISSION ALLOWANCES FOR ALL THREE TRADING PERIODS IN YEARS FROM 2005 TO 2016



Source: Slovenian Environment Agency

In 2016, the number of distributed emission allowances in comparison to 2015 increased by 6.1%. The last recorded increase in distribution of emission allowances was in 2010. A significant increase in distribution of emission allowances in comparison to the previous year is the consequence of an increased number of emission allowances for thermal power plants. Thermal power plants and heating plants in 2016 in the third trading period took over 4,781,916 emission allowances, 8% more than in 2015, and which is also 74% of all distributed emission allowances in Slovenia. In 2016, the production of thermal power increased, Thermal Power Plant Trbovlje generated a record amount of electricity.

In accordance with Decree on environmental tax on carbon dioxide emissions, the environmental tax is paid for air pollution with CO_2 from fuel combustion. This levy is a revenue budget of the Republic of Slovenia.

Figure 35

TRENDS OF THE EMISSION ALLOWANCES PRICE (EUROPEAN EMISSION ALLOWANCES FUTURES – EUA) ON EEX, A PURCHASE IN 2016 FOR 2017

Source: EEX

In 2016, the price of emission allowances varied between EUR 4.10 and EUR 8.10 per tonne of CO_2 and in comparison to the previous year decreased. In 2015 the prices were between EUR 7.20 and EUR 9.50. A decrease in the price of emission allowances was influenced by several factors. In 2016 many new production facilities using RES were installed to the power system, which consequently reduces the greenhouse-gas emissions. The efficiency of industrial facilities and other household consumers increased as a result of EU incentive policies providing subsidies for energy efficiency of large commercial buildings. The price reduction was probably also a result of the decision of the United Kingdom, which plays an important role in the emission trading, to leave EU.

3.3.1.2 **Market transparency**

Regulation on wholesale energy market integrity and transparency (hereinafter referred to as REMIT) is the key foundation for ensuring price transparency in the wholesale energy market. This regulation constitutes a comprehensive framework for monitoring and control of the EU electricity and gas markets. The framework consists of three major parts: prohibition of market manipulation and trading on the basis of inside information, a requirement for effective and timely disclosure of inside information, and appropriate legislative framework for market monitoring.

43

participants of the wholesale electricity and natural gas market in Slovenia were registered by the end of 2016

Trading on the basis of inside information and market manipulation is under REMIT prohibited. Any violations of this Regulation shall be fined. Any person professionally arranging transactions in wholesale energy products who reasonably suspects that a transaction might breach the prohibition of market manipulation or trading on the basis of inside information must inform the NRA without further delay.

Publishing of inside information includes fundamental data that should be published by the participants of the wholesale energy market. Data include information on the capacity and use of facilities for production, storage, consumption or transmission of electricity or natural gas or related to the capacity and use of LNG facilities. Inside information is information relating to the capacity and use of facilities for production, storage, consumption or transmission, including planned or unplanned unavailability of transmission infrastructure, and, furthermore, information on the connection capacities between trading zones, congestion management, balancing the system, including information on backup sources for balancing and financial settlement. ENTSO-E and ENTSO-G in accordance with REMIT send this information to ACER on behalf of market participants.

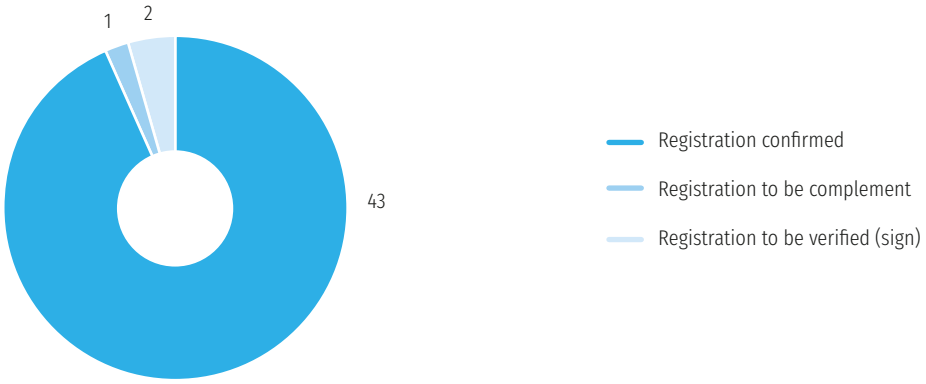
Regulation 543/2013 determines that all required data should be published by ENTSO-E on a central information transparency platform. ENTSO-E established the platform on 5 January 2015.

Market monitoring under REMIT is comprehensive and includes the monitoring of all wholesale energy products, irrespective of whether they are traded on organized market places or bilateral. For monitoring, the trading the information on trader must be available. The registration of all market participants is the task of the NRA. Market participants must register with the NRAs in the Member State in which they are established or resident or, if they are not established or resident in the Union, in a Member State in which they are active.

In the wholesale electricity and natural gas market in Slovenia, 43 participants were registered by the end of 2016.

Figure 36

REGISTRATION OF MARKET PARTICIPANTS IN SLOVENIA AT THE END OF 2016



Source: Energy Agency

Market participants must on the contracts, concluded in the wholesale market, report to ACER. The reporting is carried out through rapporteurs, who, according to REMIT represent so called Registered Reporting Mechanism (RRM). To minimize the burdens of market participants the third parties can be chosen as a RRM in order to report on behalf of market participants.

To monitor the Slovenian market, the Energy Agency will be receiving the data on transactions and fundamental data from ACER. The implementation phase of the wholesale market monitoring at the national level was in 2016 full underway, but by the end of the year has not yet been fully implemented. In that way, the real-time monitoring of the market in accordance with REMIT has not yet been implemented. By the beginning of real-time wholesale energy market monitoring, some remaining procedural arrangements have to be implemented, as well as technical-organizational adjustments of the Energy Agency and ACER. Among them is the introduction of dedicated support tools for real-time wholesale energy market monitoring. All the activities related to investigations and control procedures were based on the Energy Agency's analysis, external notifications, and information.

In 2016, one suspected violation of REMIT was under consideration, but the investigation was not completed by the end of the year.

The Energy Agency among the first seven energy regulators with the access to REMIT data at the transaction level

Data and supporting documents on market abuse require the establishment of IT ensuring high-security level. In 2016, the Energy Agency finished the audit of information security management system and upgraded the information security policy. It also established a dedicated information and physical infrastructure for REMIT procedures, which provide confidentiality, integrity, and availability of data and information and their protection. Measures taken in this area reduce the exposure to the risk of abusing sensitive data and information to the level prescribed by REMIT. The Energy Agency passed the assessment of its information security solution by the ACER Expert Group (RISIG). On the basis of ACER's decision on 30 November 2016 formally fulfilled the conditions, and it was ranked among the European energy regulators, which quickly gained the access to REMIT data at the transaction level. With that, all main conditions for monitoring the wholesale energy market at the national level were met.

Regarding the constraints with which the Energy Agency is faced, the implementation of the requirements under REMIT is one of the largest challenges since the Energy Agency's foundation. The willingness to carrying out these demanding tasks was at the end of 2016 in compliance with internal plans, capabilities, and expectations of ACER, with which the Energy Agency since REMIT implementation cooperates excellently.

3.3.1.3 **The level of 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 size, influence electricity prices in the European Union. In the following chapters are presented the indicators used for monitoring the level of market effectiveness in terms of the level of competitiveness, liquidity, and markets integration.

Bilateral trading

Bilateral trading is trading outside the organized power exchange. It is performed between two contractors, which determine the conditions of purchase or sale in a bilateral contract.

Unlike trading on a power exchange at bilateral trading the contracting parties bear a default risk – the possibility that a counterparty will fail to meet the contractual obligations. Bilateral trading is less transparent way of trading since contract details, such as price and quantity, are generally not disclosed to public. It allows customers optional product design, which why this is a popular way of trading. In Slovenia, most of electricity trading is done on bilateral markets.

Contracts, signed on bilateral markets, are of a closed type. They are characterised by the fact that the quantity of delivered electricity in a relevant time scale is determined for each calculation interval. Borzen, the market operator, must register all closed contracts that affect the energy balance of a member of the Slovenian Balance Scheme. In that way, Borzen within its tasks registers all contracts signed between members of the Slovenian Balance Scheme, contracts conclude on the energy exchange and import-export contracts. Contracts concluded on bilateral markets are a part of registered import-export closed contracts, and closed contracts signed between members of the Balance Scheme.

5%
increase in bilateral trading in comparison to 2015

In addition to closed contracts, Borzen also registers operational forecasts that represent forecast of deliveries and consumption of electricity by the members of the Balance Scheme for a delivery point for which open contracts are concluded.

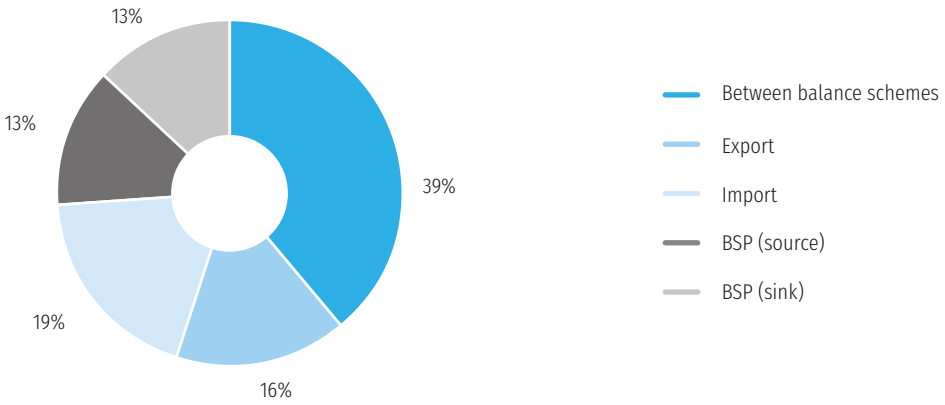
In 2016, the market operator registered a total of 109,235 closed contracts and operational forecasts in the total amount of 83,139,517 MWh. In comparison with 2016, the number of recorded closed contracts and operational forecasts decreased by 2.9%, and the total amount of electricity from recorded closed contracts increased by 5.3%.

The amount of electricity sold or purchased electricity through the closed contracts was 54,834,360 MWh. This amount is in comparison to 2015 when it was 52,143,848 MWh, a slightly higher also due to the changed method of selling electricity produced in Nuclear Power Plant, which is according to the international agreement exported to Croatia. This change affects the increase of recorded amounts in closed contracts in October, November, and December.

The structure of the closed contracts volumes and corresponding quantities are shown in Figures 37 and 38. At all transactions that are concluded at BSP, the exchange plays the role of the central counterparty, where the concluded transaction is recorded both as for quantity bought (source) and quantity sold (sink).

Figure 37:

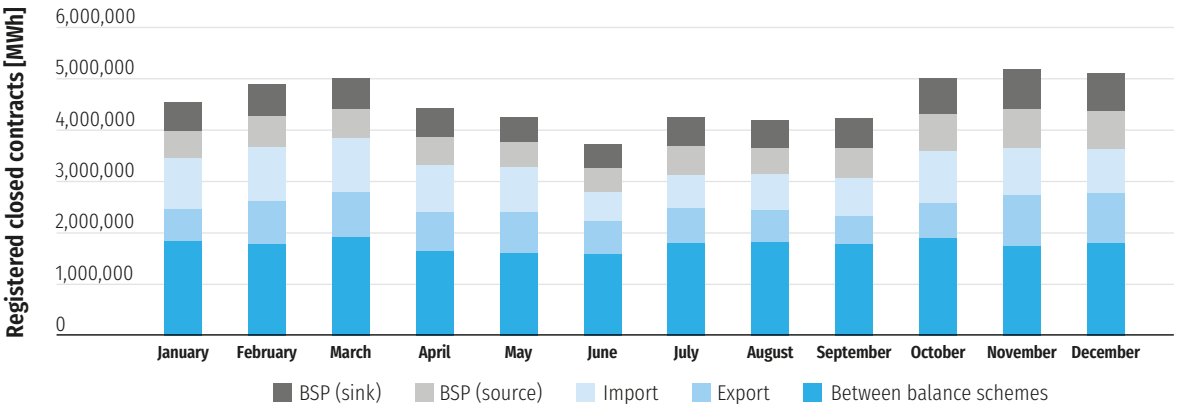
STRUCTURE OF REGISTERED CLOSED CONTRACTS IN 2016



Source: Borzen

Figure 38

VOLUMES OF SOLD OR PURCHASED ELECTRICITY THROUGH CLOSED CONTRACTS BY MONTHS IN 2016



Source: Borzen

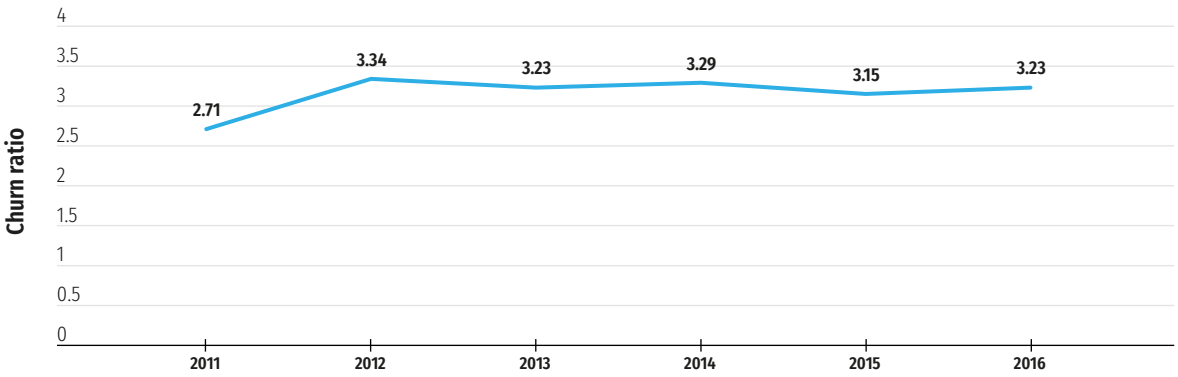
Market liquidity

The Energy Agency monitors the liquidity of the wholesale electricity market with an established index called Churn ratio. The index provides information how often a unit of electricity is traded before it is delivered to an end consumer. The calculation is based on the methodology, which takes into account the quotient between the sum of the recorded volumes from closed contracts minus exported quantities and the consumption in Slovenia. With the volumes from closed contracts in the calculation are included the quantities traded on the BSP as well as the quantities traded in the bilateral market. Figure 39 shows the movement of the index during the observed six-year period. In 2016, the index value slightly increased in comparison to 2015, but it remains above the value 3, indicating that the Slovenian wholesale electricity market is well developed and with a high level of transparency. Considering that our market is in comparison with other European markets smaller, a relatively large number of active participants are present; they are concluding a comparable number of businesses. Therefore, the prices in the Slovenian market are stable, and in case of concluding small-business transactions do not change significantly.

Index Churn ratio remains above the value 3 indicating good market liquidity

Figure 39

CHURN RATIO BY YEARS



Source: Borzen

Day-ahead market

8.2%
larger overall scale of trading on the Slovenian day-ahead market

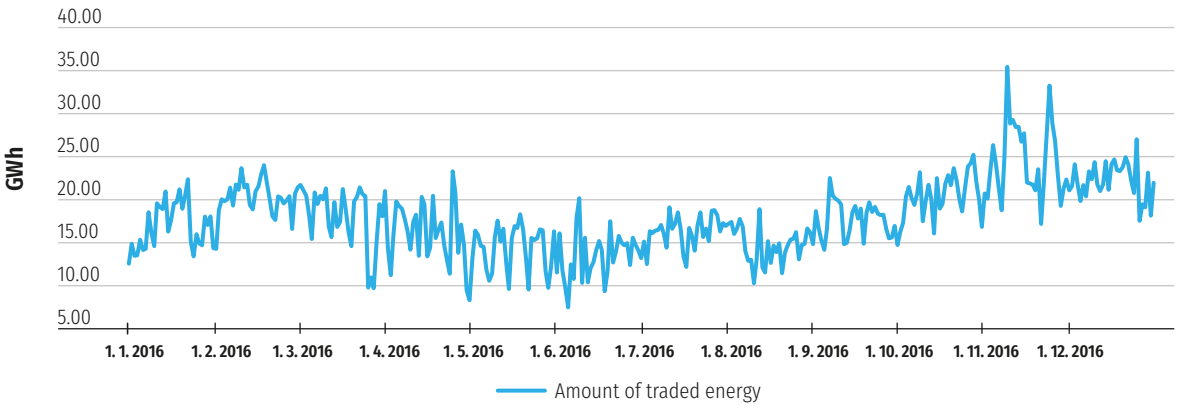
Trading in the day-ahead market is conducted on the Slovenian power exchange BSP SouthPool. The volume of trading is influenced by many factors, most importantly by the quantities of available CBTCs at SI-IT border and SI-AT borders. An important factor is also the number of active participants on the exchange, and indirectly trading is affected by exceptional events on the foreign markets, or due to breakdown or overhauls of production units or non-availability of CBTCs.

The total volume of trading in the day-ahead market in 2016 amounted to 6,567,226 MWh, which is 8.2% more than in 2015. The average annual price of Base-load product was 35.62 EUR/MWh, and the average price of Peak-load product was 39.84 EUR/MWh. Both of the prices in comparison to 2015 decreased. At the end of 2016, in day-ahead market participated 32 market participants, most of the participants were from foreign countries. On average, daily 25 participants were submitting their bids.

The highest monthly trading volume in 2016 was reached in November, namely 736,440 MWh, which is 10.5% of all trading volumes in 2016. The lowest monthly trading volume was reached in June, 404,974 MWh or 6.2% of trading volume in 2016. During the summer the volume of trading was expectedly lower.

Figure 40

ELECTRICITY TRADING VOLUMES IN 2016



Source: BSP SouthPool

Intraday Market

Trading in Intraday market is also conducted on the Slovenian power exchange BSP SouthPool. Intraday trading is limited to the Slovenian market, auction trading, implemented in June 2016, and also include market coupling with Italy.

Total trading volume on intraday market amounted to 272,015 MWh

In 2016, the total volume of continuous intraday trading amounted to 272,015 MWh, of which the volume of trading on the balancing market 197,890 MWh, and the volume of the remaining continuous intraday trading 74,125 MWh. The part of remaining continuous r intraday trading in comparison to 2015, when amounted to 20,754 MWh increased significantly.

Within intraday trading is also organized the financial settlement of the transactions, which are concluded by the participants outside the organized market. In 2016, 26 transactions were sent to financial settlement (OTC) in the total amount of 33,928 MWh.

In the period from 21 June to December 31, 2016, the volume of auction intraday trading amounted to 217,238 MWh (implicit auctions MI2 and MI5 at the SI-IT border). For 4,989,762 MWh offers were recorded, out of which 3,217,099 MWh for purchase and 1,772,663 MWh for selling. The volume of bids on this auction segment was increasing from quarter to quarter.

In the Slovenian intraday market, 11 market participants were involved, on average, daily 3.6 participants were submitting their bids.

Balancing market

The electricity balancing market in Slovenia is run by the market operator. The balancing market enables the TSO a transparent purchasing of energy for balancing the system. For balancing the system, the TSO must have at any time at its disposal positive and negative energy for balancing. The TSO must at any time ensure the balance between the production and consumption of electricity in its control area, which is in the case of the Slovenian TSO, ELES company, the entire power system. On the balancing market the TSO can buys appropriate amount of positive balancing energy if there is not sufficient energy in the system, or sells potential surpluses. By doing so, the TSO releases secondary positive or negative reserves and regain the necessary volume of reserve for the implementation of the secondary regulation. In this context it should be mentioned that in case of major disruptions in the power system such as outages of production units or major interconnectors, the TSO has in the reserve the engagement of the leased reserve for tertiary control of frequency and power, which tends to be much more expensive than buying electricity on the balancing market. Trading on balancing market is carried out in a manner of continuous trading, which means that the transaction is concluded when supply and demand meet. For practical reason trading on balancing market is carried out together with intraday trading. The balancing market is under the authority of the market operator carried by the BSP SouthPool energy exchange, which also operates the intraday market. The same rules apply for both markets, subject to the principle that intraday trading ends one hour before the time of delivery and converts to the trading on the balancing market. One hour before the time of delivery the transactions between different balance group members are not possible since in balancing market must on one side at the conclusion of transactions (buying or selling) be always the TSO. However, the rules for implementation of the balancing market set that the offers entered by the members of the balancing market within intraday market the TSO accepts as the offers placed on the balancing market, and all transactions, concluded with offers by the TSO for the purpose of balancing the power system are regarded as the transactions on the balancing market. As a result, the transactions on the balancing market can be divided to transactions carried out in the intra-day trading stage and transactions carried out in balancing market stage.

4,054

transactions were concluded on the balancing market in the total volume of 197,890 MWh or almost 5% more than in 2015

In the balancing market, all members included in the Balance Scheme can through a platform participate in trading. Trading on the balancing market is carried out 24 hours a day, seven days a week, and at most one day in advance. Trading with hourly, 15-minute, base-load and peak-load products is enabled. It is also possible to trade with block products, which are defined by the participant of the balancing market and must include at least two consecutive hourly products within the same day or two 15-minute products for the delivery within the same day.

In 2016, on the balancing market, 4,054 transactions were concluded in the total volume of 197,890 MWh. Out of these, 33,076 MWh represented the purchase of balancing energy, and 164,814 MWh represented the sale of balancing energy by the TSO. In comparison with the previous year, the volume of concluded transactions increased by more than 5%, and the number of concluded transactions increased by more than 29%. The highest volume of transactions was concluded with block products in the total amount of 117,409 MWh of electricity. With 1,751 transactions, the hourly products were the most traded product on the balancing market. Since 2013 the share of transactions concluded in the balancing market stage has been steadily rising. Thus, in 2016 the share was almost 52% of the total volume of transactions concluded on the balancing market. This means that the TSO buys or sells electricity immediately before the delivery and, thus, more effectively balance the power system.

In 2016, the highest electricity price for balancing was 150 EUR/MWh, and the lowest –140 EUR/MWh. In August, the volume of trading and the number of concluded transactions were record-breaking in the history of the balancing market; 452 transactions were concluded in the total amount of 29,718 MWh. The TSO in 2016 on the balancing market acted mostly as a seller of electricity. Apart from the TSO, another five members out of 36 were involved in the balancing market, which is less than in 2015 when seven out of 38 members were active.

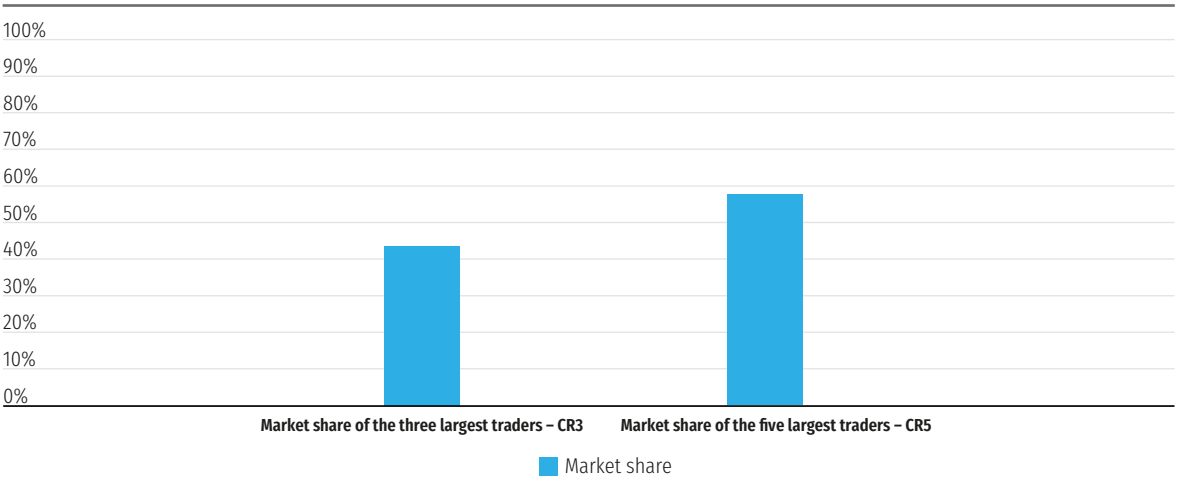
HHI indicates a low concentration in the wholesale auction market

Concentration in an auction market

In 2016, on the BSP 32 foreign and domestic companies were trading, less than the year before, when there were 36 foreign and domestic traders. The total share of the three largest traders as a market concentration index (Figure 41) in 2016 amounted to 43.5% (CR3), and the total share of the five largest traders 57.7% (CR5). The Herfindahl-Hirschman index (HHI) was 911, which indicates a low concentration on the wholesale market, but in comparison with 2015 increased.

Figure 41

SHARES OF THE TRADERS ON THE BSP WITH RESPECT TO TRADED VOLUMES IN 2016



Source: BSP SouthPool

Market coupling

Market coupling introduced on the SI-AT border for day-ahead trading and intraday trading on the SI-IT border

Already at the beginning of 2011, the BSP, the Slovenian electricity TSO, market operator Borzen, the Italian TSO Terna and the Italian market operator, which also manages the Italian power exchange GME started to cooperate in the project of market coupling on the Slovenian-Italian border. The project enabled the implicit auctioning system for allocation of physical daily CBTCs on this border.

Within market coupling for the day-ahead on the SI-IT border in 2016 in the direction SI-IT was allocated 3,633,407 MWh out of 4,813,132 MWh offered CBTCs, which in terms of implicit allocation of CBTCs represents 75.5% of utilization of daily available CBTCs. The average price of CBTCs in the direction SI-IT in 2016 amounted to EUR 9.49. In the direction IT-SI in the same period, 314,180 out of 5,720,270 MWh were offered, which represents 5.5% of utilization of daily offered CBTCs. Allocation of CBTC was in direction IT-SI more than three times higher than in 2015. The average price of CBTCs in the direction IT-SI was EUR 1.29. It should be emphasised that the prices of CBTCs in this analysis differs from the prices shown in Table 14. This is due to the fact that in this analysis are taken into account the prices reached within the market coupling, while in the values in Table 14 are taken into account also the costs of non-nominated long-term capacities. Consequently, achieved price of CBTCs are lower than the prices in this analysis.

For market coupling, the year 2016 was a turning point since the coupling was successfully introduced on the SI-AT border for day-ahead trading and intraday market on the SI-IT border.

In June 2016 on the SI-IT in addition to market coupling for day-ahead the intraday market coupling was introduced. In the direction SI-IT were allocated 64,466 out of 874,249 offered MWh, which is 7.73% of utilization of available CBTCs within intraday.

In the direction IT-SI were allocated 104,782 out of 3,061,720 offered MWh, which is 3.42% of utilization of available CBTCs within intraday.

In the second half of July 2016 began the coupling of Slovenian and Austrian markets with allocation of CBTCs for day-ahead. In the direction SI-AT was allocated 218,651 out of 4,762,173 MWh offered, which represents a 4.6% of utilization daily available CBTCs. The average price of CBTCs in the direction SI-AT was in 2016 EUR 3.31. In the direction AT-SI in the same period 590,643 out of 1,112,677 offered MWh were allocated, which represents 53.08% of utilization of daily available CBTCs. The average price of CBTCs in the direction AT-SI was in 2016 EUR 10.84.

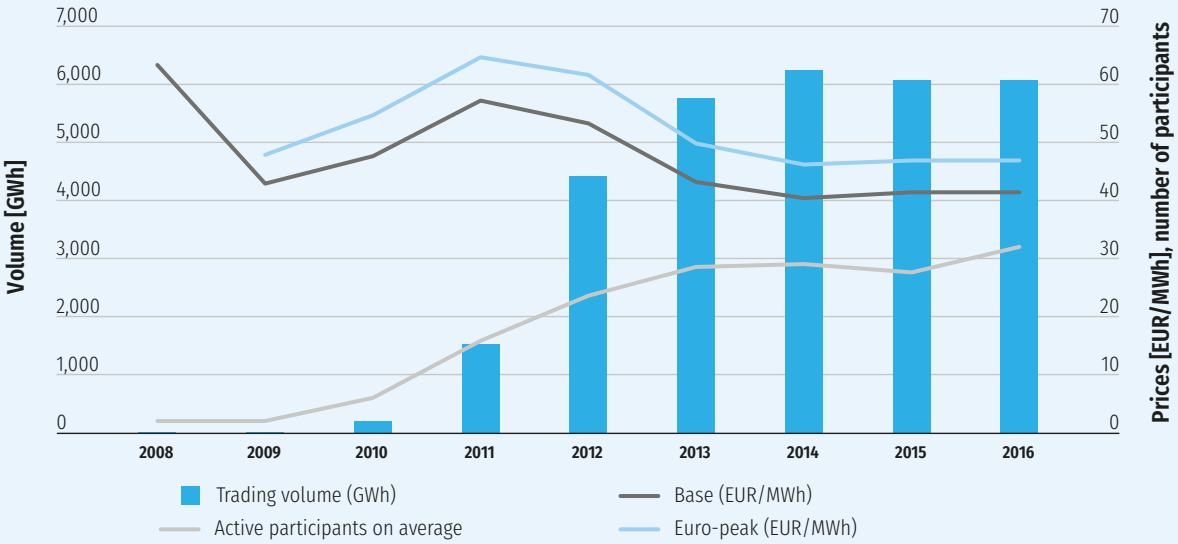
CASE STUDY

The situation on the Slovenian-Italian border from the perspective of market coupling

In the following text, we describe a detailed overview of the situation on this border in the period 2011–2016. Market coupling was from 1 January 2011 to 23 February 2015 carried out in the form of bilateral coupling of the Slovenian and Italian markets, and since 24 February 2015 the Slovenian–Italian border became a part of the interregional market coupling, which covers the area from Scandinavia to the Iberian peninsula and all the northern Italian borders. Market coupling had a very favourable impact on the Slovenian electricity exchange BSP SouthPool and consequently on the entire Slovenian market.

Figure P3-1

DEVELOPMENTS ON THE SLOVENIAN ENERGY EXCHANGE IN THE PERIOD 2008–2016



Source: BSP SouthPool

As illustrated in Figure P3-1, which shows the trading volumes for day-ahead, since SI-IT market coupling in 2011 the scope of trading on the Slovenian energy exchange, with the exception in 2015, has been steadily increasing, thus, giving the Slovenian market a credible price index. In the same period, the number of active participants has been increasing as well. In the years since the market coupling has been introduced the decrease in energy prices can be noticed, however, the decrease itself is not a direct result of market coupling but an increase in the share of the energy from RES with low or zero marginal costs on the internal European market, which caused a significant reduction of electricity prices in most of European countries.

The remaining key parameters related to market coupling in the period 2011–2016 are shown in Tables P3-1 and Figure P3-2.

Table P3-1

THE SITUATION ON THE SLOVENIAN-ITALIAN BORDER IN THE PERIOD 2011–2016

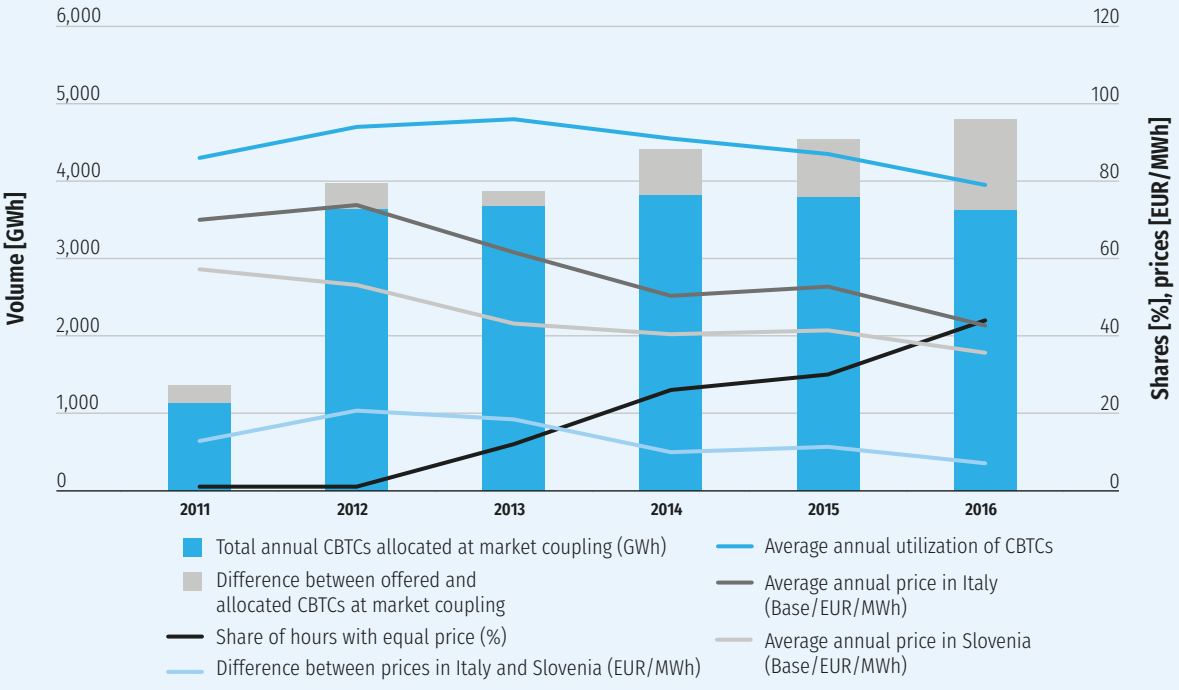
Year	2011	2012	2013	2014	2015	2016
Total annual CBTCs from Slovenia to Italy offered within market coupling (MWh)	1,353,984	3,969,838	3,872,444	4,408,921	4,535,013	4,813,132
Total annual CBTCs from Italy to Slovenia allocated within market coupling (MWh)	1,132,441	3,641,607	3,681,987	3,820,554	3,794,712	3,633,407
Average annual price in Slovenia (EUR/MWh)	57.20	53.15	43.18	40.43	41.41	35.62
Average annual price in Italy (EUR/MWh)	70.00	73.81	61.58	50.35	52.71	42.67
Difference between the prices in Italy and Slovenia (EUR/MWh)	12.80	20.66	18.41	9.92	11.30	7.05
Number of hours with equal price	55	54	1,007	2,288	2,622	3,840
Share of hours with equal price	0.63%	0.61%	11.50%	26.12%	29.93%	43.72%

Sources: ELES, Montel, power exchanges' websites

In the first year of market coupling, the quantities offered were much lower than in subsequent years. That was partly the result of a smaller share of the CBTC, which was already pre-scheduled for the day-ahead allocation, and even more, the fact that in 2011 the traders did not in large quantities return the capacities acquired at the annual and monthly auctions, as they have been doing since 2012. Since then, a relatively constant quantity of the allocated CBTCs within market coupling can be observed despite the gradual increase of available capacities. This can be interpreted by a decrease in price differences between the markets. This interpretation is also supported by the fact that in 2013 the number of hours with price convergence significantly increased, that is with the same prices on the Slovenian and Italian markets.

Figure P3-2

THE SITUATION ON THE SLOVENIAN-ITALIAN BORDER IN THE PERIOD 2011–2016



Sources: ELES, power exchanges' websites

3.3.2 **Retail market**

In the retail market, suppliers and traders sign open contracts, in which the quantities of supplied electricity and the time profile of supply are not set in advance. Consumers pay for the supplied electricity according to actual consumption metered by the utility meters.

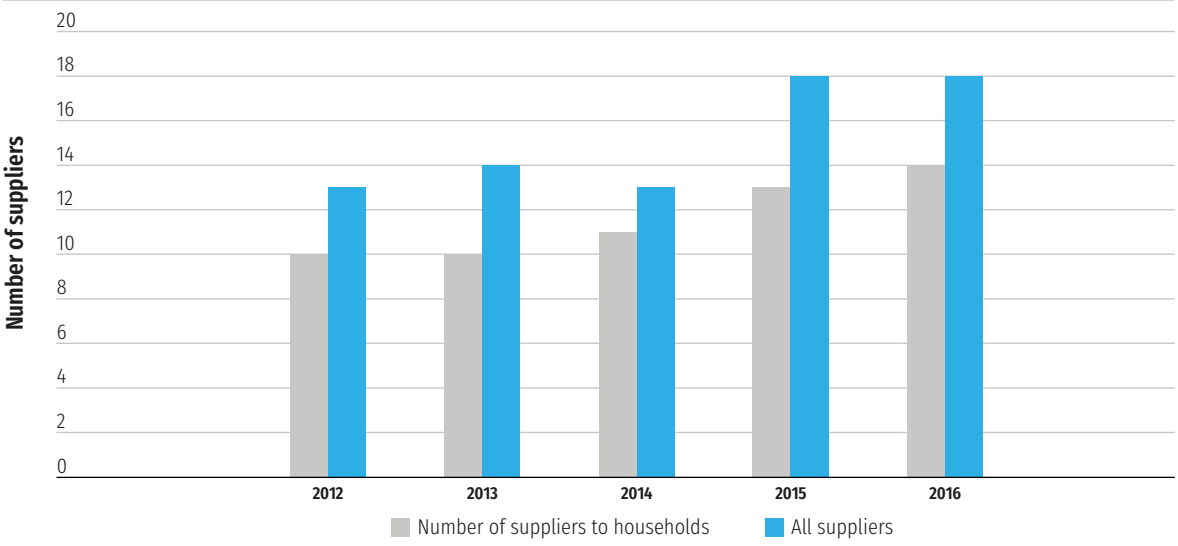
In 2016, to all consumers in Slovenia 14.2 TWh of electricity were delivered. In the retail market 18 suppliers were active, which supplied electricity in accordance with signed supplied contracts to four large business consumers, connected directly to the transmission system, five closed distribution systems and 945,442 business and household consumers connected to the distribution system.

18
active suppliers of electricity, two new entrants

In 2016, two new suppliers enter the retail market, the companies Telekom Slovenija, d.d., and Energia gas and power, d.o.o. Business models of individual suppliers are different. Some supply electricity only to household consumers, the others to business only, and most of them to both. Some companies also offer their services in other areas. The company Telekom Slovenija has as a provider of telecommunication services a long business tradition and maintains the largest market share in all segments of the electronic communications market. In 2016, they expanded their portfolio of services to the electricity by acquisition with the company Petrol, d.d.

Figure 42

CHANGES IN NUMBER OF SUPPLIERS IN THE RETAIL MARKET IN SLOVENIA IN THE PERIOD 2012–2016



Source: Ministry of Infrastructure – EPOS

3.3.2.1 **Retail electricity prices**

In modern economic environments, when open access to markets is guaranteed, and competition works, prices of individual products and services are affected by market mechanisms. The Energy Agency actively monitors the prices in the household and business markets since it receives at the monthly level information on prices changes or supply offers in the retail market for household and business consumers. Mentioned data are used for effective monitoring of the retail market. The Energy Agency prepares various comparative analysis, and on its website in the single point of contact provides the comparison of costs and indirectly also electricity supply costs for households and small business consumers. The market for large business consumers is analysed at an annual level on the basis of data received from EPOS system, which is operated by the Ministry of Infrastructure.

Suppliers offer electricity in the form of various products. We are familiar with so-called regular offers, which are based on regular price lists and their terms of supply determined by the Energy Act-1, and other offers; these offers can be further divided into discount offers[6], bundled offers[7], and other offers, which cannot be placed in any of mentioned category. Regular offers are the products available to all consumers without binding obligations, and penalties enable supplier switching at any time, while the duration of switching procedure at a supplier is regulated and must not exceed 21 days. These offers are subject to the comparison within the comparision services in the single point of contact. The definition of the regular price list allows the possibility that the supplier formally does not provide a regular offer in accordance with the Energy Act-1. Other offers are not necessarily accessible to all consumers. They can also be limited to a specific group of consumers, for example to those with installed smart meters, with the standing order payment, to consumers with heat pump, etc.). Other offers may include penalties if a consumer before the due time withdraws from the contract. Because of an aggressive marketing approach discounts and bundled offers appear very often at some suppliers.

The supply price depends on the characteristics of individual products, such as the structure of primary production sources, the time of duration of a contract, the method of payment and the way of communication

Supply prices depend on the characteristics of individual products, such as the structure of primary production sources, the time of duration of a contract, the method of payment and the way of communication. A price is thus only one of the characteristic of an individual supply product, which the Energy Agency monitors within the market monitoring.

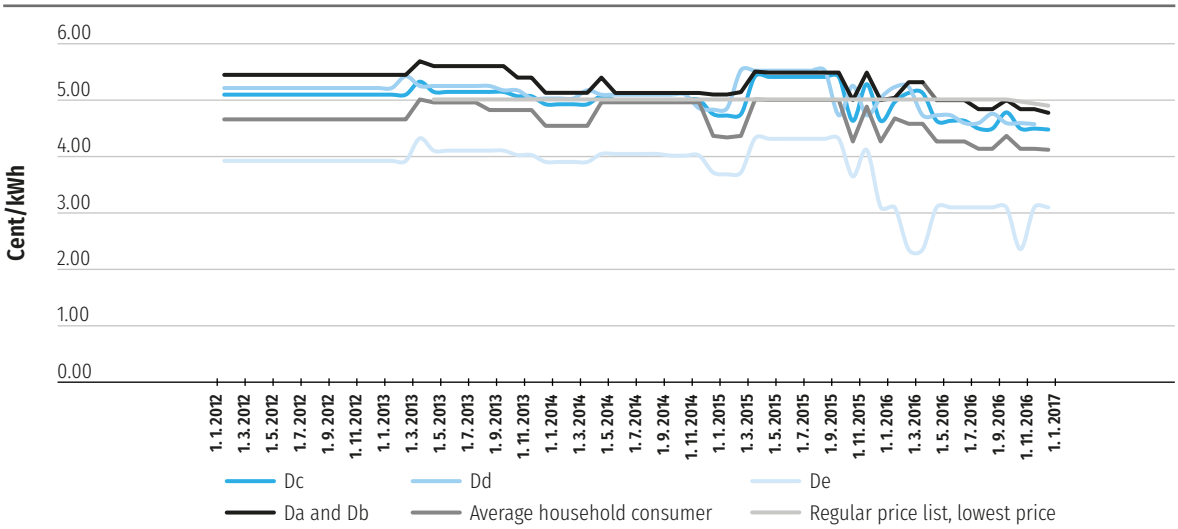
The retail price index

On the basis of monitoring the retail market for household consumers, the Energy Agency determines the retail price indexes (RPI). This index is based on the lowest offer on the retail market, accessible to all households and not restricted to the possibility of switching supplier.

Figure 43 shows the movements of the retail price index for standard consumers groups Da, Db, Dc, Dd and De for an average Slovenian household consumer[8] (consumption profile: 8 kW, 2,100 kWh, 1,996 kWh HT), and the movement of the cheapest regular price for an average household consumer in Slovenia for the period 2012–2016.

Figure 43

RETAIL PRICE INDEXES IN THE PERIOD 2012–2016



Source: Energy Agency

6 Discount offers should be the result of regular price lists

7 Bundled offers in addition to the supply of electricity include other services

8 Consumption profile: 8 kW, 2,100 kWh (MT), 1,996 kWh (HT); http://www.energetika-portal.si/fileadmin/dokumenti/publikacije/cene_elektrike/analiza_go_2015.pdf

CASE STUDY

Comparative analysis of margins on the wholesale electricity price at different purchase scenarios

The Energy Agency analysed three scenarios for calculating margins on the wholesale under different purchase scenarios and by taking into account certain simplifications for leasing CBTCs. We compared the wholesale prices with the lowest retail price of the average household consumer (MT 2,100 kWh, HT 1,996 kWh), while the margin is the difference.

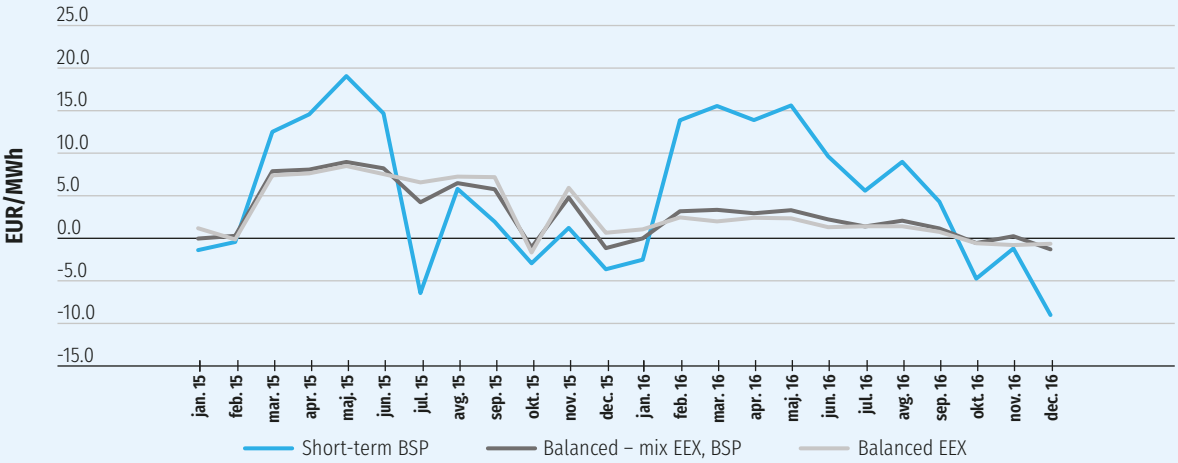
Under the first scenario, called Short-term BSP, we anticipated that the total amount of electricity had been purchased on the BSP SouthPool on the day-ahead market. This buying strategy includes 70% of leased Base, and the rest 30% is the purchase of Peak. As we can observe in the figure, a supplier would in certain periods generate high margins by using this leasing strategy, and in some periods the margins would be negative. There is a marked fluctuation of margins, which presents higher financial risks for a supplier.

Another scenario, named Balanced – mix EEX, BSP, envisaged 80% lease of energy with yearly futures products six months before the scheduled start of the supply of an individual year. The remaining 20% of electricity is bought on the BSP on the day-ahead market (Base).

Unlike the second scenario, in the third one, named balanced EEX, the remaining 20% of electricity is purchased on EPEX Spot (Base). In both scenarios were taken into account annual costs of CBTCs for the electricity bought on foreign markets and transferred to Slovenia.

Figure P4-1

MOVEMENTS OF MARGINS ON THE WHOLESALE ELECTRICITY PRICE FOR DIFFERENT BUYING SCENARIOS



Source: Energy Agency

As we can see in Figure P4-1, a supplier in the second and third scenario of the lease would almost the entire period generate positive margins, which are comparable throughout the observed period. According to both scenarios, the margins would be in 2015 higher than in 2016.

There is also a correlation between the movements of margins under all three scenarios since the observed markets are strongly interconnected. The two-year average margin is in the first scenario by more than 50% higher than in the other two and it moves between 2.9 and 5.3 EUR/MWh.

The year 2016 was marked by significant price fluctuation, but at the end of the year, the prices stabilized at the lower level than they were at the beginning of the year. The RPI of all consumption types or consumers groups was except for the group De correlated. In comparison with 2015 in 2016, the prices for all consumers groups decreased, the most for the group De. The RPI was for the group De dictated by the same supplier. The fall in prices for all groups was a result of the good functioning of the market, competition, and falling wholesale electricity prices, which on all neighbouring power exchanges in comparison to 2015 decreased again.

The fall in prices for all groups a result of the good functioning of the market, competition, and falling wholesale electricity prices

As in the previous years since the Energy Act-1 entered into force of the value of RPI on the basis of the regular price list for an average household consumer in 2016 did not change for most of the year. But at the end of the year, the RPI value decreased since the supplier, which in 2016 was setting the RPI further reduced the price in its regular price list (Figure 43). The RPI on the basis of regular prices was the entire year higher than RPI of an average household consumer, which could indicate that the suppliers formed their bundled and discount offers by the starting price from regular price lists.

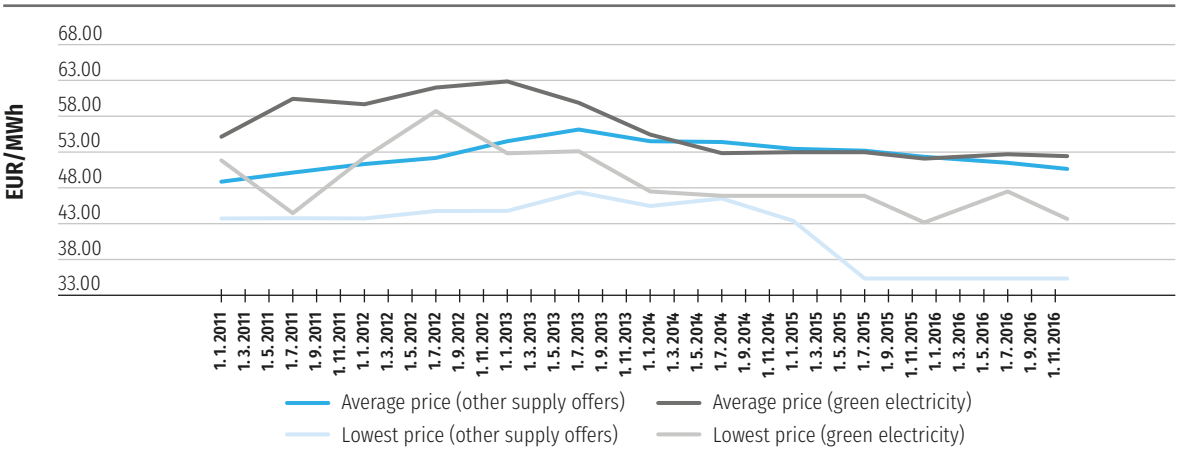
Analysis of the green electricity price movements

Electricity suppliers within their supply services offer consumers the products that differ among other things also in the structure of primary production sources. Consumers can choose between the supply of electricity, which was entirely produced from RES (green electricity), and also other offers, which in the production sources include other energy sources (other offers).

Consumers can also choose green electricity, which is entirely produced from RES

Figure 44

COMPARISON OF GREEN ELECTRICITY AND OTHER OFFERS IN THE SLOVENIAN RETAIL MARKET FOR AN AVERAGE HOUSEHOLD CONSUMER (DC – 3,500 kWh PER YEAR) IN THE PERIOD 2011–2016



Source: Energy Agency

Figure 44 shows the movement in average prices of green electricity and other supply offers, and the movement of the lowest price of green electricity and other offers on the market in the period 2011–2016.

The gap between the average price of green electricity and the rest of energy in 2013 started to get smaller, bigger was in the part of 2014, and in 2015 the average price of green electricity was even lower than the average price of the other offers. In 2016, we recorded a gradual increase in the difference between the both prices, while prices of other offers were reaching lower values than green electricity. The lowest prices of other supply offers were throughout the observed period lower than the lowest price of green electricity. The prices were close only in the middle of 2013 and 2014. The cheapest green electricity was in 2016 significantly more expensive than other electricity supply offers on the market.

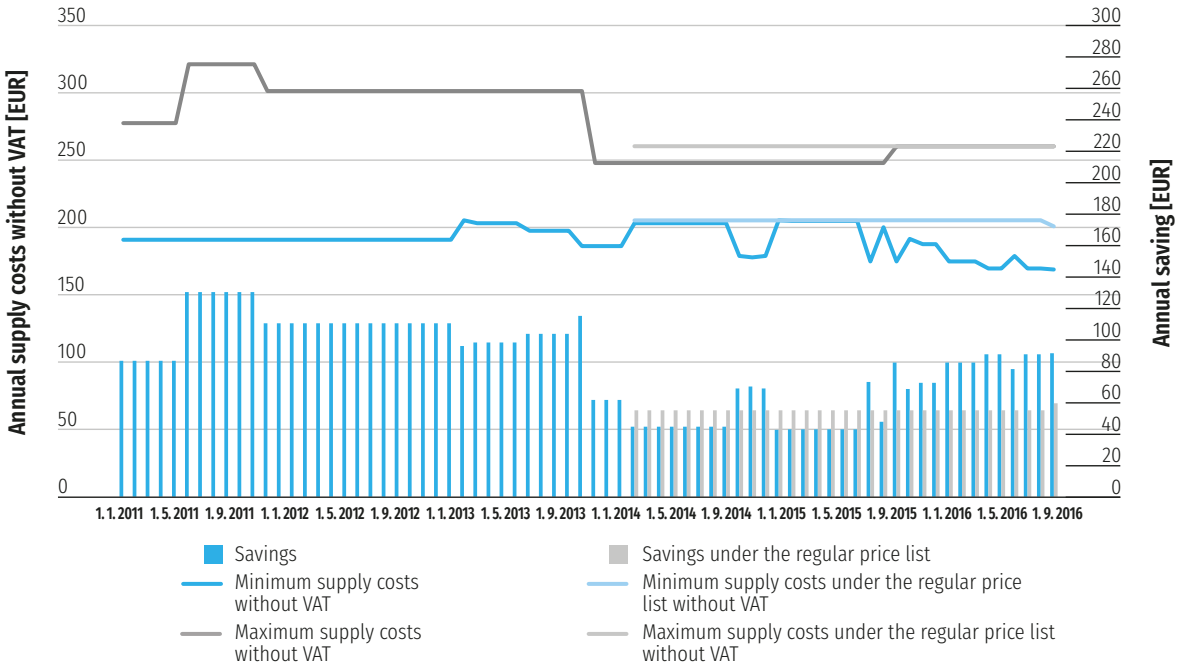
Potential benefits of switching supplier or an electricity supply product

Potential savings by switching supplier significantly increased in comparison to 2015

By switching a supplier or an electricity supply product at the existing supplier, a consumer can potentially reduce his annual electricity costs. The quantitative benefit assessment is based on the determination of the maximum potential annual savings at changing electricity supply product based on the difference between the highest and the lowest annual electricity supply costs.

Figure 45

POTENTIAL ANNUAL SAVING BY SWITCHING SUPPLIER BASED ON THE MOST EXPENSIVE AND THE CHEAPEST OFFER IN THE MARKET, OR THE OFFERS UNDER THE REGULAR PRICE LIST



Source: Energy Agency

Figure 45 shows the movement of the minimum costs and the maximum costs of electricity in the retail market at the annual level without the network charge, levies, and VAT. We can also see the minimum and the maximum costs for the supplied electricity under the regular price list.

In 2016 the potential savings at switching supplier increased. If a consumer with the most expensive supply chose the cheapest offer on the market, his potential savings would be between EUR 69 and 91. The increase in potential savings was a result of a reduction in electricity prices in the market; the minimum cost of electricity supply was at the end of 2016 lower than at the beginning of the year, and the maximum cost remained at the same level.

The potential saving by switching supplier within regular offers has been since the introduction of the regular price list in the Energy Act by December 2016 constant and amounts to EUR 55. In December increased to almost EUR 60. This was a result of an additional reduction in prices of the supplier who already before had the lowest price in its regular price list. The highest price on the basis of the regular price list in the observed period was dictated or determined by only one but otherwise another supplier.

Final electricity prices for household consumers

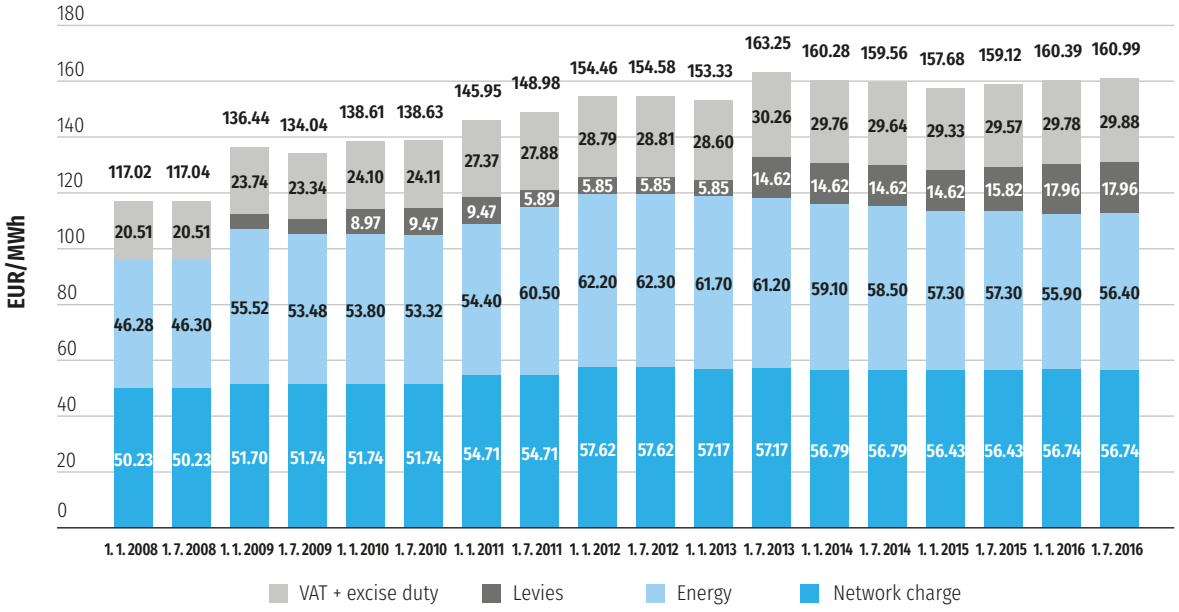
In the following text we present the structure of the final electricity price for household consumers. The final electricity price for consumer consists of:

- the electricity price formed freely on the market;
- the network charge (for the transmission and distribution network);
- levies (for supporting electricity production from RES and CHP, supporting energy efficiency programmes and for the operation of market operator);
- excise duty and
- value added tax.

Final electricity price for household consumers at lower commodity price and higher levies slightly higher

Figure 46

MOVEMENTS OF FINAL ELECTRICITY PRICE FOR A TYPICAL HOUSEHOLD CONSUMER IN SLOVENIA (DC – 3,500 kWh PER YEAR) IN THE PERIOD 2008–2016



Source: Energy Agency, SURS

Since 2013 the final price has been decreasing mainly due to a decline in energy prices, but from the beginning of 2015, we can observe a slight increase on behalf of higher levies. The energy price in 2016 compared to the previous year decreased again.

Final electricity prices for business consumers

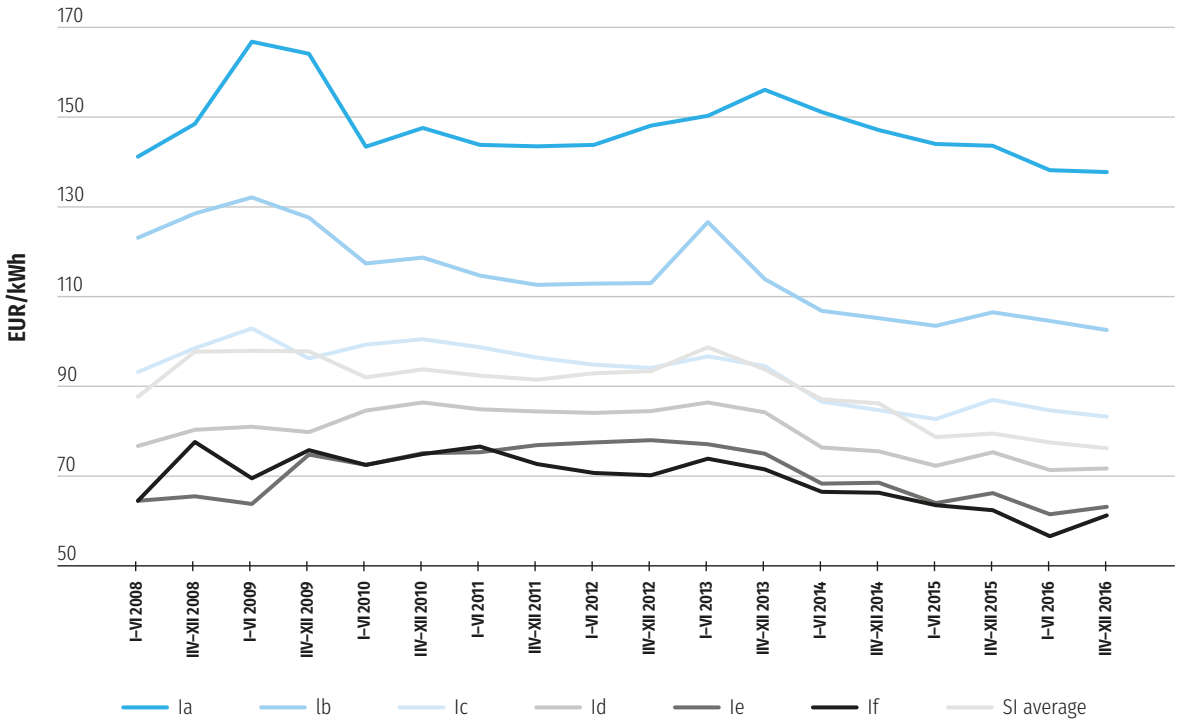
The final electricity price for business consumers, without VAT, in the second half of 2016 in Slovenia amounted to 85.1 EUR/MWh, and in comparison with the same period of 2015 decreased by 4% (Figure 47). The retail price reduction is a of the situation in the energy prices, since in 2015 on the wholesale markets prices were falling; at business consumption the contractual price model is often designed in a way that the electricity prices are directly or indirectly related to wholesale prices since such agreement between a supplier and a customer reduces potential financial risks.

4%

lower final electricity price for business consumers in comparison with the same period of 2015

Figure 47

MOVEMENTS OF FINAL ELECTRICITY PRICE FOR TYPICAL BUSINESS CONSUMERS IN SLOVENIA IN THE PERIOD 2008–2016



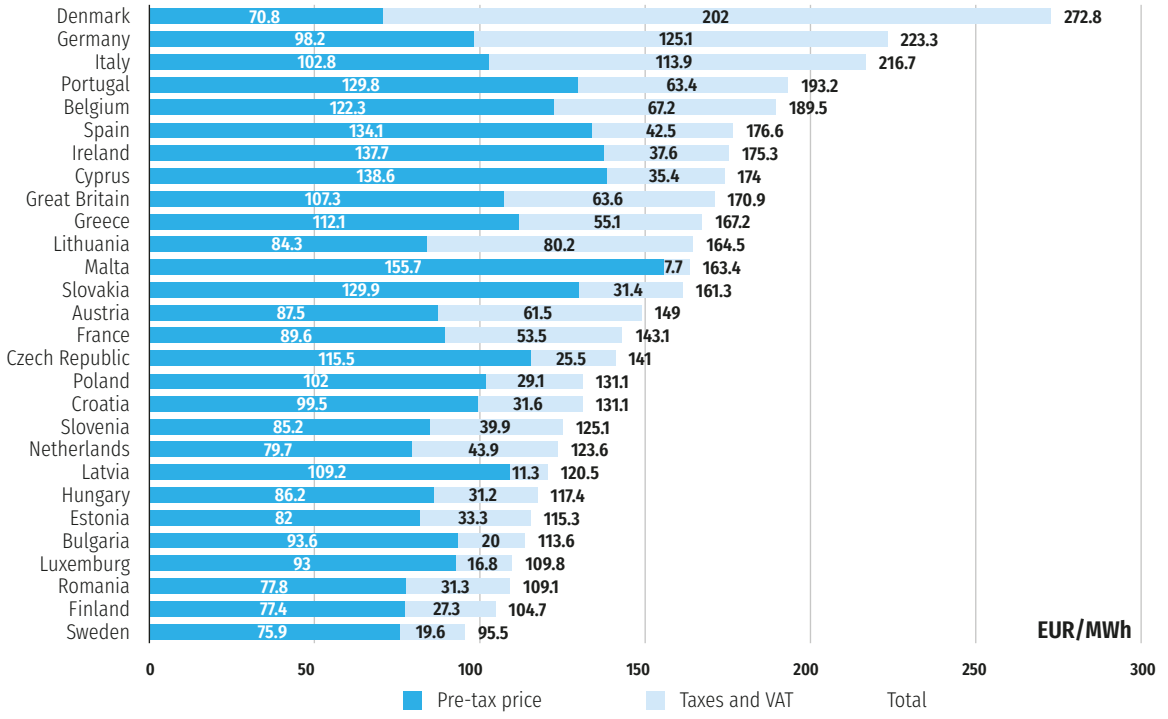
Source: Statistical Office of the Republic of Slovenia

The final electricity price for average business consumers is in Slovenia lower than the EU average

In the figures that follow the comparison of electricity prices in some EU countries for 2016 for two typical business consumers selected in line with the Eurostat methodology are presented (Figure 48 and Figure 49). For Slovenia among the taxes and duties are included levies, excise duty, and VAT, and the pre-tax price includes the price for energy and the network charge. The same as in 2015 the highest price in the EU for business consumers was in Denmark; the majority of this price are taxes and VAT. Slovenia is in both groups of business consumers ranked below the EU average, which is good for the competitiveness of the industry.

Figure 48

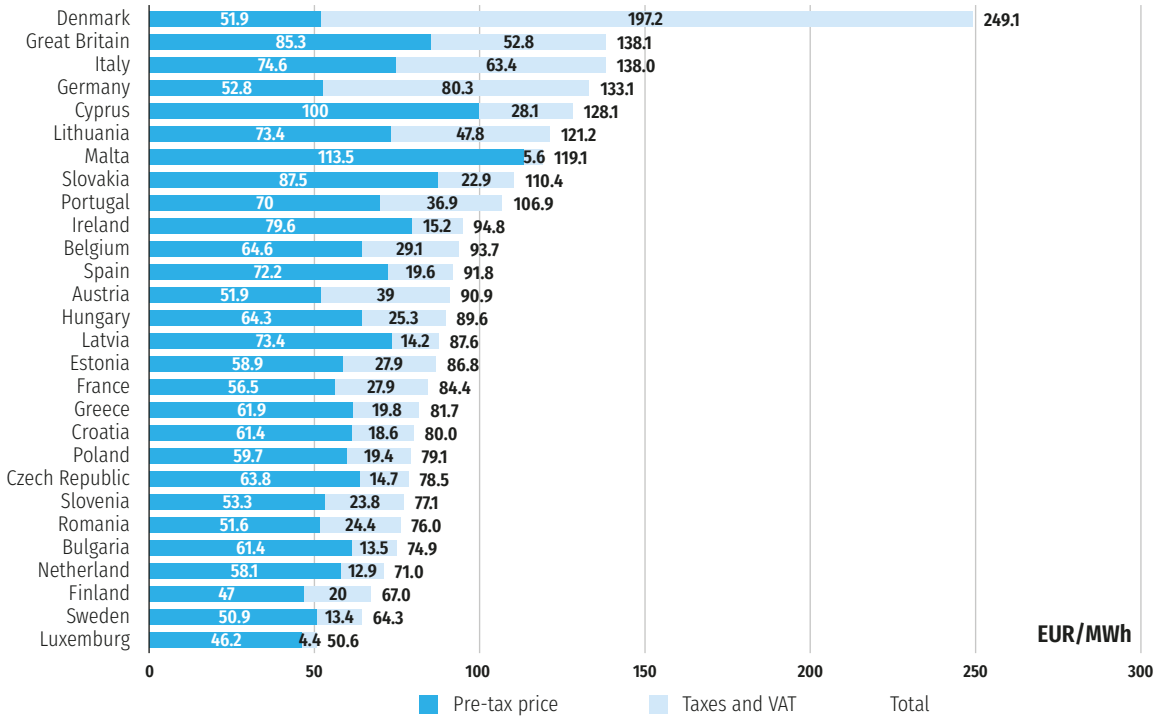
COMPARISON OF ELECTRICITY PRICES FOR A TYPICAL BUSINESS CONSUMER WITH AN ANNUAL CONSUMPTION OF 20 TO 500 MWh (IB) IN EU AND SLOVENIA IN 2016



Source: Eurostat

Figure 49

COMPARISON OF ELECTRICITY PRICES FOR A TYPICAL BUSINESS CONSUMER WITH AN ANNUAL CONSUMPTION OF 20 TO 70 GWh (IE) IN EU AND SLOVENIA IN 2016



Source: Eurostat

3.3.2.2 **Transparency**

Financial transparency of suppliers

Financial transparency of suppliers is provided under the mandatory publication of annual reports of the business entities and by submitting the data of AJPES (The Agency of the Republic of Slovenia for Public Legal Records and Related Services) for the needs of the national statistics in accordance with the Companies Act. The Energy Agency within the market monitoring framework analysis the annual reports and prepares reports on the operations of entities, which are made public, or may be used in the correlative analysis for market monitoring. The Energy Agency estimates that a common legislative framework provides for a sufficient level of financial transparency of supplier in the retail market.

Transparency of bills, and electricity disclosure

A mandatory part of the bill is electricity source disclosure

The transparency of electricity bills is regulated in accordance with the Energy Act, the current Act on the methodology determining the regulatory framework and the methodology for charging the network charge for the electricity system operators and Act on the determination of the shares of individual electricity production sources and the method of their presentation. On electricity bills are separately indicated the costs of electricity, network charge and other levies, excise duty, and VAT. A mandatory part of the bill is a disclosure of the structure of the production sources.

On the electricity bills to their consumers, in the promotional materials and on the internet, electricity suppliers must indicate the shares of individual energy production sources in the whole structure of the electricity of individual supplier in the preceding year. Suppliers must start to publish their shares of production sources from 1 July of the current year.

The structure of production sources disclosed by the electricity suppliers is based on the amount of cancelled guarantees of origin for RES of each supplier and other structure of production sources (residual mix). The methodology determining the shares of individual electricity production sources, which is in Slovenia used for electricity disclosure since 2013, does not take into account the data on production sources that may be determined by the contract between the wholesale electricity market participants. The shares of an individual supplier are determined on the basis of the number of cancelled guarantees of origin, while the shares of other production sources (fossil fuels, nuclear) are determined only on the basis of the remaining structure of production sources (residual mix).

By 31 May, the Energy Agency must on its websites publish residual mix for the preceding year. The residual mix is based on the statistic of electricity production, from which all the production from RES with issued guarantees of origin is deducted. To the remaining structure of production sources is added the electricity with corresponding guarantees of origin whose period of validity has expired in the preceding year. The amount of electricity corresponding to the determined national residual mix is compared to the electricity consumed in the preceding year, from which the amount for the Slovenian suppliers and final consumers of cancelled guarantees of origin and the electricity consumption of PSHPP is deducted. In this amount of electricity, losses in the transmission and distribution systems are also taken into account. If this amount exceeds the amount corresponding the residual mix, the remaining amounts are replaced in a way that as their structure the European residual mix is taken into account; the European residual mix is every year published by the Association of Issuing Bodies (AIB). The AIB publish the European Residual Mixes by 15 May for the preceding year. By supplementing the national residual mix with the European residual mix, we obtain the residual mix, which is published by the Energy Agency and is the basis for determining the electricity disclosure of an individual supplier.

Each supplier in the calculation of electricity disclosure covers its amount of the supplied electricity from RES with their cancelled guarantees of origin, and with the part of cancelled guarantees of origin from facilities using RES that receive support as the guaranteed purchase. How much of the electricity from the guaranteed purchase belongs to an individual supplier is determined by the Energy Agency in respect to its share of the electricity in the overall supply of electricity to end consumers.

A supplier replaces his remaining amount of supplied electricity with the residual mix, while such replaced mix is taken into account in the proportionate share of the total supplied electricity by a supplier and the amount of cancelled guarantees of origin. In that way, each supplier determines its electricity disclosure (the structure of production sources) at the company level. Electricity disclosure must be published by all active suppliers in the Slovenian retail market. When a supplier is offering specific electricity products, for example "100 percent energy from solar power plants" or a certain share from renewable sources must to the customers, buying this product, indicate the share in the whole company structure, and in addition, the structure, which refers to the specific electricity product .

In 2016 the Energy Agency published a new Act on the determination of the shares of individual electricity production sources and on the method of their presentation, which replaced the previous one. The main change refers to the consideration of electricity, for which the support in the form of guaranteed purchase was obtained, in the determination of the structure of production sources. Until 2016, the amounts and production sources related to this electricity were included in the remaining structure of the production sources. According to the new act, the corresponding quantities of electricity are cancelled in the name of the suppliers in proportion of market shares of their supply to the final consumers in the Republic of Slovenia in the year for which the composition of the production sources is presented. The market shares of supply are determined and on its website published by the Energy Agency no later than 31 May of the year following the year on which the composition refers to. Beside this provision, the new act provides a new set of production sources, which is in compliance with a set of production sources that are in the EESC and at European residual mix calculation used by AIB.

Regular price list and publication of price lists

The suppliers to household and small business consumers must make public offers for electricity supply and the related price lists as well as general conditions for the supply services. With the implementation of the Energy Act, the offers must be formed and published on the basis of the valid regular price lists. According to the Energy Act, regular price list means a price list for a particular type of consumer (a household or small business), which applies to all consumers that conclude a supply contract with the supplier for a particular type of consumer, with the exception of promotional or package price lists, and includes at least 50% of consumers and at least 1,000 customers with each supplier.

Activities for providing transparency

With monitoring the retail electricity market and providing information within the single point of contact the Energy Agency actively contributes to the transparency of the retail market. The monitoring of the retail market is carried out on the basis of publicly available data and other data required from the reporting agents; the Energy Agency also carries out market researches and surveillance activities (on the basis of the results of market monitoring, reports of violations or restrictive practices, etc.) and implement measures for providing transparency. These measures include bilateral cooperation, influencing on the content and approving the rules for market operation and other secondary legislation, the preparation of amendments to the legislation and other rules, introduction of public consultations in accordance with active regulation of the energy networks of the future (AREDOP), and corrective influence on the functioning of market participants through their participation in professional associations (e.g. in the Section IPET). Ensuring transparency is primarily focused on the retail market for household and small business consumers. Nevertheless, in the validation of secondary legislation and preparation of legislation, it also ensures the appropriate level of transparency of the retail market for other consumers.

For providing transparency of the retail electricity market the comparative online services are available on the Energy Agency's website

On the Energy Agency's website are within the single point of contact available e-services, among which the application for comparison of electricity supply costs is the key one (hereinafter referred to as comparison of suppliers). Comparison of suppliers enables the calculation and comparison of the costs of electricity supply for an individual consumption type on the basis of the valid supply offers, or price lists under which consumers are still served but are no longer available to new consumers.

Comparative calculations can be carried out for the supply to household and small business consumers. Suppliers submit their offers to the Energy Agency in a standard format on a monthly level in accordance with 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. The comparison based on the Energy Act-1 is limited to the comparison of the costs under regular price lists. This means that consumers no longer have the single access to all price lists and offers and that they have to search for this information at an individual supplier, which makes impossible to effectively compare, or at commercial providers of comparision services. In the application, the Energy Agency provides an up-to-date list of suppliers and system operators that includes identity card of an individual company and other useful information.

Within the single point of contact, the Energy Agency provides the e-service "Check the bill". It allows consumers to check the accuracy of a bill for the supplied electricity, according to the supply and consumption profile. Billing on a monthly basis is shown separately in line with legal components and is available for all products on the market, not only for those based on the regular price lists. The verification is possible only for monthly electricity invoicing, and not for balance payment. The single point of contact also allows the comparison of costs for the use of the network depending on the user profile and the type of connection. This calculation gives the users other important information, which contributes to the transparency of services (a structured list of legislation, explanation of the electricity bill, etc.).

Comparison of costs for the electricity supply within the application for comparison remains limited to the offers based on the regular price list

The market makes available diverse enough services, which are not restrictive regarding binding and contractual penalties; consumers may choose among the supply services that allow switching supplier theoretically almost every month. These are not only offers based on regular price lists, but also many other supply offers in the market. Household consumer otherwise may withdraw from the supply contract without paying penalties, reimbursement, compensation or any other payment due to the withdrawal before a specified date if the termination of the contract takes effect for at least one year after its conclusion.

For the transparency of the retail market, the Energy Agency within its jurisdiction carries out the control over the electricity suppliers and in accordance with its findings imposes sanctions. In 2016, in a total of 14 surveillance procedures (10 started in 2015, and four in 2016) identified possible violation of the first paragraph of Article 42 of the Energy Act-1 and Act on the determination of the shares of individual electricity production sources and on the method of their presentation on issued electricity bills, promotional materials and websites. All detected breaches were in 2016 eliminated, and the Energy Agency issued warnings, and in one case violations were not established, therefore, the procedure was terminated by a decision. After the surveillance procedures, the Energy Agency established that suppliers to end-consumers disclosed the required information in accordance with the law.

36 *surveillance procedures related to electricity market transparency*

In 2016 the supervision was carried out, which had started in 2015, connected to the charging of flat-rate operating costs under regular price list. Since the Energy Agency did not detect the violation, the procedure was terminated by a decision.

In 2016, the Energy Agency also carried out control over electricity supplier related to enumeration of network charge items on the end consumers bills. During the procedures was found that most of the suppliers, nine out of 14, on the end-consumers' bills among network charge items also included contributions which do not belong among network charge (for example a contribution for the network operator, for energy efficiency, or contributions for the support of the production from RES and CHP). All irregularities were eliminated, and the Energy Agency issued nine warnings.

The appropriate degree of transparency must also be ensured in the area of standardization of contracts and general supply conditions. At the end of 2015, 16 controls of electricity suppliers to household and small business consumers started regarding the key elements of supply contracts general supply conditions. The procedures were carried out in 2016; in nine cases the procedures were terminated (in eight cases violations were not established since the contracts included all the required items, and in one case in it was found out that the case was not related to the supplier). In five cases, the Energy Agency widened the control since it was established that the suppliers' on their website did not publish general terms of supply, or appropriate price lists, or above all that the website does not exist. It was also established that in some supply contracts the right of withdrawal was not provided. In all five cases the irregularities were eliminated, thus, only warnings were issued. Two procedures are still ongoing and have been carried over to 2017.

In the area of the retail market for larger business consumers, there is no legal basis to establish the same level of transparency of offers on the market as it applies to households and small business consumers. Price lists are not made public, prices and other supply conditions are determined mainly through negotiations and usually are concluded non-standard forward contracts for the supply where most contracts have one-year validity. Because of this, there are no regular price lists. In 2015 and 2016 we did not receive any complaint or report against the retail market for larger business consumers, so it can be assumed that the rules and executive regulations as well as common legislation for these consumers (obligation, etc.) governing this area effectively and that the rules are clear.

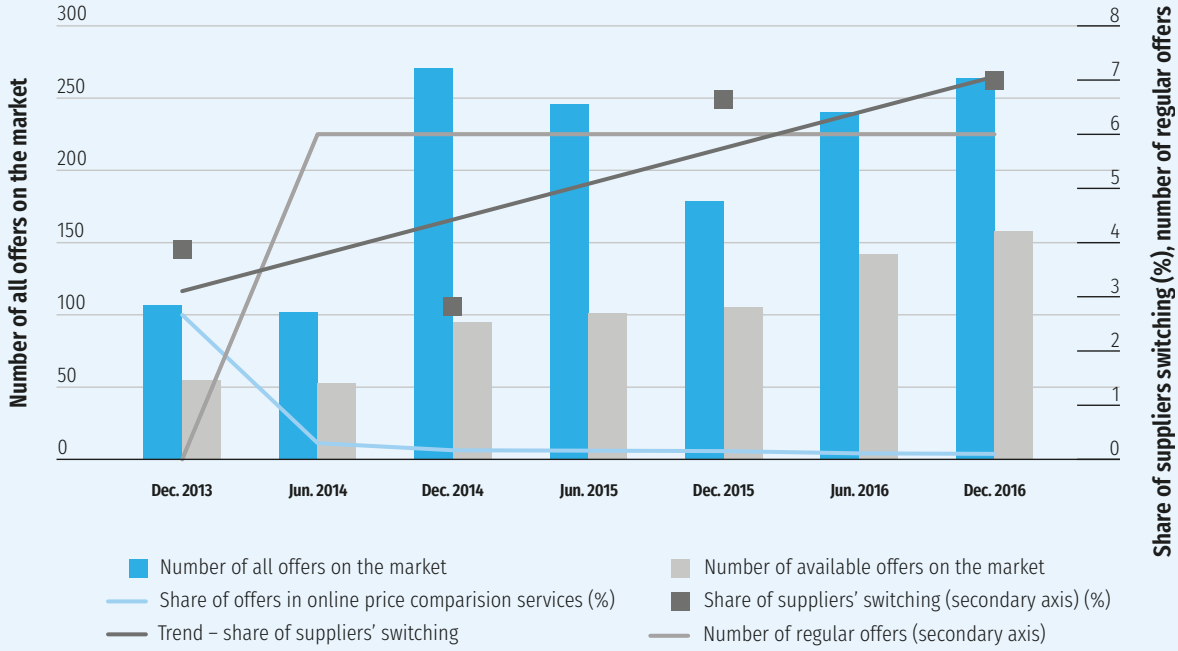
CASE STUDY

The effect of introducing a regular price list on the transparency of the retail market for household consumers

In 2016 the Energy Agency within the market monitoring and the oversight of the legality actively monitor the fulfilment of suppliers' obligations regarding the publishing regular price lists. Figure P5-1 illustrates the results of the effect of introducing a regular price list on the retail market for an average household consumer.

Figure P5-1

EFFECT OF INTRODUCING A REGULAR PRICELIST ON MARKET TRANSPARENCY



The first year after the introduction of the regular price list rapid and extraordinary increase in the number of electricity offers in the retail market for household consumers, more than 150 percent increase, which is the result of intentional portfolio transformation of some suppliers to avoid the publication of regular offers. The number of products for an average Slovenian consumer had doubled. Unfortunately, new products on the market did not significantly increase the choices for consumers since they were not very different in terms of prices and other characteristics. However, they had a negative effect on market transparency. Since the introduction of a regular price list such offers are provided only by one-third of suppliers, and with that providing a reference for the transparent formation of discount offers and offers of other suppliers based on discounts and bundled services. Before the introduction of legal provisions limiting the comparison services within the Energy Agency's comparison tools only to the regular price lists, it was possible to make comparison among more than 50 offers of ten electricity suppliers. After the adoption of the Energy Act-1, the same comparison was possible only between six offers. In the same observed period the number of suppliers to household consumers increased by half; at the end of 2016, the electricity was supplied to household consumers by 15 suppliers.

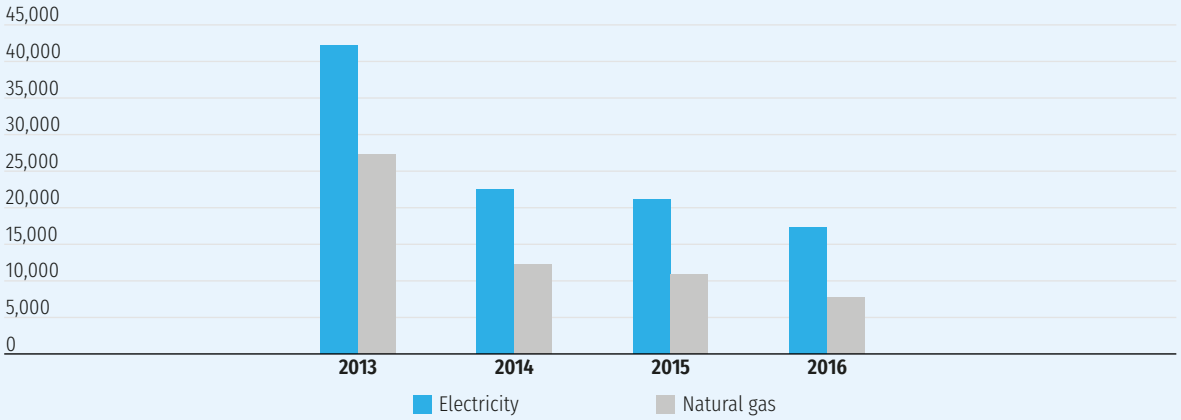
In 2015, when the number of all electricity offers on the retail market for household consumers was gradually decreasing, which was mainly due to a merging of some supply companies and optimization of product portfolio, in 2016 there were again more than 250 offers.

In the observed period, we have also recorded an increase in the share of offers, available for an average Slovenian household consumer, which means that the share of specific or dependent offers on the market. Since 2014, despite a lower level of transparency, the switching rate has been increasing. In 2015, the campaign of the Slovenian Consumers' Association contributed to this increase, while in 2016 the rate reached a record value since market opening in 2007. Indicative analysis of the total number of consumers, who are supplied under regular price lists, shows a significant reduction in 2016, which indicates that consumers that have not yet changed a supplier since market opening became active. That still doesn't always mean that they actually changed a supplier, they could only sign a more favourable contract with the existing supplier. In any case, this means an increased choice of discounted offers.

Taking into account all the above, we can conclude that in 2015 and 2016 when we recorded the highest suppliers' switching rates on the market, the consumers, who have already change a supplier, were active (for example in 2012 a comparable switching rate had been already achieved), but mostly they exploit the potential of discounted offers on the market. Due to restrictions on the comparison services of the Energy Agency under the Energy Act-1, these consumers must use commercial comparison services, which are not regulated and managed by an independent institution, or they have to search information at an individual supplier. Active consumers are less and less interested in offers based on regular price lists, which can be confirmed by the analysis of the number of performed comparisons by using the Energy Agency's comparision services; since the implementation of the Energy Act-1 utilization of the tools reduced by half and continues to decline. We can assume that one of the causes is the potential of savings in 2016, which was much higher at transfer to discounted offers (Figure 45).

Figure P5-2

TREND IN NUMBER OF COMPARISON BASED ON REGULAR OFFERS



Already in 2015, ACER in its Market Monitoring Report for 2014 in Case study introduced the problem of degrading the usefulness of the comparative services of the Energy Agency. The competent ministry in response to ACER findings announced appropriate amendments to Article 434 of the Energy Act-1, which supposed to remedy negative effects of the definition of the regular price list. Based on the results of the analysis of the introduction of the regular price list, the Energy Agency in 2016 prepared a proposal for the amendment of the Energy Act-1 provisions governing this area and sent it to the relevant ministry.

To ensure the appropriate level of transparency of a number of offers on the market an independent and regulated comparison of all offers on the market should be re-established. With that, the choice would be easier, the conditions for an additional increase in suppliers' switching rate would be established, and, thus, the level of activities on the retail market would be increased: at the switching rate from 8.5% to 14%[9] suppliers already risk losing significant numbers of customers if they do not actively compete, or if they make loyalty-related errors.

9 »Warm Active Markets«, VaasaETT – World Energy Retail Market Rankings

3.3.2.3 **Market effectiveness**

Market concentration slightly increased on all observed retail markets, indicating a reduction in competition among suppliers

Monitoring of the effectiveness and competitiveness of the retail market is carried out on the basis of continuous collection of data from market participants and aggregators of public data (Ministry of Infrastructure, Statistical Office of the Republic of Slovenia, etc.) In the following chapters are presented specific indicators by which the effectiveness and competitiveness of the retail market are measured.

Electricity supply to all end consumers

Table 18 shows the market shares of suppliers related to the supplied electricity and HHI (Herfindahl-Hirschman Index)[10], as an indicator of market concentration, by taking into account the supply in the entire retail market, which means that the market for larger business consumers connected to the transmission system is included as well.

Table 18

MARKET SHARES AND HHIs OF THE SUPPLIERS TO ALL END CONSUMERS IN SLOVENIA IN 2016

Supplier	Supplied electricity (GWh)	Market shares
GEN-I	3,212.6	23.2%
ECE	2,661.0	19.2%
Energija plus	1,762.8	12.7%
Elektro energija	1,631.4	11.8%
TALUM	1,203.5	8.7%
E3	1,101.9	8.0%
Petrol	732.7	5.3%
Petrol Energetika	724.6	5.2%
Acroni	336.2	2.4%
HEP	211.4	1.5%
Others	276.5	2.0%
Total	**13,855**	**100%**
HHI of the suppliers to all end consumers		**1,413**

Sources: Companies' data

HHI shows that this is a moderately concentrated retail market (HHI = 1,000–1,800). In comparison with 2015 HHI slightly increased[11].

In 2016, in comparison with the previous year the market shares of suppliers ECE, SIJ Acroni, GEN-I and HEP increased the most. Already in 2015, ECE was among suppliers that had the largest market share. The main reason for an increase in market share in 2015 and 2016 was the merger of companies Elektro Gorenjska Prodaja and Elektro Celje Energija on 1 October 2015 to the new company ECE, which took over consumers, and after that retain the majority of market share of the company Elektro Gorenjska Prodaja. Increase in market share of suppliers can also be a result of successful marketing activities and active communication with customers on novelties in supply offers. The company SIJ Acroni has a status of a closed distribution system, meaning that their final electricity consumption increased. The biggest drop in market share was recorder at Elektro energija, which lost 5.7 percentage point of its share compared to 2015. At the end of 2015 the Slovenian Competition Protection Agency approved the merger between

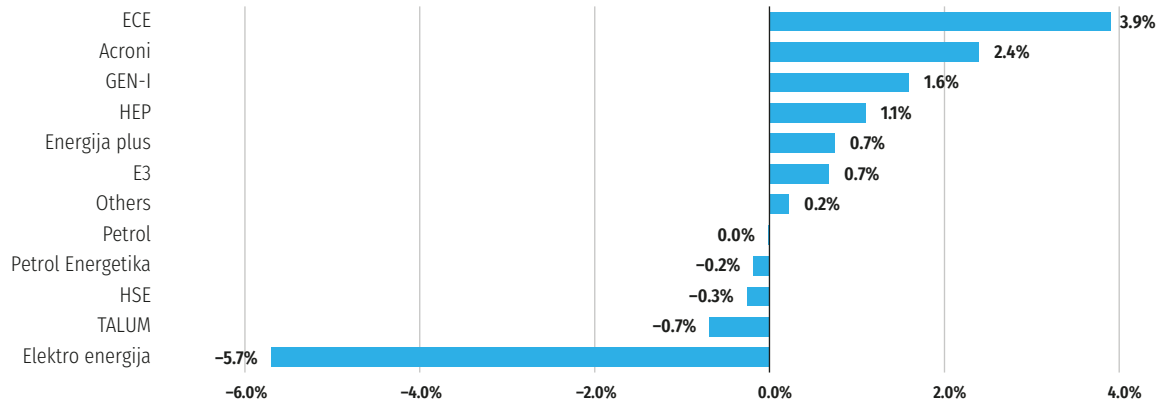
10 https://en.wikipedia.org/wiki/Herfindahl_index

11 An increase of more than 200 points in a highly concentrated market requires the attention of the competent authorities and may trigger investigations against cartels

the suppliers GEN-I and Elektro energija[12], and in November 2015 the envisaged merger was approved by the Supervisory Board of Elektro Ljubljana, then the owner of subsidiary company Elektro energija. Loss of market share by the company Elektro energija can also be a result of portfolio restructuring based on the new business model dictated by the ownership association with GEN-I.

Figure 50

CHANGES TO THE MARKET SHARES OF THE SUPPLIERS TO ALL CONSUMERS IN 2016 WITH RESPECT TO 2015



Source: Energy Agency

Electricity supply to all business consumers

Market shares of electricity suppliers in the retail market for business consumers in 2016 are shown in Table 19.

Table 19

MARKET SHARES AND HHIs OF THE SUPPLIERS TO ALL BUSINESS CONSUMERS IN 2016

Supplier	Supplied electricity (GWh)	Market share
GEN-I	2,490.9	23.5%
ECE	2,006.3	18.9%
Energija plus	1,231.7	11.6%
TALUM	1,203.5	11.3%
Elektro energija	1,023.4	9.6%
Petrol Energetika	706.6	6.7%
E3	654.6	6.2%
Petrol	500.6	4.7%
Acroni	336.2	3.2%
HEP	211.4	2.0%
Others	241.5	2.3%
Total	**10,607**	**100%**
HHI of the suppliers to business consumers		**1,390**

Source: Companies' data

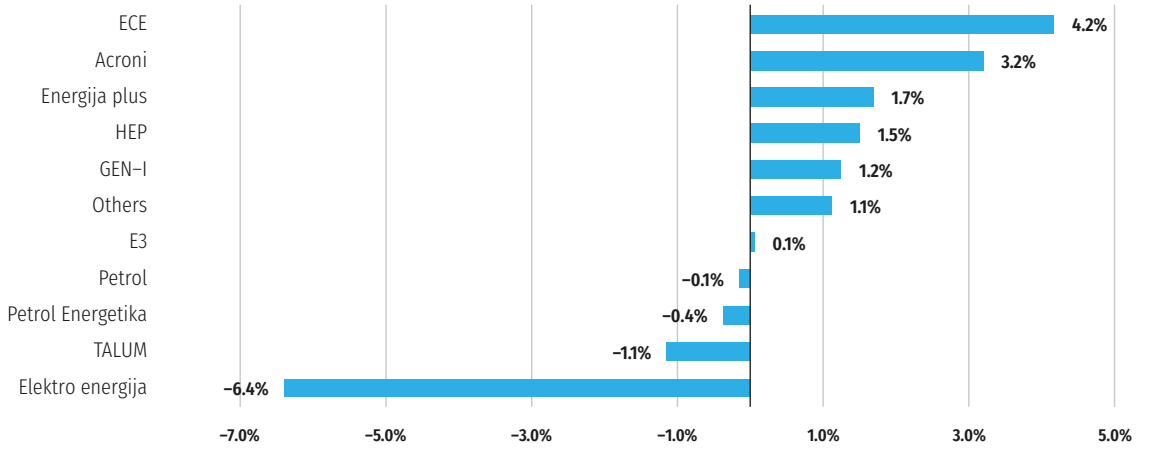
12 http://www.varstvo-konkurence.si/si/ostali_dokumenti/arhiv_odlocb/odlocba332/

The retail market for business consumers with 1,390 HHI value was also moderately concentrated and in comparison with 2015 insignificantly increased.

In comparison to the previous year, the biggest market shares gained the suppliers ECE, SIJ Acroni, and Energija plus (Figure 51). Also in this part of the market, the increase in the market share of ECE is a result of a merger between companies Elektro Gorenjska Prodaja and Elektro Celje Energija. The largest market share compared to the previous year in this segment lost the company Elektro energija.

Figure 51

CHANGES TO THE MARKET SHARES OF THE SUPPLIERS TO ALL BUSINESS CONSUMERS IN 2016 WITH RESPECT TO 2015



Source: Energy Agency

Electricity supply to household consumers

In the retail market for household consumers in 2016 the medium market concentration since HHI was below 1800 and was moving close to the boundary of high market concentration. The market share of the two largest suppliers was more than 40%, and the market share of the three largest suppliers exceeded 60%. The largest share had GEN-I, followed by ECE and Elektro energija.

Table 20

MARKET SHARES AND HHIs OF THE SUPPLIERS TO HOUSEHOLD CONSUMERS IN 2016

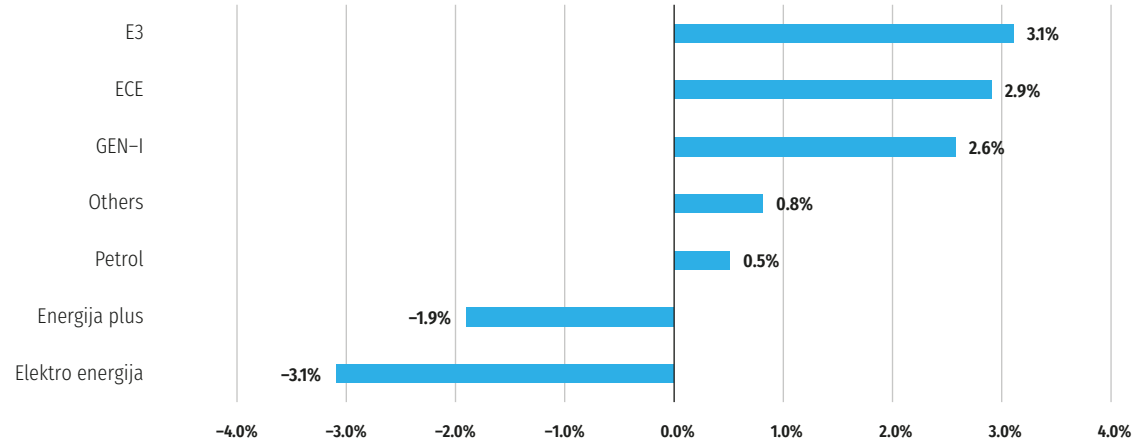
Supplier	Supplied electricity (GWh)	Market share
GEN-I	721.7	22.2%
ECE	654.7	20.1%
Elektro energija	608.1	18.7%
Energija plus	531.1	16.3%
E3	447.4	13.8%
Petrol	232.1	7.1%
Others	53.8	1.7%
Total	**3,249**	**100%**
HHI of the suppliers to household consumers		**1,758**

Sources: Companies' data

In this segment of the retail market in comparison to the previous year their market share in 2016 strengthened E3, followed by ECE and GEN-I, in the range from 2.6 to 3.1 percentage point (Figure 52). The biggest market share lost the suppliers Energija plus and Elektro energija.

Figure 52

CHANGES TO THE MARKET SHARES OF THE SUPPLIERS TO ALL HOUSEHOLD CONSUMERS IN 2016 WITH RESPECT TO 2015

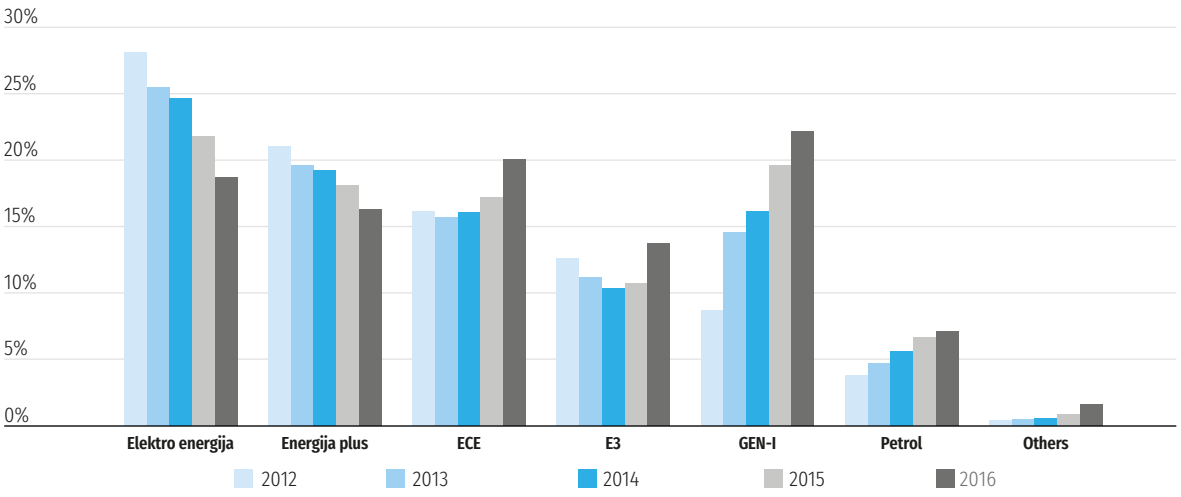


Source: Energy Agency

In the period 2012–2016 in the segment of household consumers the market share was continued to increase the suppliers Petrol and GEN-I. Market shares were also increased for ECE, E3, and other smaller suppliers. In the observed period, Energija plus and Elektro energija lost their market shares.

Figure 53

MOVEMENTS OF MARKET SHARES OF ELECTRICITY SUPPLIERS TO HOUSEHOLD CONSUMERS IN THE PERIOD 2012–2016



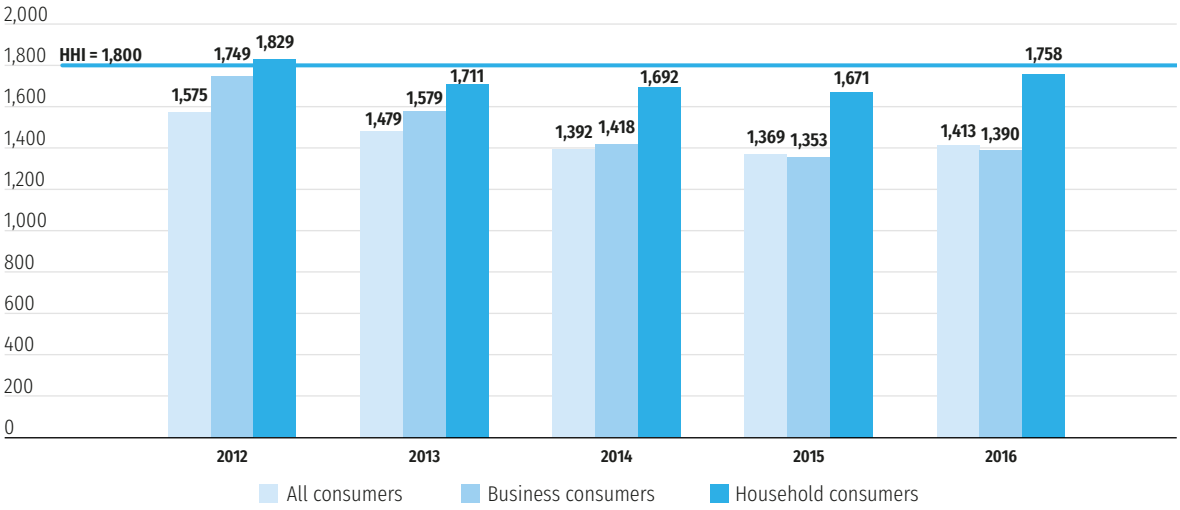
Source: Energy Agency

HHI for the period 2012-2016

The market concentration in 2016 slightly increased on all observed market, which indicates that competition between individual suppliers decreased. From 2012 until 2015 the competition has been increasing on all observed markets (negative trend HHI values had a negative trend of movement). The biggest increase is recorded in the household market, where the HHI values due to suppliers merger and consequently the changes in market structure approached to 1800, which indicates a very concentrated market in which exploitation of market power and consequent abuses can occur.

Figure 54

TRENDS OF THE HHIs IN THE RETAIL MARKETS IN THE PERIOD 2012–2016



Source: Energy Agency

Switching supplier

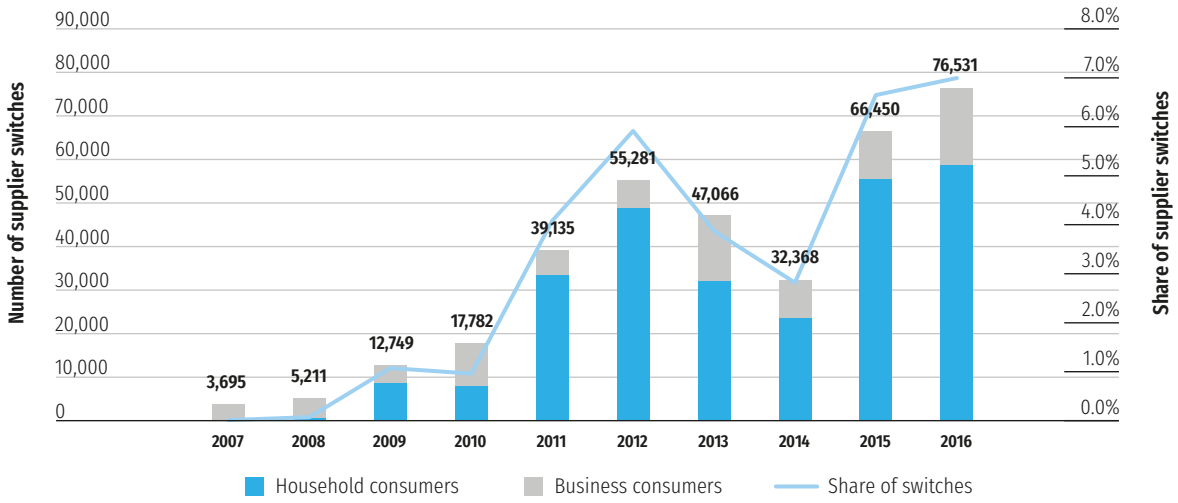
In 2016, 76,531 consumers changed supplier, of which 58,669 were household consumers and 17,862 business consumers. Again, 15% increase in a number of supplier switches was recorded in comparison with 2015, which indicates that competition is strengthening and good functioning of the electricity retail market (Figure 55). Some new electricity suppliers entered the market. Among them is also a dominant provider of communication services that extends its offer by providing electricity, which increases the attractiveness of bundled offers in the market.

76,531
consumers changed electricity supplier, the most so far

In 2015, the increased number of switches was mainly a result of the campaign by the Slovenian Consumers' Association – Switch and Save, when more than 12,000 households change their supplier, while in 2016 there were no similar campaigns. That is why we can the increase in switches attribute primarily to more active suppliers and accordingly more attractive offers and increasing consumer awareness about possible savings when switching electricity supplier or also the increased number of active consumers.

Figure 55

NUMBER OF SUPPLIER SWITCHES IN THE PERIOD 2007–2016



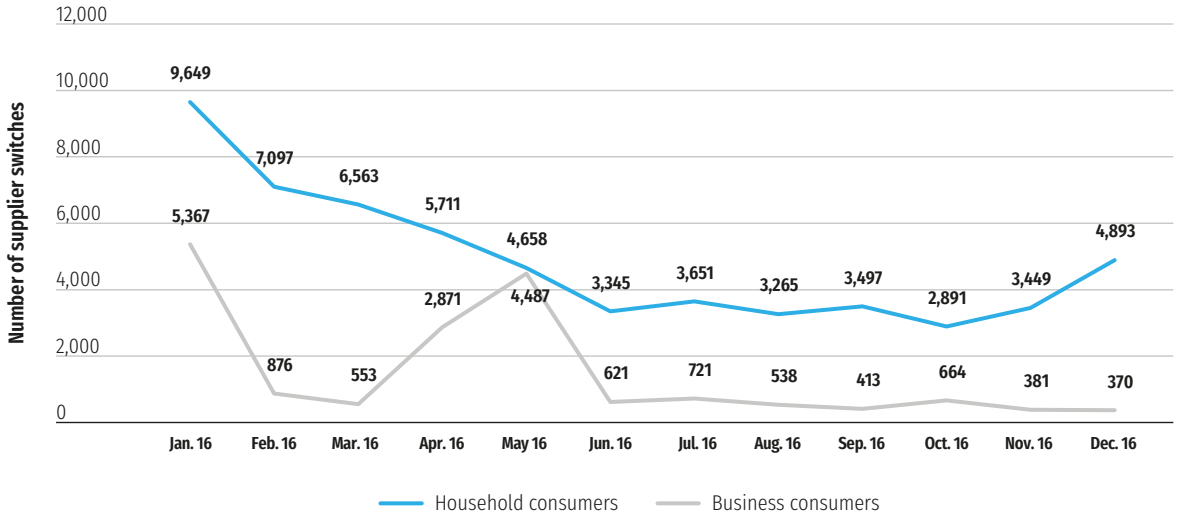
Source: SODO

The dynamics of supplier switching in 2016 shows that of consumers decided to switch supplier at the beginning of the year due to growing activity of suppliers at the end of 2015. Then RPI for individual consumption types (Figure 43) decreased, which may be one of the key reason for the increased number of switches at the beginning of 2016. On average, 4,889 household and 1,488 business consumers switched supplier per month.

In the period 2012–2016 the number of switches was rather unstable and associated with period incentives in the market, such as before mentioned campaign, major price changes, and aggressive advertising. The share of supplier switches, which in 2016 amounted to approximately 7%, is slowly approaching the value of 8.5%, which indicates the lower limit of market activity at which suppliers already risk losing significant numbers of customers if they do not actively compete, or if they make loyalty-related errors[13].

Figure 56

DYNAMICS OF SUPPLIER SWITCHES IN 2016 WITH RESPECT TO THE TYPE OF CONSUMPTION



Source: SODO

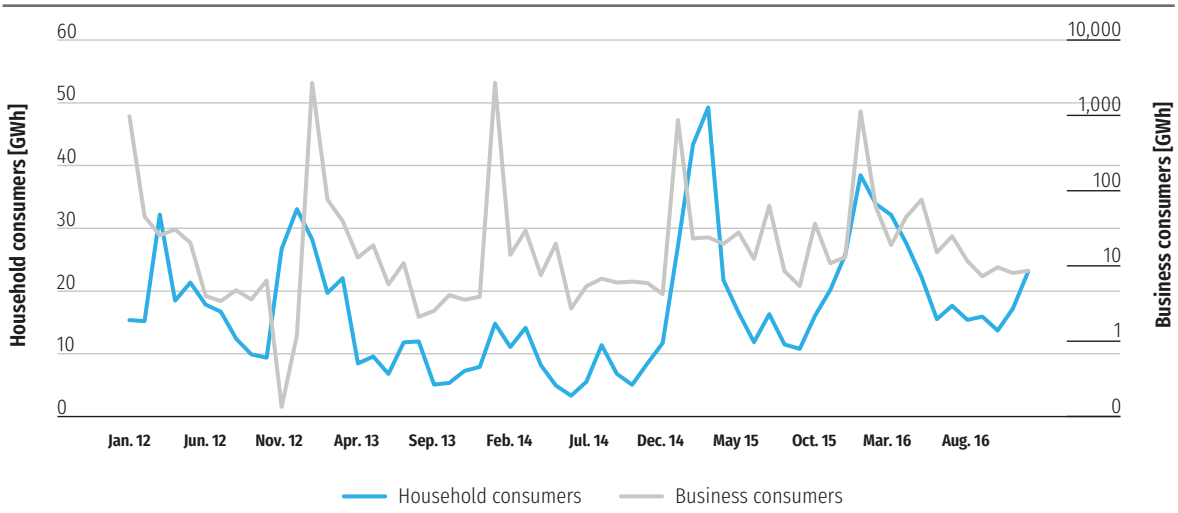
13 VassaETT World Energy Retail market Rankings

Most of the business consumers in 2016 decided to switch a supplier at the beginning of the year when the contracts usually expire, and in April and May. As is illustrated in Figure 47 (movements of electricity price for business consumers), at the beginning of 2016 the electricity prices for individual types of industrial consumers decreased, which could be a possible reason for an increase in supplier switching by business consumers in April and May.

Figure 57 shows the dynamics of supplier switching for the period 2012–2016. The amount of the supplied electricity. We can notice a close correlation between the amount of energy and number of switches.

Figure 57

VOLUMES OF SWITCHED ELECTRICITY WITH RESPECT TO THE CONSUMPTION TYPE

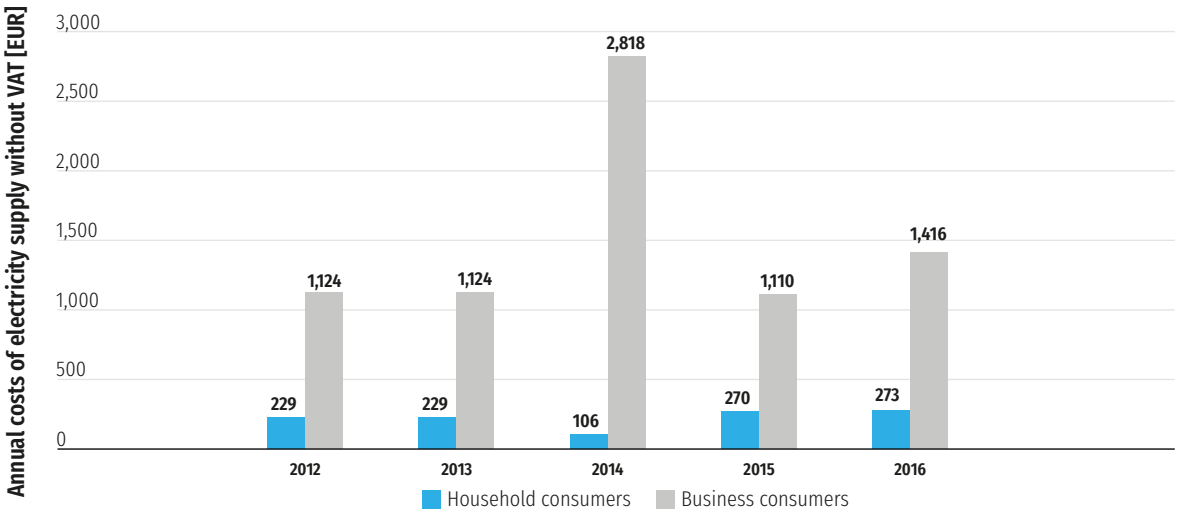


Source: SODO

The amount of switched electricity was in 2016 in comparison to 2015 bigger at both types of consumption (Figure 58).

Figure 58

VOLUMES OF SWITCHED ELECTRICITY WITH RESPECT TO THE CONSUMPTION TYPE IN THE PERIOD 2012–2016



Source: SODO

Complaints

The Energy Agency monitors market effectiveness and competitiveness on the basis of consumers complaints against suppliers. In Slovenia is established Supplier centric market model, thus, it is necessary to classify complaints by the subject to those actually related to a supplier, and others related to the DSO.

In more detail, this subject is presented in chapter on Consumer protection (5).

Data exchange in key market processes

In accordance with the third package of energy legislation the Energy Agency with the implementation of a consultation process AREDOP in areas that directly and indirectly address an effective data exchange in the market, contributes to harmonisation of data exchange processes for the most important market processes in the electricity market. The Energy Agency's strategy is based on directing market participants to use of open standards in data exchange. The use of open standards eliminates barriers for entering new participants to the market and reduce entering costs. In that way, market competitiveness is enhancing, which is reflected in the entry of new market participants (Figure 42). In the future, in accordance with the Energy Agency's general act, all key data entities in electronic data exchange will base on standardized identifiers. On the basis of the Energy Agency's intervention, in the retail electricity market in 2016 formal activities finally started to use the standard for the global definition of metering points. The Energy Agency in 2016 took corrective measures also because of mal practices in designation of entities, which hindered switching of supplier by introducing Act on the identification of entities in the data exchange among participants in the electricity and natural gas markets (Chapter 3.3.2.4)

The deployment of the advanced metering system in Slovenia is ongoing under requirements of Regulation on measures and procedures for the introduction and interoperability of advanced electric power metering systems. In 2016, SODO in accordance with that regulation developed the deployment plan and defined the architecture of the system, its minimum functionalities and some aspects of data exchange, which will be based on relevant standards (CIM and similar). The Regulation requires from the DSO to establish a single point of access to validated data of the advanced metering system. The central information system will, therefore, provide data services for data exchange between business entities and network users (B2B and B2C). The Energy Agency closely monitors the compliance of the implementation with the legislation and thus ensures the harmonization and consistency of the implementation with technical requirements. In 2016, a lot of attention was devoted to the aspects of providing cyber security in the advanced metering system as well as in the deployment of smart meters (Chapter 3.2.2.4).

3.3.2.4 **Recommendations on supply prices, investigations and measures taken to promote competition**

The Energy Agency monitors the retail market, cooperates with other regulatory and supervisory authorities (Market Inspectorate, Competition Protection Agency) as well as independent and non-profit organizations. It is also responsible for the updating of information on market developments, and ensures market transparency with the activities within the single point of contact. On its websites provides comparision services, which enable the comparison of supply costs based on a regular price lists.

There are many factors that influence on the retail market prices, such as wholesale prices, suppliers' procurement strategies, environmental requirements (e.g. efficient use of energy), etc.; the total cost of supply is also dependent on the network charges, levies (RES and CHP, for the market operator, energy efficiency, excise duty). Retail market prices are not regulated, therefore the Energy Agency does not give recommendations on retail prices. The exception is the price for last resort supply, which is regulated by the provisions of the Energy Act-1. The electricity DSO must automatically and without transfer windows ensure supply to final consumers connected to its system if the contract for supply is terminated because of measures resulting from the insolvency or illiquidity of a supplier, in accordance with the regulation governing the operation of the electricity market. The same acts at the request of household or small business consumer. The price of last resort supply must be made public and be

Deficiencies and limitations of the regular price list definition decrease market transparency since the vast majority of the suppliers do not provide regular price list

higher than the market price of the supply to a comparable consumer, but it must not exceed the price by more than 25%. If the electricity DSO does not set the price of electricity for last resort supply, the price is set by the Energy Agency. In 2016, no consumer was supplied under the conditions of last resort supply and no corrective measures were taken in this area.

Also in 2016, the Energy Agency established that the majority of suppliers to the retail market did not have the supply offers based on regular price lists, which is the result of deficiencies and ambiguities of regular price list definition and its limitations. Some suppliers intentionally changed their products portfolio after the implementation of the Energy Act-1 and introduction of a regular price list, and adapt their business in a way that they do not meet the criteria of the regular price list. The comparison also exclude all new suppliers, which had entered the market in 2016 and not yet acquired 1000 consumers. There are many supply offers in the market not covered by the web application for comparison of electricity supply costs, which negatively affects the transparency of the retail market for household consumers since an independent comparison of all supply offers at single point is not possible.

In the electricity market, the same rules for the prevention, restriction, and distortion of competition apply as for other goods. As it is evident from publicly available data, in 2016 did not take any decision or any action against electricity market participant. In the context of a concentration assessment it decided that the following concentrations are in line with the competition rules: GEOCOM, d.o.o., and ZE SOLAR 1, d.o.o, and GEN-I, d.o.o., and Elektro Energija, d.o.o. The concentration of all five DSO companies and the company Informatika d.d. was also filed, whereas the decision has not yet been taken or published on the website of Competition Protection Agency.

In the course of market surveillance in 2015 and 2016, the Energy Agency established a case of bad practice due to introducing own identifiers at issuing electricity bills for the supply. This practice hindered efficient implementation of supplier switching and created mistrust in the functioning of the retail electricity market and caused additional unplanned costs, the Energy Agency in May 2016 adopted Act on the identification of entities in the data exchange among participants in the electricity and natural gas markets, with which the integrity of designated identifier to certain data entities throughout data exchange from data source (for example an DSO) through a supplier to the final consumer e.g. network user). Under this legislation, the Energy Agency in 2016 carried out an overview of indication of a unique identifier for a metering point on the issued bills and established that electricity suppliers on their own single bills indicated a different identifier of a metering point. Electricity suppliers were therefore called to use a unified identification code for a metering point on their bills. Most of the suppliers took into account the Energy Agency's warnings, however, by the end of 2016 the review has not yet been completed and it continues in 2017.

The Energy Agency stopped two surveillance procedures related to the disclosure of actual situation in the comparison tool and switching supplier, as no violations were found. Two procedures concerning allegedly unfair advertising have not yet been completed.

Act on the Identification of Entities in the Data Exchange among Participants in the Electricity and Natural Gas Market, which binds market participants to use standardized identifiers of key data entities in the electronic exchange of data in the market. The mentioned general act sets the minimum standards of identification and recommends the use of two standardized identification schemes, EIC in GS1, depending on a scope of application. The Energy Agency monitored and directed the activities of the DSO in the planning phase of the transition from the use of their own identification schemes to standardized schemes. It was also very active in monitoring the use of appropriate identification of market participants in balance schemes at market operators.

Regarding the measures implemented on the basis of the third energy package for unifying the most important data exchange processes at the national and regional level the Energy Agency insists on 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. Within ebIX® in 2016 a lot of development activities were focused on the area of smart grids and data exchange related to flexible trading and the role of aggregators. At the national level, an expert communication on this subject is underway in IPET Section, which operates within Chamber of Commerce and Industry of Slovenia. The Energy Agency is actively involved in the work of the section, both in its management and relevant issues. In 2016, it was responsible for the area of cyber security of the power system and in the energy market.

3.4 Reliability of the electricity supply

The reliability of the electricity supply to the consumers depends on the capacity of the power system and the sufficiency of production sources and energy. We can speak of the two functional aspects of the reliability of supply - sufficiency of production sources and the security of the network. The sufficiency of production sources describes the ability of all available production sources to meet the demand for electricity at any time, taking into account planned and unplanned outages of the system. In a broader sense, the sufficiency means a sufficient reserve of affordable raw materials and resources for the production of electricity.

Electricity network security is the ability of the system to withstand disturbances such as outages of elements, failures, such as short circuits. In order to ensure the network security, in Slovenia the n-1 criterion is used for the transmission network, and for higher levels of the distribution networks. By using n-1 criterion, it is guaranteed that in case of an outage of any component of the system, the overloading, exceeding the limits or supply interruptions are avoided.

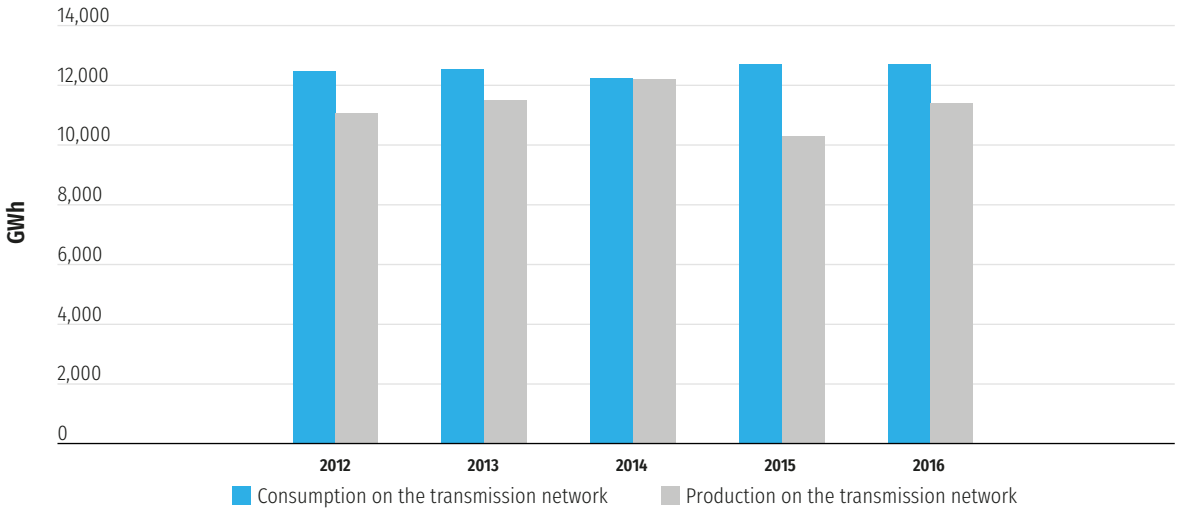
Under the Energy Act in the event of a sudden crisis in the energy market, and when the physical safety or security of persons, facilities or installations or electric power system integrity is threatened, the electricity TSO may impose measures to reduce the energy supply to certain categories of consumers, determine the order of reductions, lay down the method for using energy and determine obligatory energy production. The electricity TSO implements measures in cooperation with the electricity DSO, or by itself 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 electricity system operators within the framework of system operating instructions.

3.4.1 **Monitoring balance of supply and demand**

In the last years, delivery of electricity from the transmission system has not change significantly; in 2016 remained at almost the same level as the year before. A slightly higher fluctuation could be observed in the production of electricity on the transmission system, which were mainly a result of overhaul cycles of the nuclear power plant and hydrological conditions affecting production in hydroelectric power plants. Multiannual consumption trend and production shown in Figure 59, which takes into account half of the production of the nuclear power plant Krško, indicates that the production on the transmission system was higher by almost 10% than the previous year, but still did not reach the production of 2014, which stood out due to favourable hydrological conditions.

Figure 59

ELECTRICITY CONSUMPTION AND PRODUCTION IN SLOVENIA FOR THE PERIOD 2012–2016



Source: ELES

3.4.2 Monitoring investment in production capacities in relation to the security of supply

When planning the scenarios of future electricity consumption in Slovenia is to the greater extent possible taken in to account the ENTSO-E methodology, which defines four visions of development. Scenarios are primarily defined by macroeconomic developments since scenarios with high objectives for the development of gross domestic product determine higher possibilities of investments related to efficient use of energy, renewable sources and other parameters that affect the scope of final electricity consumption.

The results of the analysis of the system operator for the period 2017-2026 show the deficit of domestic production by all four scenarios at the similar level, which is mainly a consequence of the uneconomical operation of available domestic production. The difference will have to be compensated by the import from abroad.

Table 21 shows changes to be made by the Slovenian electricity producers as expected in the development plan of the transmission network for the period 2015–2024. The positive power values in the second column indicate new production facilities or a renovation of the existing facility, where an increase in the capacity is planned, and the negative values indicate shutdowns of the concerned units or reducing of the nominal power of the unit. The sign in the last column presents the scenario or the development vision according to which the investment will be carried out. The investments in new production sources are set by taking into account the ENTSO-E methodology, which is also included in the forecast of electricity consumption in the coming years. According to the current situation the most realistic scenario in V2 implying that the electricity prices continue to be too low to allow investments in conventional production sources and the economic growth in Slovenia will not be high enough for large investments in RES.

Table 21

CHANGES TO THE PRODUCTION FACILITIES ON THE TRANSMISSION SYSTEM BY 2024

	Installed capacity (MW)	Expected year of change	Scenario
Hydroelectric power plants			
HPPs on the Drava River			
PSHPP Kozjak	403	2020	V 4
HPP on the Mura River			
Hrastje Mota	20	2019	V 4
HPPs on the Sava River			
Brežice	56	2017	V 1,2,3,4
Mokrice	32	2019	V 3,4
Moste 2, 3	48	2020	V 3,4
Suhadol	41	2020	V 3,4
Trbovlje	33	2023	V 3,4
HPP on the Soča River			
Učja	34	2021	V 4
Thermoelectric power plants			
TPP Brestanica			
TPP PB 1–3	–63	2017	
TPP PE VI–IX	80	2017	V 2,3,4
TE-TO Ljubljana			
Unit I, coal	–39	2020	
Unit II, coal	–29	2018	
Unit CCPP	117	2018	V 2,3,4

Source: ELES

3.4.3 Measures to cover peak demand and shortages of electricity

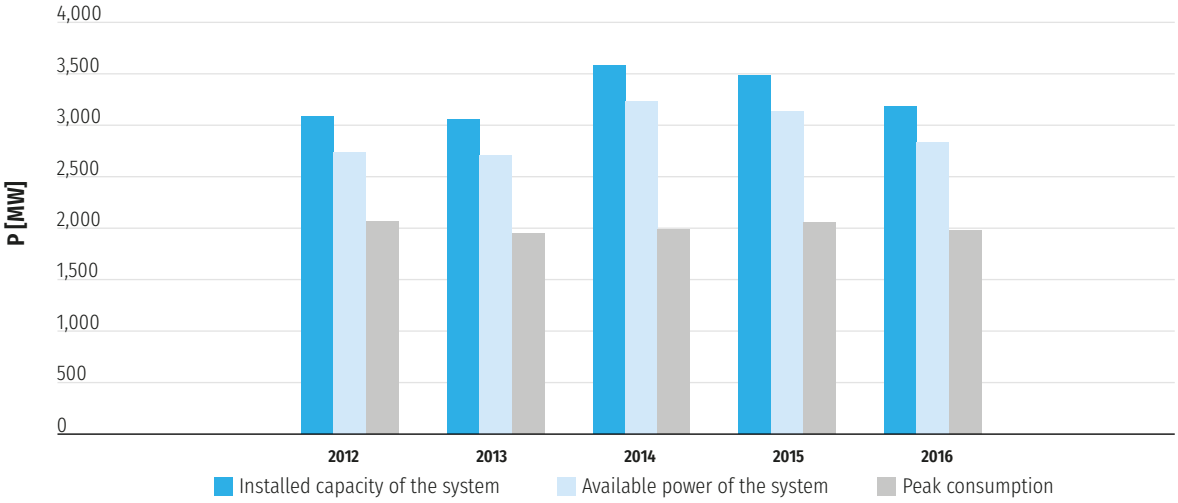
Figure 60 presents the values of peak demand, installed capacity and available capacity for the Slovenian market in the period 2012–2016. The difference between the installed capacity of the production facilities and actual available power represents one half of the power from the Krško NPP, which belongs to Croatia, in line with Article 6 of the Agreement between the Government of the Republic of Slovenia and the Government of the Republic of Croatia Regarding the Status and Other Legal Issues Relating to the Investments in the Krško Nuclear Power Plant, its Exploitation and its Disassembly.

The ratio between the installed capacity or available capacity of production sources and peak power is the indicator of the availability of adequate production sources. The system must have at its disposal enough power to cover demand and reserve power at normal operation, and in the event of unforeseen circumstances. The ratio between the available capacity and peak load in 2016 slightly decreased due to termination of operation of Block 5 in the Šoštanj Thermal Power Plant, while at the same time it also should mention that Block 5 and 6 due to specifics of connections in the HV switchgear in the Šoštanj Thermal Power Plant they could not operate at the same time.

Peak load on the transmission system in recent years has not changed significantly; small fluctuations are among other circumstances the result of fluctuations in economic activities and meteorological deviations. Interestingly, in 2016 the peak load occurred exactly at noon of 20 December, in contrast to the period after 1997, when peak load normally occurred in the evenings.

Figure 60

INSTALLED CAPACITY OF PRODUCTION FACILITIES, THE POWER AVAILABLE FOR THE SLOVENIAN MARKET, AND THE PEAK CONSUMPTION ON THE TRANSMISSION SYSTEM IN THE PERIOD 2012–2016

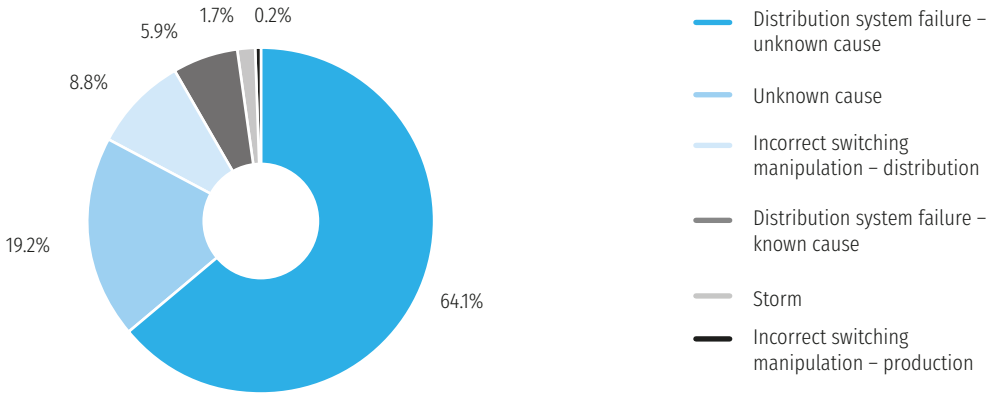


Source: ELES

The volume of unsupplied electricity to the transmission system in 2016 was considerably lower than the year before and amounted to 33.48 MWh, mostly due to a failure of the distribution system from an unknown cause. Unsupplied electricity is calculated in accordance with Act on the Rules for Monitoring the Quality of Electricity Supply, therefore it should be mentioned that actual volumes of unsupplied electricity may be lower than indicated since a significant share of consumers in the affected areas could be supplied by the medium-voltage network.

Figure 61

UNSUPPLIED ENERGY FROM THE TRANSMISSION SYSTEM WITH RESPECT TO THE CAUSES



Source: ELES

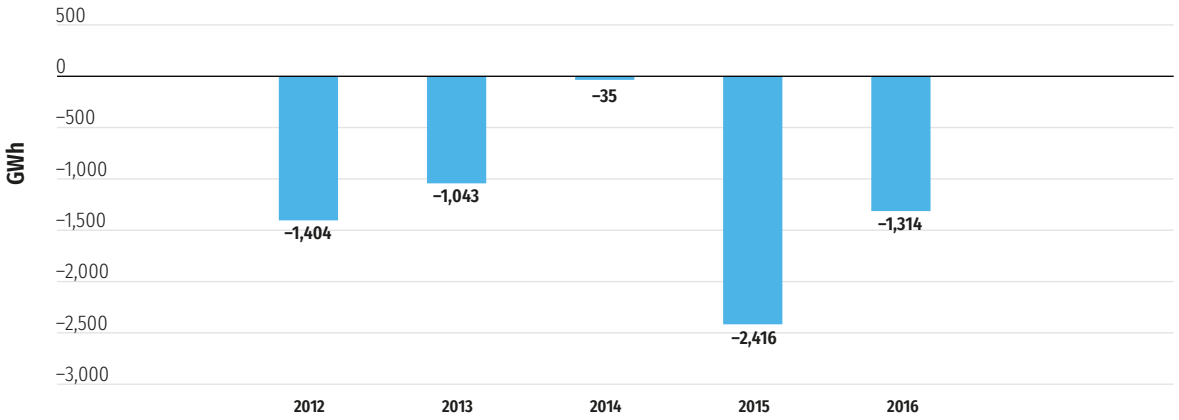
Domestic sources for electricity production in 2016 were not sufficient to cover the demand for electricity, however, the import dependence of Slovenia was much lower than the previous year, somehow at the multiannual average level as shown in Figure 62. At stable production in nuclear power plant, the production in hydroelectric power plants and thermoelectric plants was in 2016 considerably higher, which is a result of stabile production of thermoelectric power plant Šoštanj. Nevertheless, the electricity supply was never interrupted as a result of a shortage of production sources since the Slovenian transmission system is well connected with the neighbouring systems of Austria, Italy, and Croatia. Net transfer capacity at borders next to control of electricity transit flows also provide security of domestic electricity supply. In the preparation phase in the connection with the transmission system of Hungary, which will increase the reliability of the Slovenian power system, and significantly increase import transfer capacity and reliability of the transmission system in this part of Slovenia. Reliability of power supply will also be improved in case of a failure of major production facilities or other unforeseen events and operational problems when additional help through the Hungarian transmission system will be available. The project will enable better integration of the regional markets and facilitate the access to Eastern electricity markets, which will allow in the long term more favourable prices of electricity for the Slovenian consumers.

7%

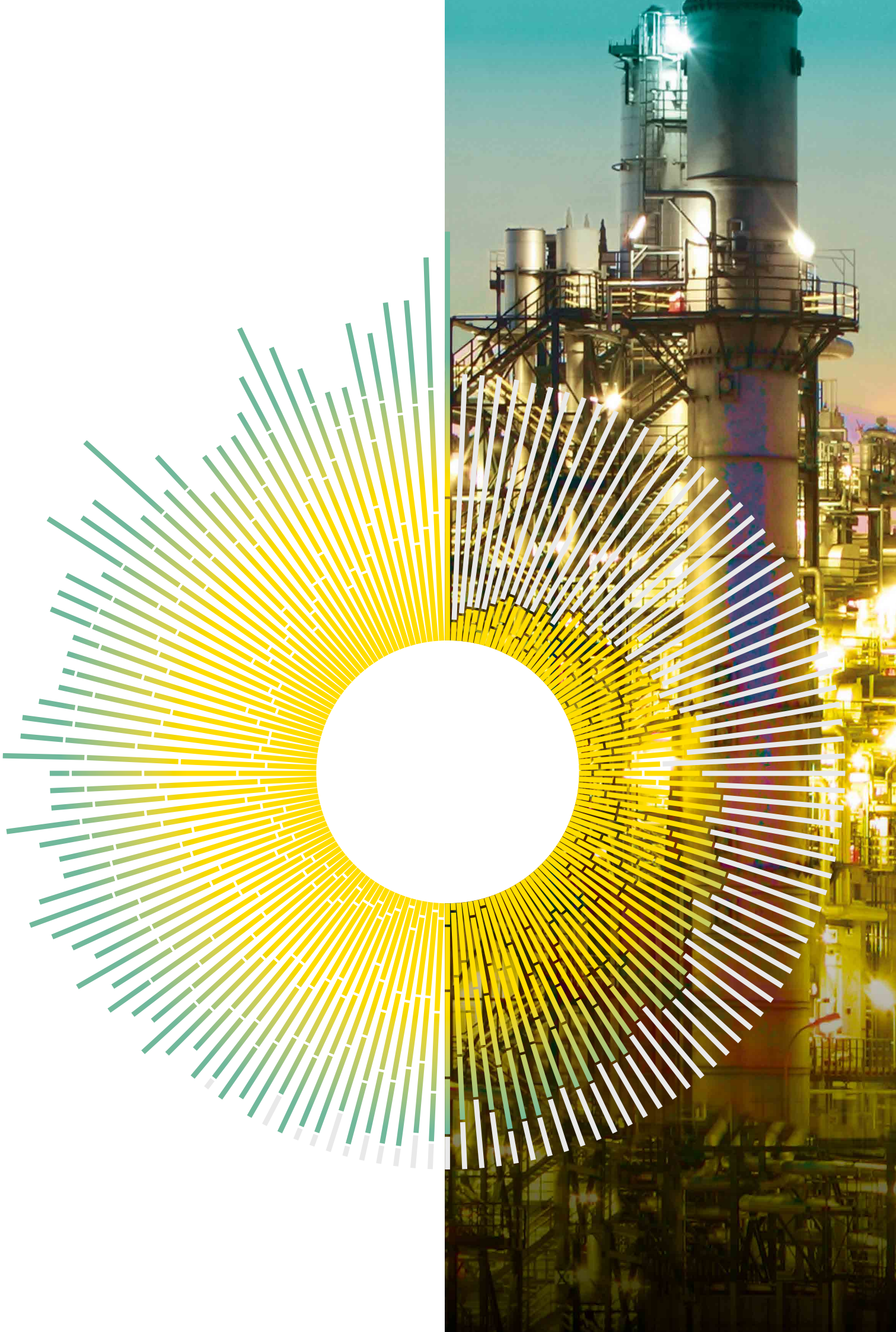
lower import dependency of Slovenia on electricity than in 2015

Figure 62

DEFICITS OF ELECTRICITY ON THE TRANSMISSION SYSTEM IN THE PERIOD 2012–2016



Source: ELES



04

Natural gas

After a multi-year trend of reducing the natural gas consumption in Slovenia, the consumption in 2016 increased again for the second year in a row. The supply was reliable, without any unplanned interruptions. The implementation of the balancing rules has beneficial effects.

96.46%
of the natural gas wholesale market was controlled by the three largest suppliers.

4.5%
increase in the consumption for the second year in a row.

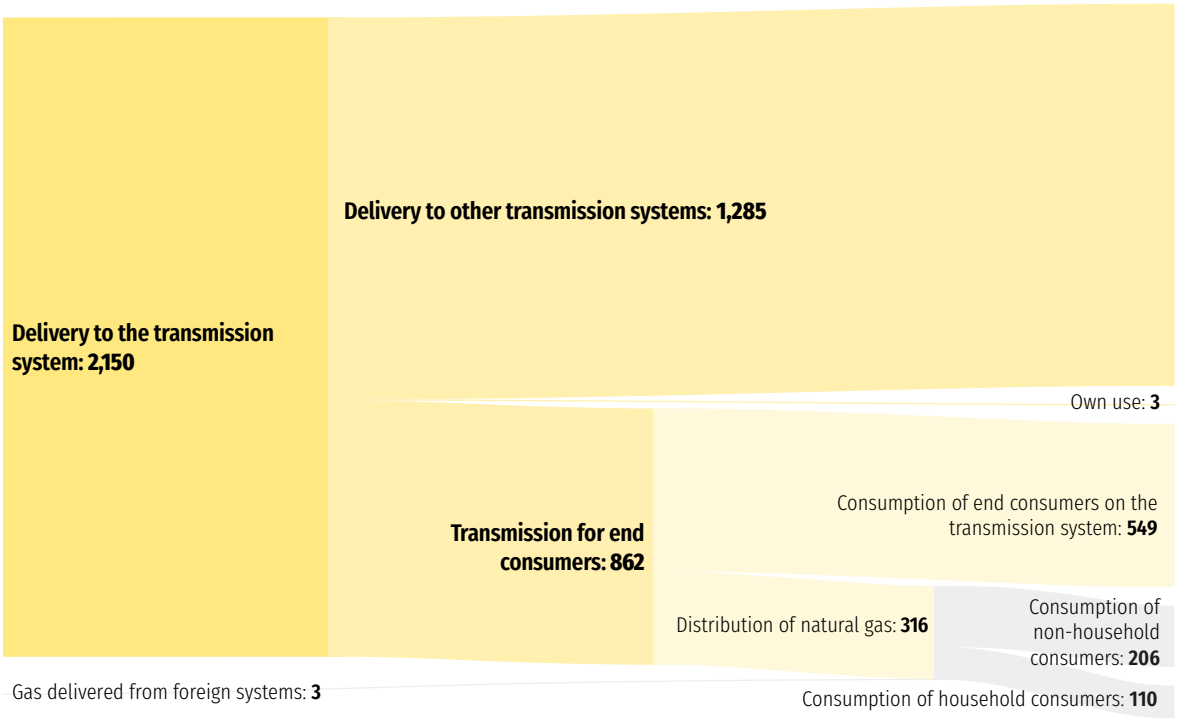
4.1 The balance of natural gas supply

In 2016, through the transmission system, 2,147 million Sm³ or 23,116 GWh of energy were transferred, which is almost 15% more natural gas than the previous year. The transfer of gas to other transmission systems increased by almost 23%.

After a multi-year trend of reducing the natural gas consumption in Slovenia, the consumption in 2016 increased again for the second year in a row. Higher consumption is recorded at consumers, connected to the transmission system, as well as at customers connected to the distribution systems. An increase in the annual consumption of both consumers groups was around 4.5%, and it can be very likely attributed to the simultaneous effects of several factors, such as weather, competitive prices of natural gas, economic growth, and other individual factors. Total consumption of natural gas amounted to 865 million Sm³ or 9,309 GWh, and this was the second-largest distributed quantity since the beginning of the market opening in 2004. The consumption on the distribution networks was larger only in 2010, namely by 1.4%.

Figure 63

BASIC INFORMATION ABOUT THE DELIVERED, DISTRIBUTED AND CONSUMED AMOUNTS OF NATURAL GAS IN MIO Sm³



Source: Energy Agency

At the end of 2016, 133,439 end consumers were connected to the natural gas transmission and distribution systems.

The change in the number of business consumers on the distribution systems at the end of 2016 compared to the previous year was mainly the result of the changing the classification of some such consumption points to household consumers.

The natural gas distribution was carried out by 15 natural gas system operators and three operators of closed distribution systems.

Table 22

NUMBER OF NATURAL GAS CONSUMERS ACCORDING TO CONSUMPTION TYPE IN 2015 AND 2016

Number of consumers according to consumption type	2015	2016	Index
Business consumers on the transmission system	132	132	100.00
Business consumers on the distribution system	14,528	13,724	94.47
Household consumers	118,719	119,583	100.73
Total	133,379	133,439	100.04

Source: Energy Agency

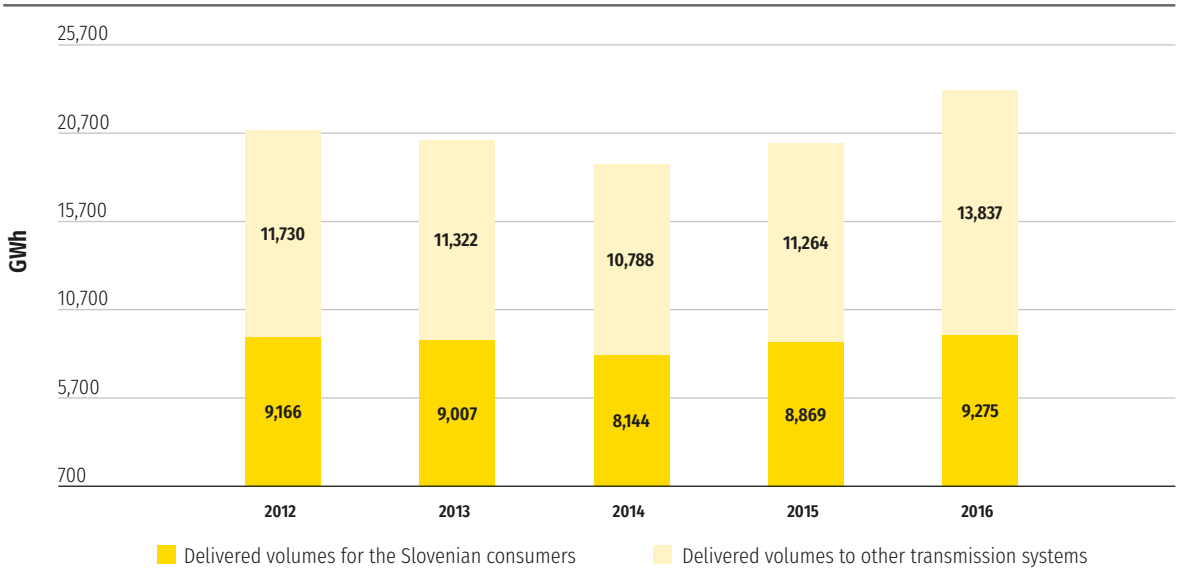
4.1.1 Transmission of natural gas

The transmission system is owned and operated by the TSO, the company Plinovodi, d.o.o. It consists of 946 kilometres of high-pressure pipelines with a nominal pressure of more than 16 bars and 209 kilometres of pipelines with a nominal pressure less than 16 bars. The transmission system also consists of 199 metering-regulation stations, 41 metering stations, seven reducing stations, and compressor stations in Kidričevo and Ajdovščina. The Slovenian gas transmission system is connected to the gas transmission networks of Austria (the Ceršak MRS), Italy (the Šempeter MRS) and Croatia (the Rogatec MRS). Border points are at the same time relevant points of the transmission system. The fourth relevant point is the exit point in Slovenia. The entire transmission network is one balancing zone. For trading of natural gas in the wholesale market, the virtual trading point was established.

In 2016, the TSO had transferred 9,275 GWh of natural gas for the Slovenian consumers, which is an increase in consumption for the second consecutive year. Also, the transfer of natural gas to others transmission systems was higher, the highest since 2006.

Figure 64

DELIVERED NATURAL GAS VOLUMES



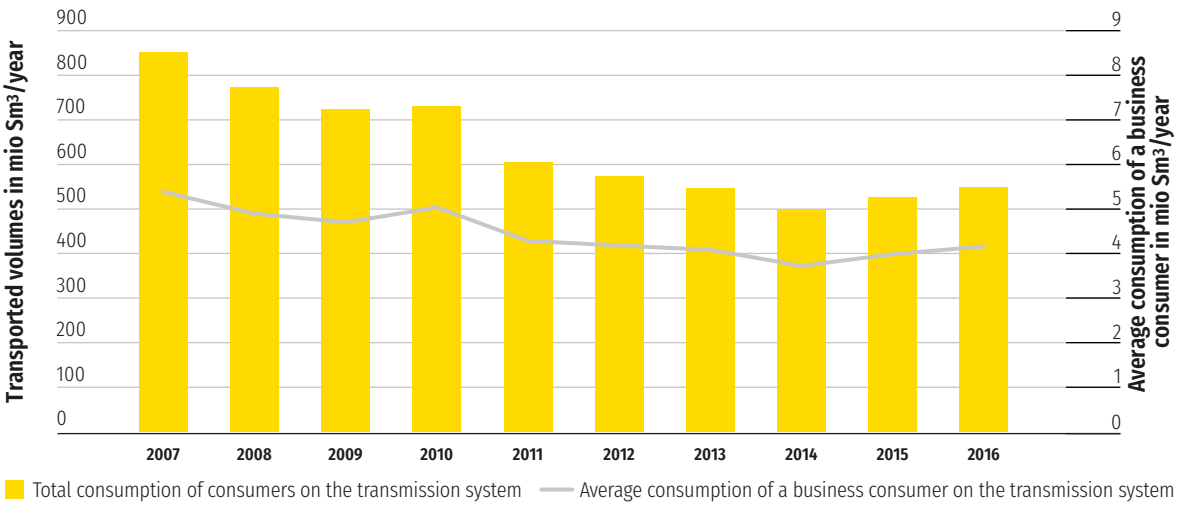
Sources: Energy Agency, Plinovodi

Three new industrial consumers were connected to the transmission system, while two industrial consumers were disconnected due to bankruptcy, and one was merged with other large customers. The number of end consumers on the transmission system remained unchanged at 132.

Figure 65 shows the total consumption of consumers on the transmission system and the average consumption of a business consumer for the ten-year period 2007–2016.

Figure 65

TOTAL AND THE AVERAGE CONSUMPTION OF A BUSINESS CONSUMER ON THE NATURAL GAS TRANSMISSION SYSTEM



Source: Energy Agency

4.1.2 Distribution of natural gas

The provision of the service of the gas DSO is performed as a service of general economic interest. In 2016, the distribution of natural gas was carried out in 79 municipalities in the greater part of the urban areas in Slovenia, except of Primorska region (Slovenian Littoral Region). In these municipalities, the distribution was performed by 16 gas DSOs.

9.3%
larger quantities of natural gas distributed than five years ago

In 64 municipalities this activity was organized with a concession act between the concessionaire and the local community; in 14 municipalities was performed by public companies, and in one municipality as an investment of public capital into the activity of private law. In the local community of Šenčur, service of general economic interest was provided by two system operators in four areas on the basis of concession contracts signed with the municipality. In individual local communities the concessions for the provision of the service of the gas DSO were awarded; however, the gas distribution was not carried out, as the distribution networks were not yet ready for use.

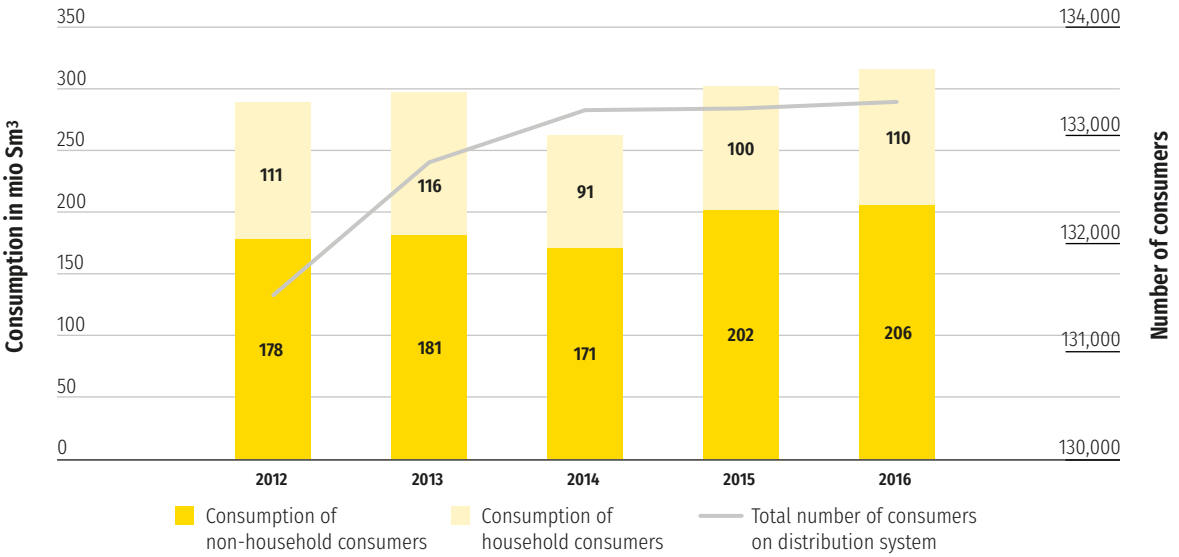
Gas DSOs distributed nearly 316 Sm³ of natural gas, which is a maximum during the last five-year period and the second largest quantity over a ten-year period (most of the natural gas was distributed in 2010). Compared to the year 2015, an increase in distributed volumes was registered for approximately 4.5%. At household consumers, the consumption increased by more than 9%, and at non-households by just over 2%. The increase in relation to the type of consumers does not reflect completely real situation since some individual consumption point were reallocated from household to non-household consumption. The increased natural gas distribution was very likely a consequence of the weather and the supply of new consumers.

In observing the number of consumers, connected to the distribution systems, the change in the structure of consumers was detected. On distribution systems, the number of household consumers with annual consumption up to 500 Sm³ decreased, and the number of consumers with annual consumption more than 500 Sm³ increased. A similar trend was noticed at non-household consumers, where the number of smaller customers decreased and increased the larger one. The most noticeable decrease was detected at consumers who use natural gas only for cooking or combined for cooking and sanitary hot water.

The consumption of household and non-household and the number of all consumers on distribution systems for the period of five years is shown in Figure 66.

Figure 66

CONSUMPTION ON THE DISTRIBUTION NETWORK DEPENDING ON THE TYPE OF CONSUMPTION AND THE NUMBER OF ACTIVE CONSUMERS

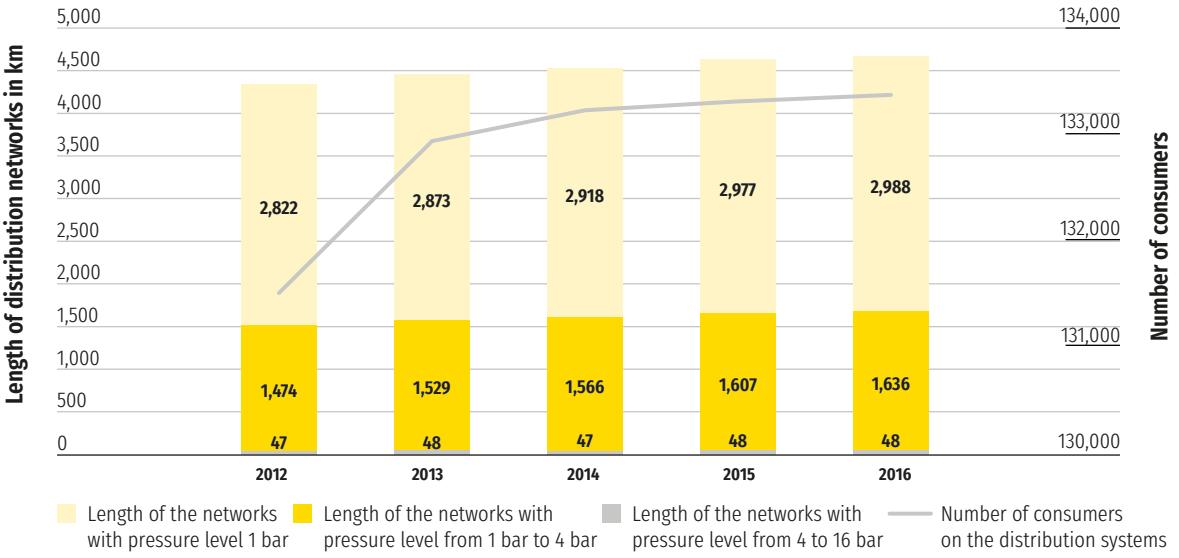


Source: Energy Agency

The length of the distribution network did not increase significantly. At the end of the year, the total length of the distribution pipelines in Slovenia was 4,672 kilometres, which was around 0.8% more than in the previous year. The distribution pipelines, together with the corresponding facilities, are mainly owned by the system operators. Pressure levels of the networks, extensions of distribution pipelines with facilities, and an increase in the number of consumers in the period 2012–2016 are shown in Figure 67.

Figure 67

LENGTH OF DISTRIBUTION NETWORKS AND THE NUMBER OF ACTIVE CONSUMERS



Source: Energy Agency

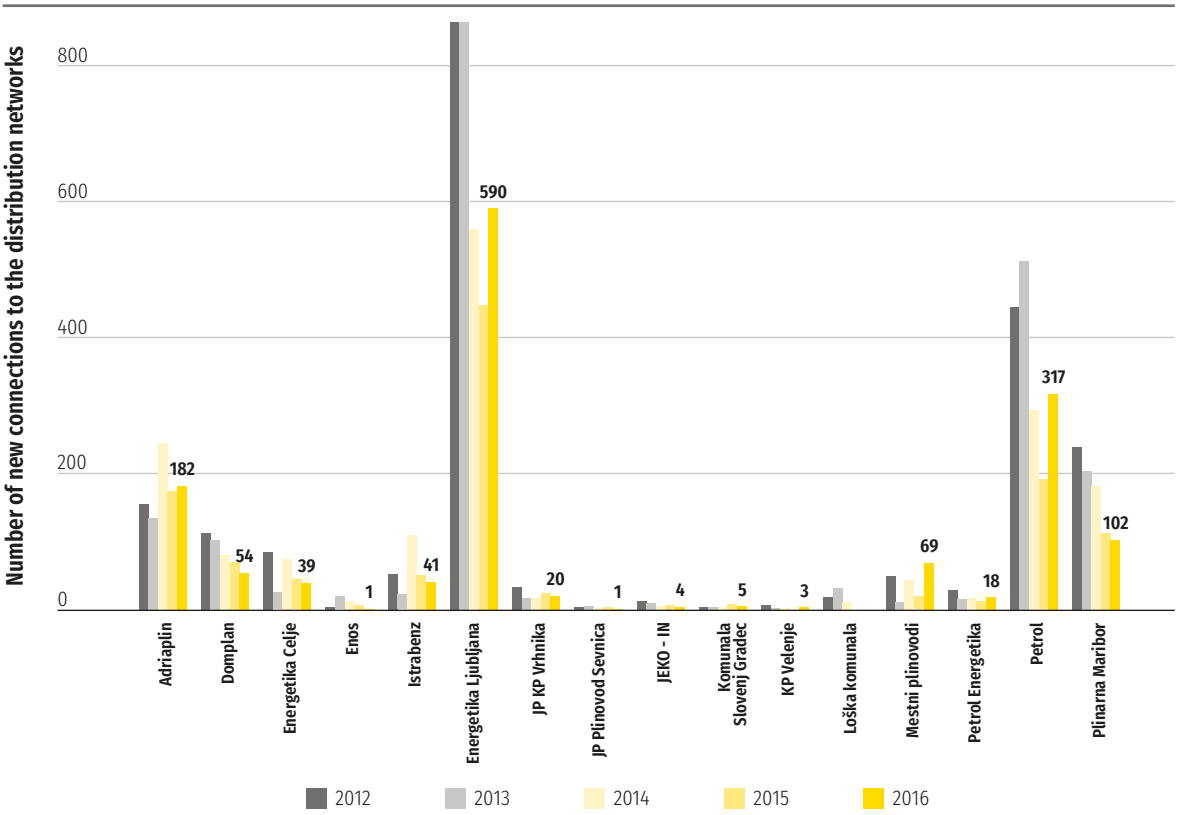
The gas DSOs to the distribution systems connected 1,446 consumers, nevertheless, the total number of consumers increased by only 61 due to disconnections; so at the end of 2016 on the distribution systems, 133,307 final consumers were connected.

133,307
final consumers were connected to the distribution systems

Despite the fact that the number of new connections after several years increased again and the number of disconnections from the distribution systems decreased, the number of new connections from the previous years had not yet been reached. Comparable and favourable prices of other energy products, high costs for connection to some distribution systems and deficiency of local energy concepts are some possible reason for inadequate utilization of existing and new distribution systems for natural gas.

Figure 68

NUMBER OF NEW CONSUMERS ON THE DISTRIBUTION NETWORKS IN THE PERIOD 2012–2016

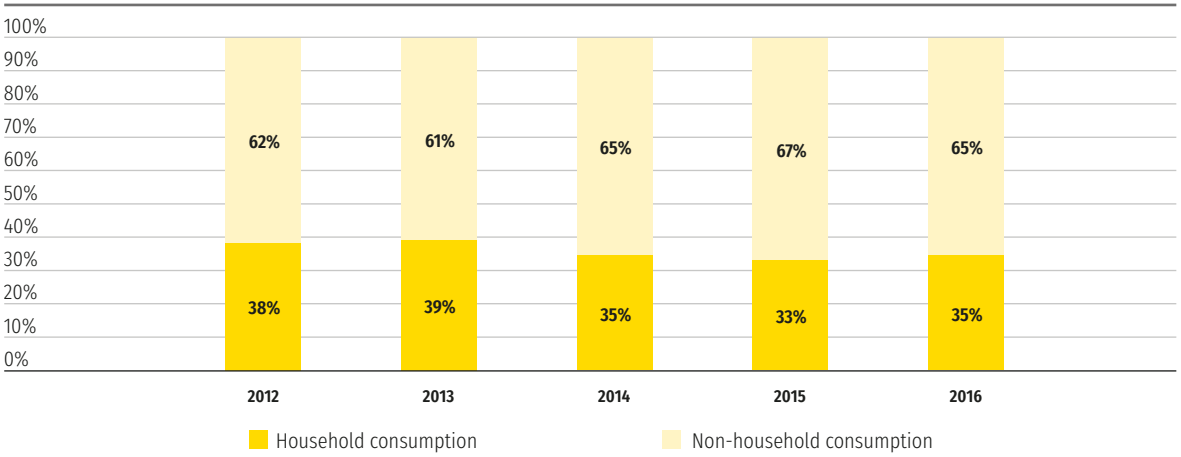


Source: Energy Agency

The structure of consumers did not change significantly in relation to the type of consumer. In the last five years, household consumers at the annual level account for approximately 90% of all consumers connected to the distribution systems. Also, distributed quantities of natural gas in 2016 does not show significant changes in the relationship between household and non-household consumption. The share of household consumption was 35%, the remaining 65% was distributed to non-household consumers.

Figure 69

SHARE OF CONSUMED NATURAL GAS FROM DISTRIBUTION SYSTEMS FOR HOUSEHOLD AND NON-HOUSEHOLD CONSUMERS

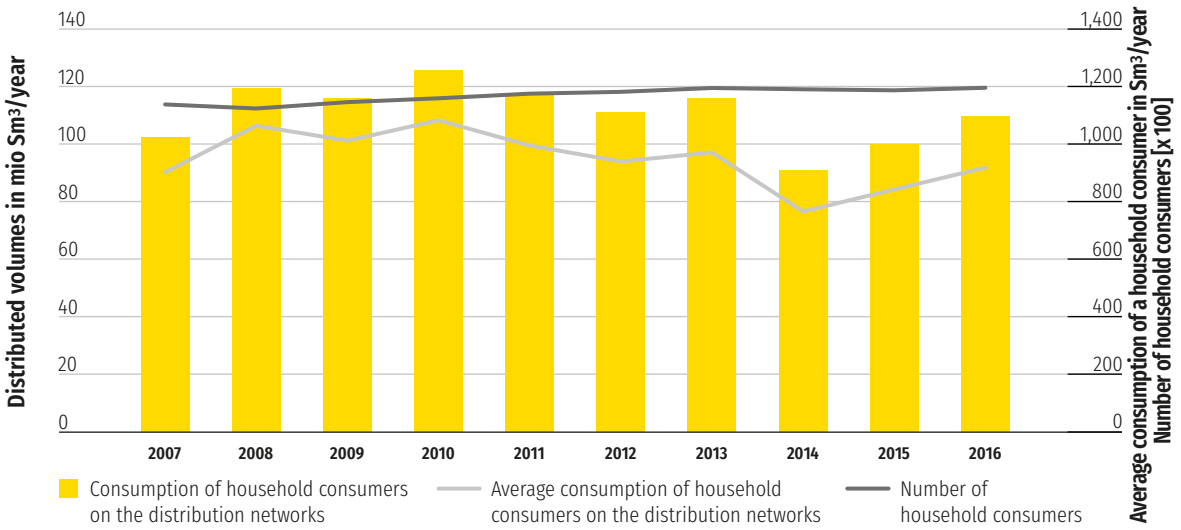


Source: Energy Agency

Household consumers use gas mainly for cooking, sanitary hot water, and heating. Similarly to the previous period, in 2016, more than 96% of all consumers used less than 4,500 Sm³. More than 90% in one year consumed less than 2,500 Sm³ of gas. The share of consumers with annual consumption more than 4,500 Sm³ was 3.7%, and their consumption amounted to 67% of all consumption on the distribution networks. Total and average natural gas consumption of household consumers through the period 2007–2016 is shown in Figure 70. The growth of the average consumption in 2016, which continues for the second time in the row, and the simultaneous implementation of measures for more efficient use of energy is very likely influenced by the change in the structure of consumers. The number of consumers in groups CDK1 and CDK2 with a relatively small annual consumption decreased and on the other hand the number of consumers in most other groups with significantly higher annual consumption. The number of all consumers was stagnant for the third consecutive year, however, disconnections of consumers with the lowest consumption was detected, but they were replaced with new ones with significantly larger consumption.

Figure 70

TOTAL AND AVERAGE CONSUMPTION OF A HOUSEHOLD CONSUMERS ON THE DISTRIBUTION NETWORKS



Source: Energy Agency

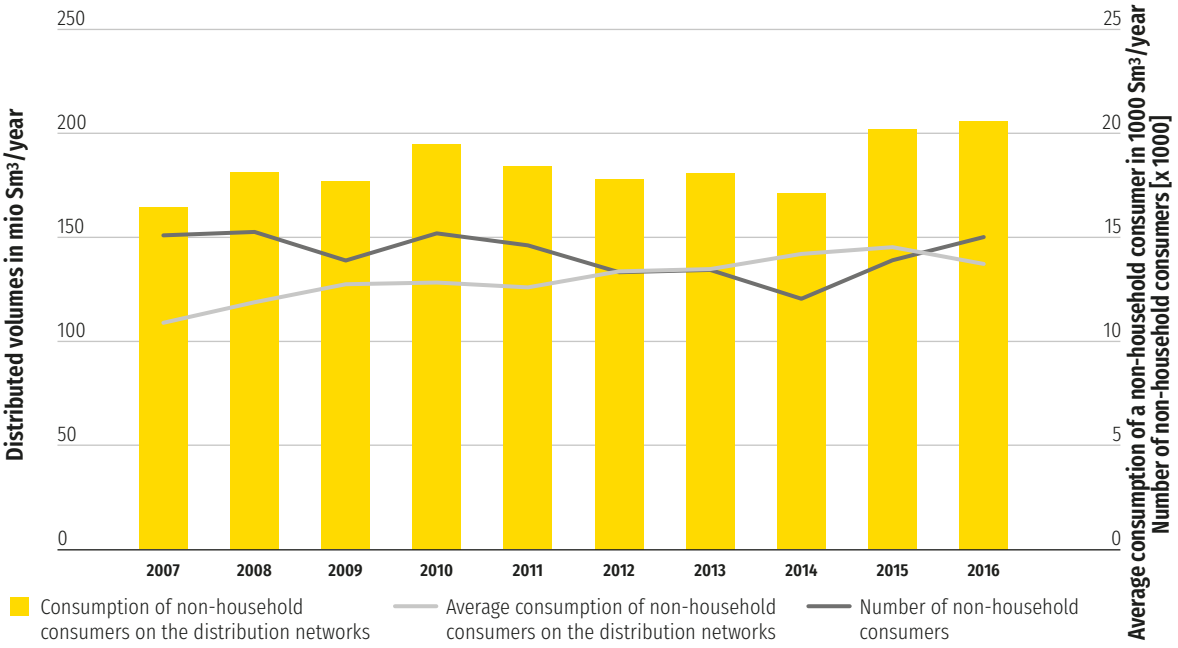
25.3%

higher consumption of non-household consumers as ten years ago

Non-household consumers used gas also for cooling, technological and production processes and other activities. Figure 71 shows the movement of consumption and the number of non-household consumers. The number of non-household consumers with low consumption decreased, and increased the number of consumers with higher annual consumption. The number of non-household consumers only because of re-allocation of individual consumption points to household consumption, and not because of the actual decrease in number. The non-household consumers generated the largest consumption in the ten-year period and consumed the largest amount of natural gas since the beginning of the introduction of gas pipeline networks in Slovenia.

Figure 71

TOTAL AND AVERAGE CONSUMPTION OF NON-HOUSEHOLD CONSUMERS ON THE DISTRIBUTION NETWORKS



Source: Energy Agency

4.1.3 The use of compressed and liquefied natural gas from the transmission and distribution systems

4.1.3.1 Compressed natural gas in transport

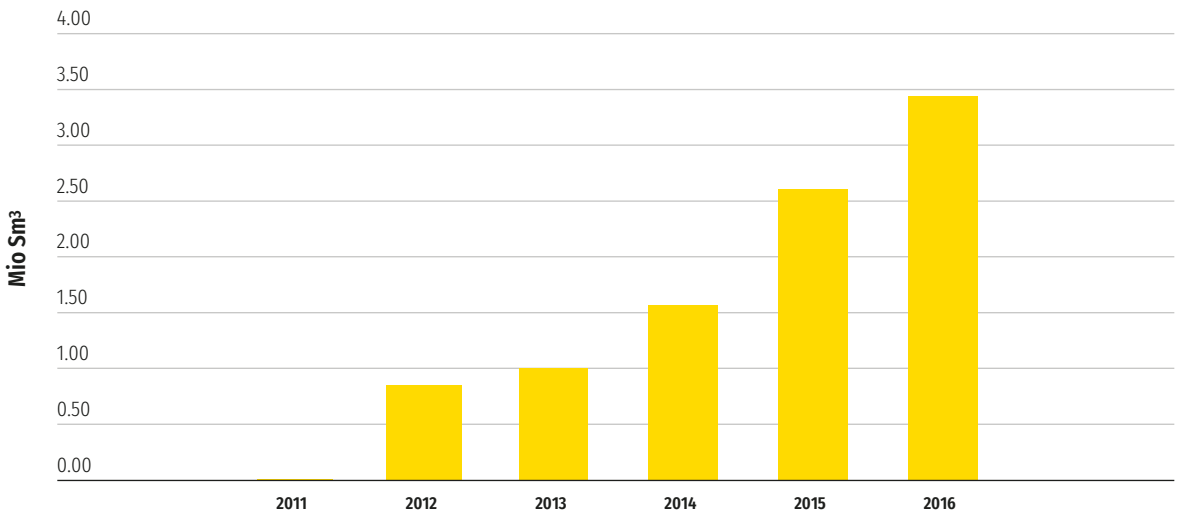
Compressed natural gas (CNG) in transport can be used as a fuel source for personal, delivery and good vehicles and public bus transport, especially for short and medium distances. In Slovenia, the use CNG for transport started in 2009, when Enos LNG, d.o.o., company from Jesenic bought the first vehicle on CNG and small service station, initially intended for individual use. Based on performed tests and with relation to an economical driving and environmental footprint of driving with participation of the Faculty of Mechanical Engineering in Ljubljana, in 2011 the first service station was opened in Jesenice where interested user could fill up their vehicles. At the end of the same year the second service station was opened in Ljubljana, which provided a self-service supply 24 hours a day, all days of the year. In June 2014, in Maribor the third service station was opened, which the same provides non-stop service. In 2016, Ljubljana got another service station and with that ensured conditions for further deployment of this energy source into transport. New CNG service stations are planned, priority located in major cities and at the Slovenian motorway network; the time schedule of projects will depend mainly on successful conclusions of agreements between many participants with the aim to ensure synergistic effects and economic viability of individual projects.

CNG service stations can be connected to the transmission or distribution natural gas system as an end consumer, and a further supply of vehicles is performed by a supplier as a charging service. In providing the infrastructure for CNG service stations, we are far behind from more developed countries of the EU, such as Italy with o more than 1000 service stations, Austria with 165 stations, and Germany with more than 900 stations. Among neighbouring countries, Croatia has only two stations, and in Hungary, progress can be detected in the capital city, while the rest of the area has still a poor coverage.

Data on consumption in Slovenia show that the total natural gas consumption in transport for 2016 increased by almost 840,000 Sm³ compared to the previous year. The total annual consumption reached almost 3.5 million Sm³. The bulk of annual consumption growth must be attributed to the city of Ljubljana with its surroundings, where advantages and the potential of this source of energy were recognized in local public transport and gradually also by providers of services of general economic interest. An increase in the use of CNG in transport has reduced emissions of pollutants, which are heavy burdens of urban centres, and at the same time, fuel costs are much lower in comparison with conventional fuels. The annual consumption of CNG since the opening of the first public station is shown in Figure 72.

305%
higher consumption of CNG in traffic as in 2012

Figure 72
CONSUMPTION OF CNG IN TRANSPORT



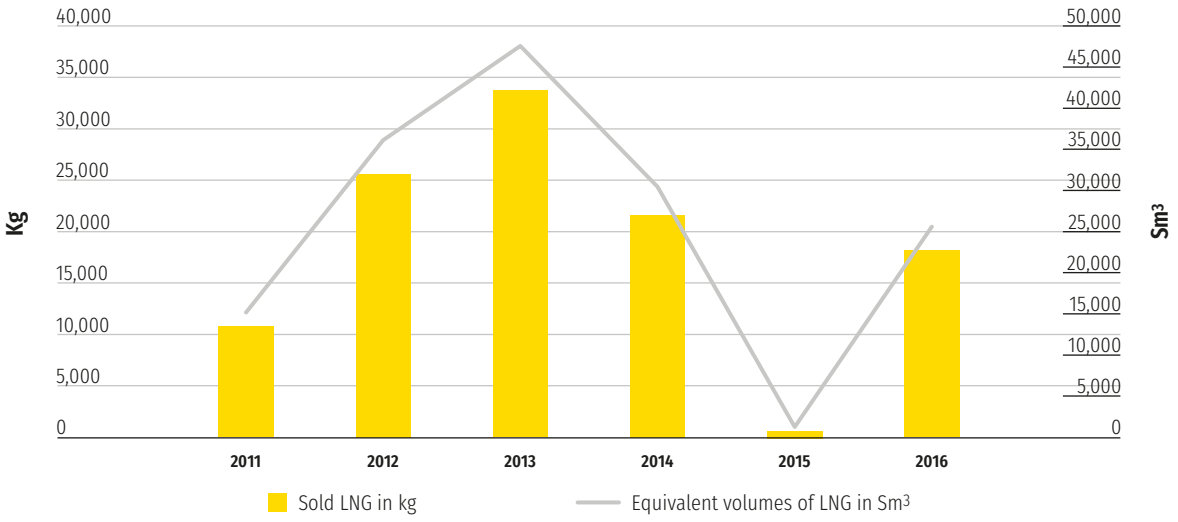
Source: Energy Agency

4.1.3.2 **Liquefied natural gas**

In 2016, the supply of liquefied natural gas was provided only by the ENOS LNG, d.o.o., company, which runs its own natural gas natural liquefaction plant and storage facility of 50 Sm³ in Jesenice. The annual capacity of the liquefaction plant is 3.5 million Sm³. The company also provides temporary supply in cases of interrupted supply of the natural gas from the systems, regular supply of gas in areas where no transmission or distribution systems of gas have not yet been built, and also the delivery of LNG. Annual sales of LNG in the period 2011–2016 are shown in Figure 73.

Figure 73

SALES OF LNG



Source: Energy Agency

LNG is also suitable for the use in all type of transport, except for air transport. In 2016, the supply of LNG has not yet been provided in Slovenia. According to the information of potential suppliers, the first two LNG stations are planned in 2017 or 2018, most likely along the motorway network.

4.2 The regulation and regulated services

4.2.1 **Unbundling**

In 2016 in Slovenia the service of general economic interest of gas TSO was performed by one entity and the service of general economic interest of gas DSO was carried out by 15 entities.

The gas TSO, the company Plinovodi, performs its activity as an independent legal person, and it is 100% owned by a domestic legal person supplying natural gas. It owns the assets with which it carries out its functions. The gas TSO is certified and designated as in independent transmission system operator.

For gas DSOs legal separation of activities is not required since the number of connected consumers does not exceed 100,000.

System operators are required to prepare annual financial statements according to the Companies Act and submit to audit and make public as it is for large companies required by the Companies Act.

Since the operators of distribution systems were also engaged in other energy and market activities must, therefore, they prepared separate accounting statements.

In the notes to the audited financial statements, the DSOs must disclose the criteria for the allocation of the activities identified by the internal company's acts and that were used in the preparation of separate financial statements. Audited annual reports have to include the rules used for the production of separate accounts by energy-related activity. The use of the listed rules for producing separate accounts has to be examined by an auditor. System operators must submit to the Energy Agency audited annual report and special report by the auditor within eight days of receipt of auditor's report or no later than six month after the end of the calendar year.

4.2.2 Technical functioning

4.2.2.1 **Balancing services**

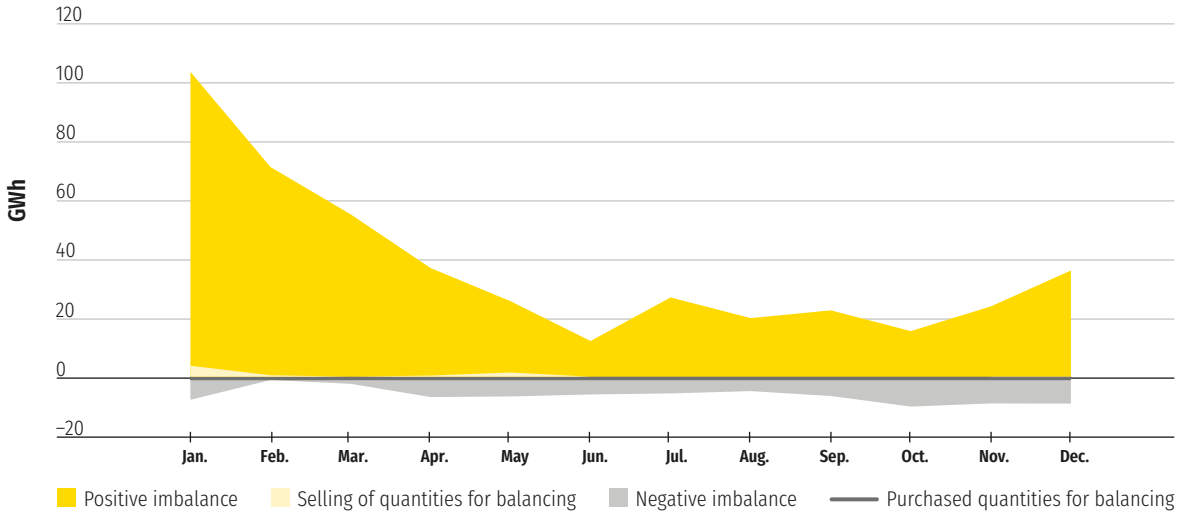
In 2016, out of 17 registered leaders of balance groups in the Slovenian balancing market, seven leaders were regularly active, four were active from one to three months, and six of them were inactive. The gas TSO through buying and selling natural gas on the trading platform and with an annual contract on balancing took care for balancing of the system and charged for imbalance. The entire transmission network is one balancing zone; imbalances are determined on a daily basis and calculated monthly for each gas day.

Beneficial effects of enforcement of the new rules on gas balancing

Beneficial effects of enforcement of the new rules on gas balancing from October 2015 were revealed in the first part of 2016 when positive imbalance started to decrease and started to approached values from the previous years.

Figure 74

AMOUNTS FOR IMBALANCE AND BALANCING SERVICES OF THE TRANSMISSION SYSTEM



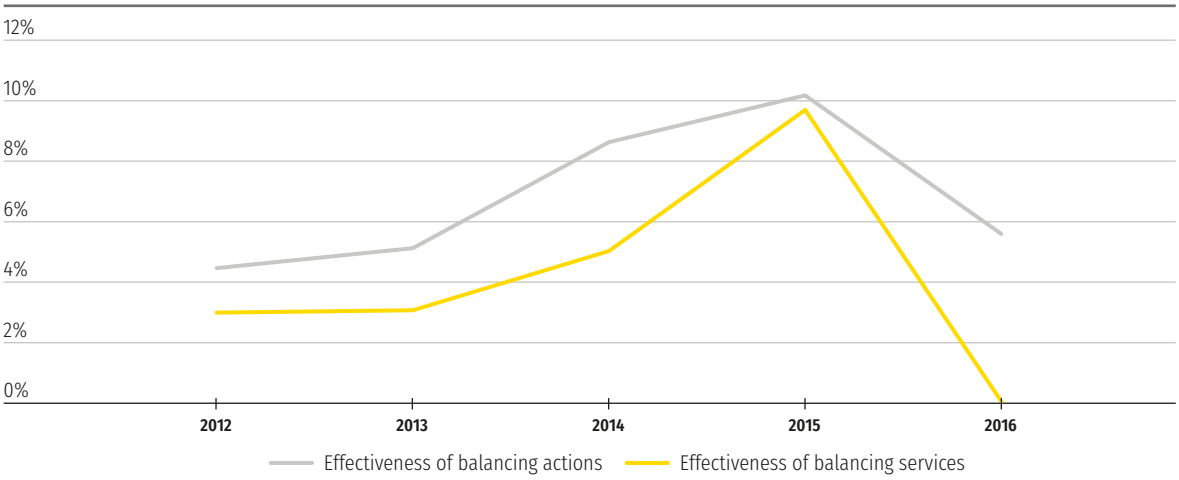
Sources: Energy Agency, Plinovodi

Trading on the trading platform significantly reduced the imbalance of balance groups leaders as well as amounts for balance the transmission system. Consequently, performance of imbalance settlement (the ratio between the quantities for daily imbalance settlement and transferred quantities for consumers in Slovenia), as well as the performance of balancing services (the ratio between quantities for settlement and transferred quantities for consumers in Slovenia). The lower value of an individual indicator means the more successful performance of balancing.

Balance differences in 2016 amounted to 47.1 GWh, which is 48% more than the year before. Two thirds of them were positive and one third negative. Depending on the transferred quantities at the exit points of the transmission system, the largest balance differences were recorded in summer months.

Figure 75

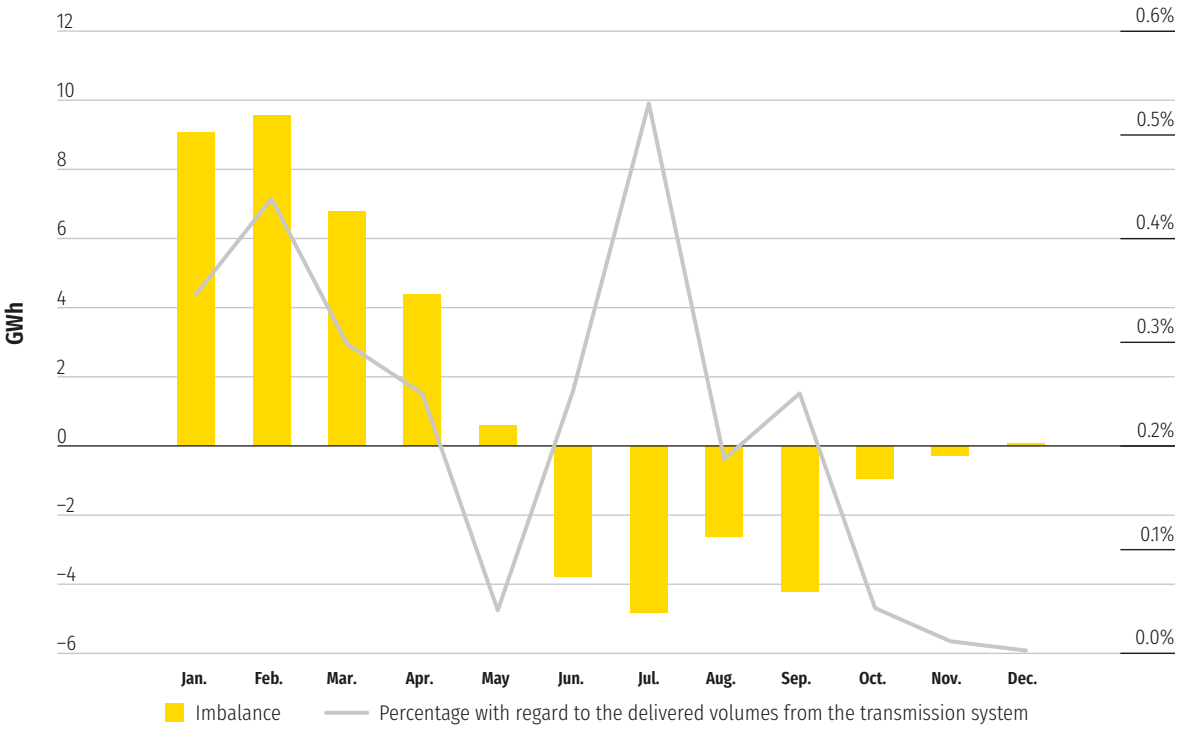
EFFECTIVENESS OF BALANCING ACTIONS AND BALANCING SERVICES



Source: Energy Agency

Figure 76

IMBALANCE IN 2016 BY MONTHS

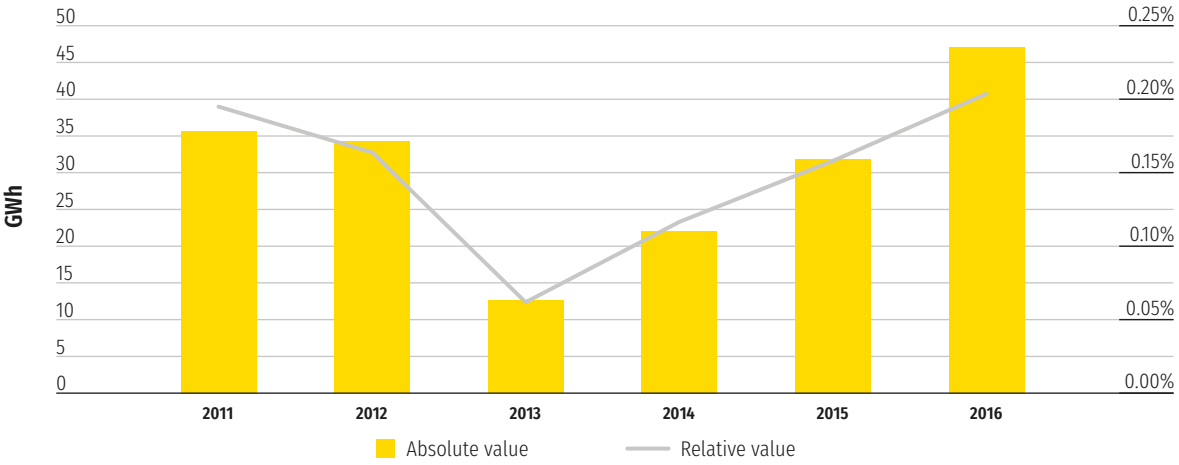


Sources: Energy Agency, Plinovodi

Movement of balance differences for the third consecutive year shows the increase of imbalances, both in absolute and relative value. Relative values are calculated according to the quantities transferred from the transmission system.

Figure 77

ABSOLUTE VALUE OF IMBALANCE IN GWH AND RELATIVE VALUE IN PERCENTAGES



Sources: Energy Agency, Plinovodi

The gas TSO did not have an access to storage facilities or a terminal for liquefied natural gas, and did not provide flexible internal capacity.

4.2.2.2 **The secondary market for transmission capacity**

Trading in the secondary market was carried out at borders entry point Ceršak and exit point Rogatec. Trading at entry point accounted for four-fifths of all subleased capacity and 70% of all subleased capacity.

Table 23

TRADING OF TRANSMISSION CAPACITIES IN THE SECONDARY MARKET

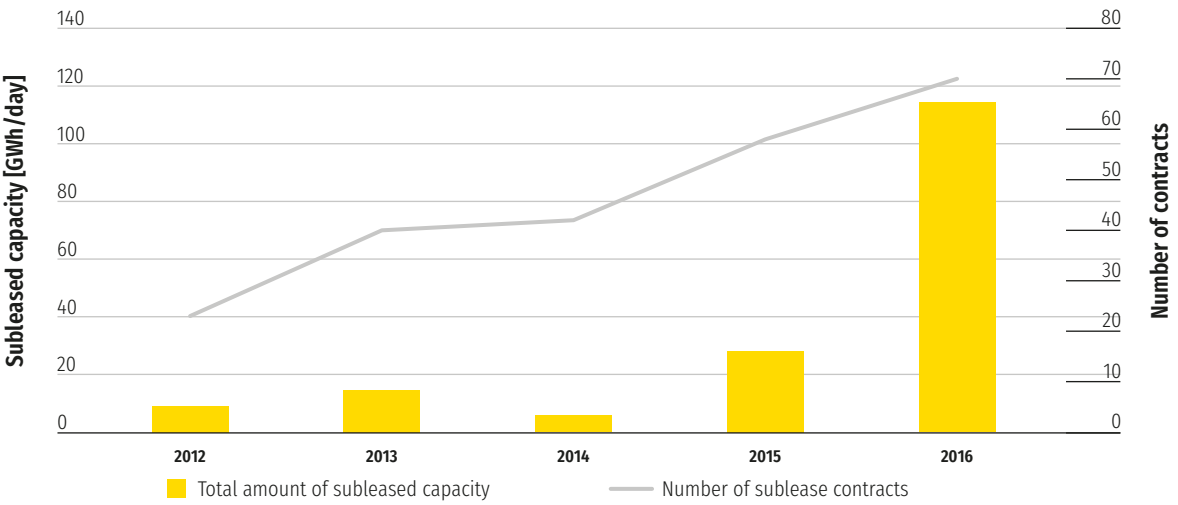
	Border entry points	Border exit points
Number of transmission capacity providers	17	5
Number of bids	50	22
Total amount of offered capacity in kWh/day	92,764,117	21,938,200
Number of enquirers for capacity	49	21
Number of enquires	46	12
Total amount of enquired capacity in kWh/day	92,604,117	21,778,200
Number of providers who sold transmission capacity	17	5
Number of enquirers who leased capacity	18	6
Number of signed contracts for sublease	49	21
Total amount of subleased capacity in kWh/day	92,604,117	21,778,200
Number of refused subleases	0	0

Sources: Energy Agency, Plinovodi

70 sublease contracts were signed, which was 21% more than the previous year. The quantity of subleased capacity was four times higher than in 2015, indicating the intensive development of the secondary market for transmission capacity.

Figure 78

TREND IN DEVELOPMENT OF THE SECONDARY CAPACITY MARKET



Sources: Energy Agency, Plinovodi

4.2.2.3 **Planning of non-daily metered off-takes**

In accordance with Commission Regulation (EU) No 312/2014 establishing a Network Code on Gas Balancing of Transmission Networks the Energy Agency as the regulatory authority in 2015 designated the gas TSO, company Plinovodi, as the forecasting party in balancing zone in Slovenia.

The forecasting party first prepared a draft of the forecasting methodology for non-daily metered off-takes, and after the public consultation in November published the final methodology on its website. The purpose of the methodology, which is based on a statistical demand model, is to provide the forecasts of a network users' non daily metered off-takes and, where appropriate, its subsequent allocation, providing information on inputs and off-takes on the distribution systems and putting forward this information to the transmission system operator for the system users.

Under the methodology, each non-daily metered off-take will be assigned with a load profile that will with the highest probability reflect the actual consumption and thus provide quality data for allocation of consumption type or according to the balancing group. The data will ensure to the balancing groups' leaders more effective imbalance settlement.

In order to apply the methodology on 1 October 2018, and to begin the official test period one year before the implementation, in 2016 started the planning of the information system, database exchanges between natural gas market participants, structures and types of databases, which will be subject to exchange, a model of standard load profiles for testing and preparing final allocation application, and also planning of software interfaces for connecting different information systems.

CASE STUDY

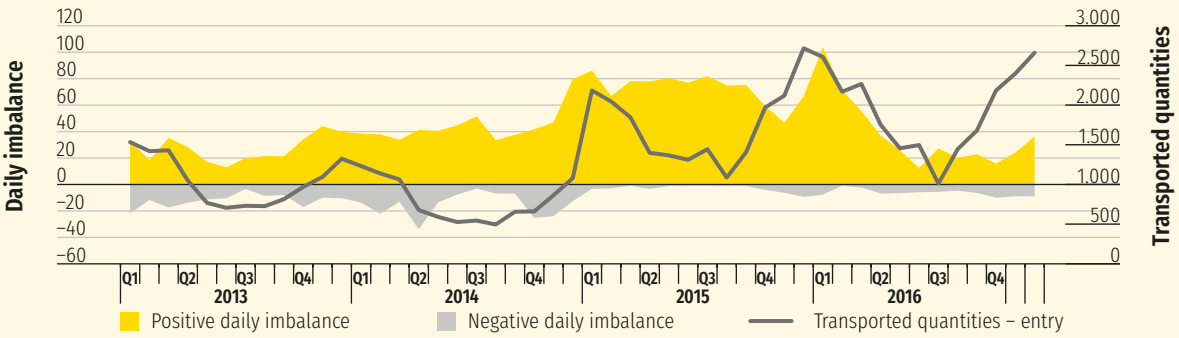
Imbalance settlement – transition to a trading platform

Before the implementation of Regulation (EU) No 312/2014 (BAL NC), the Rules for calculating deviations of the intake and offtake of natural gas from 2011 were in force. These rules gave the balancing groups' leaders very limited possibilities for imbalance settlement. Only annual and weekly forecasts were available, and the last revised forecast was possible by 10:00 on the day of delivery. Trading of surpluses and deficits was not possible. Daily data on imbalance settlement of individual balancing group were not available. Daily and cumulative monthly imbalance were calculated. The tolerance levels were between 3 and 6% for daily imbalance quantity, and between 15 to 40% for cumulative monthly imbalance quantity. Imbalance settlement was based on the basic price of natural gas CB, which was tied to the oil price. The penalties for imbalances were very high (from 9 to 51% of CB price).

Due to the intensive development of the Slovenian natural gas market, which started in 2012, the rules then in force were no longer appropriate, as they did not reflect market prices. Consequently, balancing group leaders in 2015 took advantage of a non-market mechanism for settlement and balancing of the transmission system for selling surpluses of gas, since the buying prices for positive imbalance quantity was very favourable. In that way, the total quantity of positive imbalance in 2015 were higher by 66% than 2014, and 169% higher than in 2013.

Figure P6-1

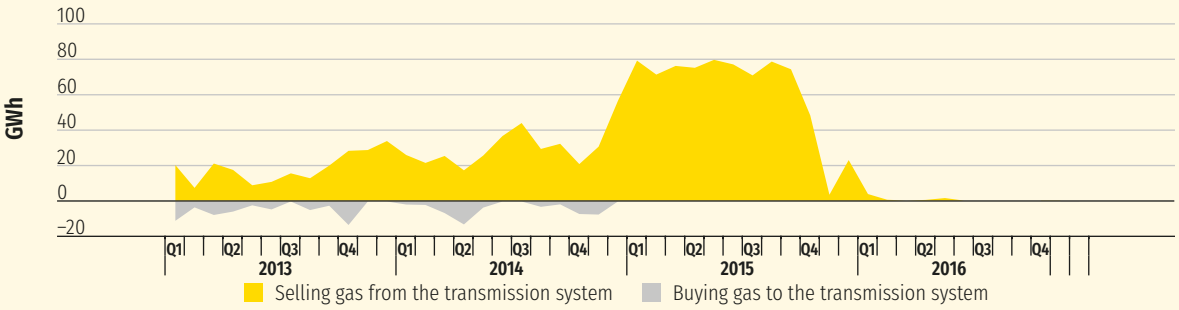
TOTALS OF DAILY IMBALANCE IN THE PERIOD 2013–2016



In 2015, the TSO in 2015 frequently had to implement measures for balancing of the transmission system. With a three-year contract on balancing the transmission system, it sold 108% more gas than the year before and 239% more gas than two years earlier.

Figure P6-2

QUANTITIES OF GAS FOR BALANCING THE TRANSMISSION SYSTEM IN THE PERIOD 2013–2016



By implementing Regulation (EU) No. 312/2014 and with the new System operating instruction in October 2015 on the balancing market purely market conditions were established. Balance group leaders have now up-to-date information on the status of their portfolio, adjusted forecasts within day are possible as well as trading with surpluses or deficits of gas via trading platform. Prices for imbalance settlement and also prices in the annual balancing contract are linked to the stock market index CEGHIX. Consequently, already in 2016 positive imbalance of balance group leaders halved, and the selling of gas for balancing transmission system was only one percent compared with the previous year.

4.2.2.4 **Multi-year development of the transmission network**

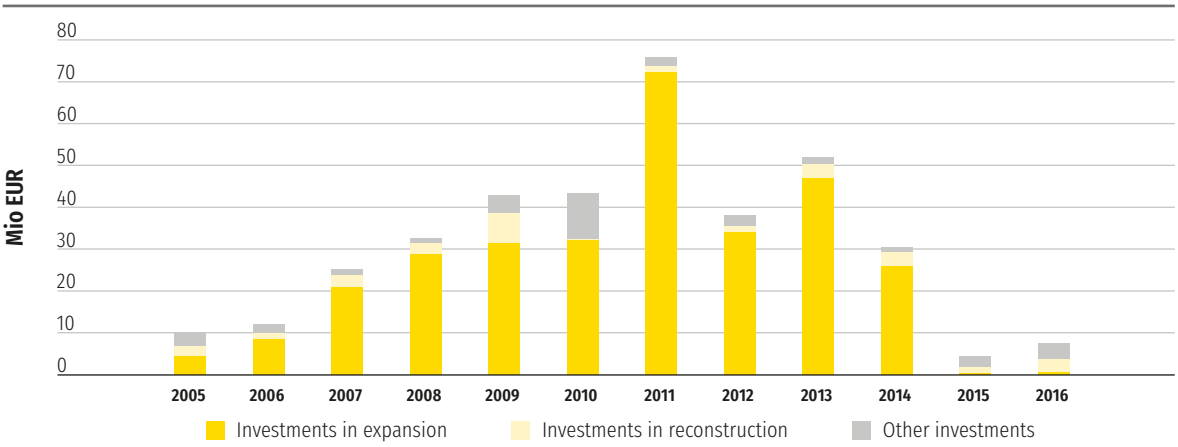
The investments in the natural gas transmission system

EUR 7.4 *million were allocated to the construction and reconstruction of the transmission system*

The gas TSO in 2016 for the construction and reconstruction of the transmission system allocated EUR 7.4 million, which is two thirds more than the year before, but still much less than in previous years. The vast majority of the necessary funds the TSO covered by the depreciation of fixed assets, and less than 5% by the TEN-E 2013 grants.

Figure 79

INVESTMENTS TO THE NATURAL GAS TRANSMISSION SYSTEM



Sources: Energy Agency, Plinovodi

After an intensive investment cycle, which ended with construction of a parallel central transmission system in 2014, the TSO's investment activities were in 2016 mostly related to the analysis and preparation of project documentation for investment to expand transmission system in regions without gas pipelines, and to the investment to reconstruct and increase reliability of operation.

The Energy Agency issued an approval to the development plan (Ten-Year Network Development Plan of the Gas Transmission Network for the Period 2017–2026). This development plan is in compliance with the Ten-Year Network Development Plan by ENTSOG TYNDP 2015. At the same time, the Energy Agency also approved the Investment Plan for the Period 2017-2029, in which in more detail investments to be carried out over the next three years are presented.

Table 24

MORE IMPORTANT INVESTMENTS ACTIVITIES IN THE PERIOD 2017–2019

Project	Activities
Management centre	Upgrade of the content and technical integration of management systems
M5 Vodice–Jarše, R51 Jarše–TE-TOL	Connection of thermal power plant
M6 Ajdovščina–Lucija	Building gas infrastructure in the Coast-Karst region
MMRP Rogatec – upgrading	Provision of bi-directional capacity with reverse flow
R51c Kozarje–Vevče	System loop

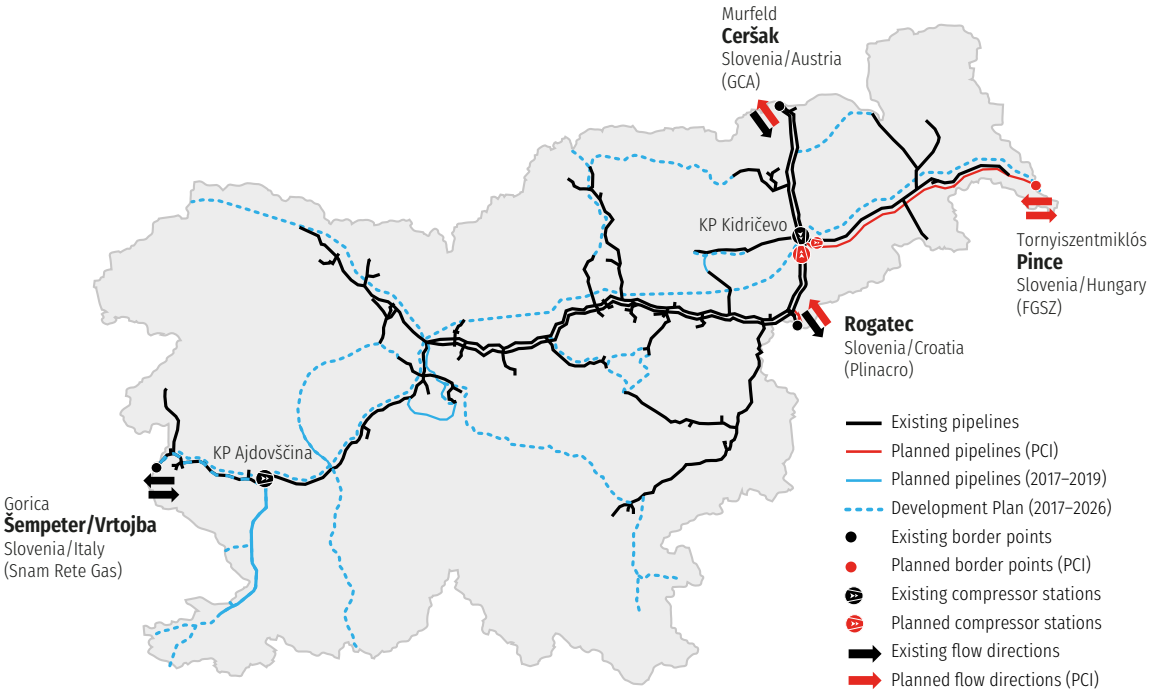
Sources: Energy Agency, Plinovodi

In 2016, the TSO was also preparing the documentation for Slovenia–Hungary interconnection and for strengthening the gas connection between Austria and Croatia, which would enable reverse flow of natural gas. The TSO wants both projects to be included on the third list of PCI, which is every two years prepared by the European Commission.

The gas connection between the Slovenian and Hungarian transmission system Kidričevo–Lendava–Tornyiszentmiklós–Nagykanizsa) would facilitate the access of Slovenian suppliers to Hungarian underground storages, and Hungarian suppliers to gas sources in Italy and North Adriatic. With that, in Slovenia the security of gas supply would improve, while Hungary would get new supply sources and supply routes from the west.

Figure 80

THE TRANSMISSION NETWORK IN DECEMBER 2016



Source: Plinovodi

The investments in the natural gas distribution systems

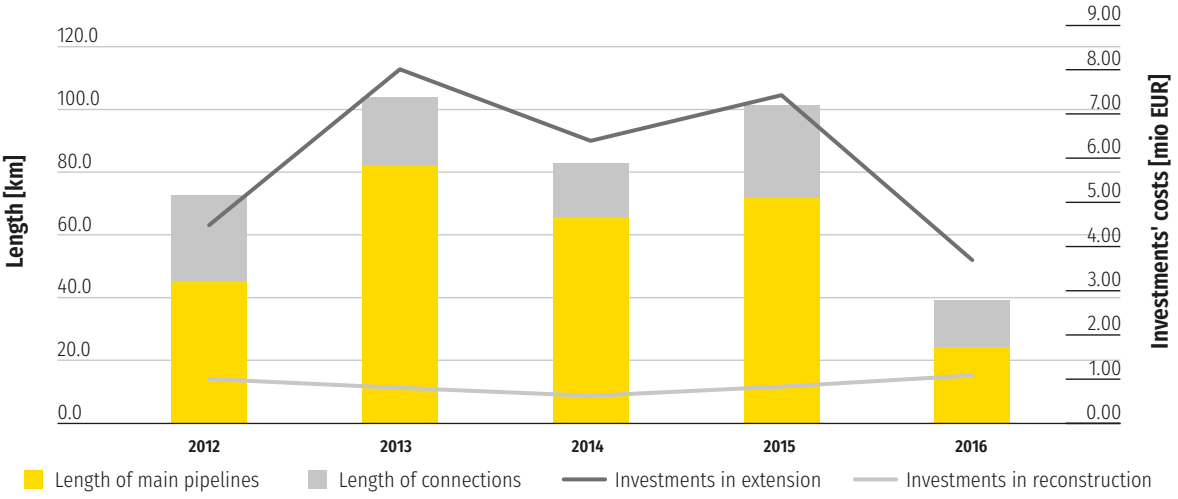
The gas DSOs built 43.1 kilometres of new pipelines. Out of these, 3.9 kilometres were activated, which is the lowest value of the new distribution pipelines construction in the last five years. The annual increment of new distribution pipelines was less than one percent. Around 4.8 kilometres of pipelines were reconstructed.

The total value of investments was EUR 5 million, of which investments in the extension of distribution systems amounted to EUR 3.9 million. Compared to the previous years, the investments to reconstruction and increase in security of supply were slightly higher and amounted to 22% of the value of all investments.

43.1 *kilometres of new pipelines in the worth of EUR 3.9 million*

Figure 81

TREND OF BUILDING NEW PIPELINES AND INVESTMENTS COSTS

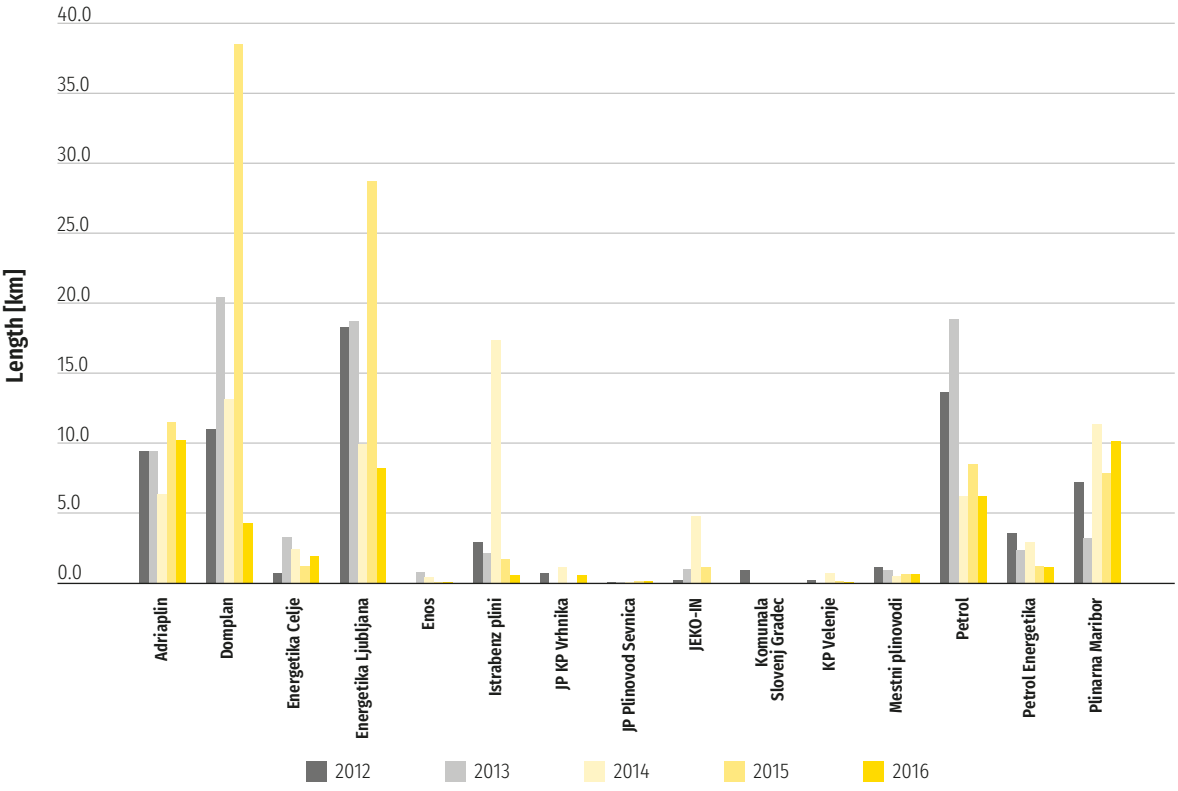


Source: Energy Agency

Figure 82 shows the intensity of the construction of new pipelines by individual DSO. On average, each DSO in 2016 built 2.9 kilometres of new pipelines, but in fact five DSOs built nine tenths of new pipelines, and the rest 10 operators built only five kilometres of new pipelines.

Figure 82

LENGTH OF NEW DISTRIBUTION PIPELINES IN THE PERIOD 2012–2016



Source: Energy Agency

4.2.2.5 **Security and reliability of operation and quality of supply**

The maximum daily peak load of the transmission system was recorded on 22 December 2016 and was 1,870,579 kWh/h. The transmission was carried out in accordance with plans and without any operational disruptions. The capacities of the border entry/exit points were sufficient since no contractual or physical congestion occurred.

The gas TSO issued seven approvals for connection and carried out one physical connection to the transmission network. The average duration of physical connection was 49 days, together with the administrative procedure 58 days.

The gas DSOs received 1,767 applications for connection approval and issued 1,761 approvals. The number of issued approvals decreased by almost 16% compared to the previous year or the average number of issued approvals over the last five-year period. The gas DSOs connected 1,446 new customers.

The gas DSOs connected 1,446 new customers

The average duration of the connection procedure of new consumers was at 12 DSOs on average shorter than 30 days after the submission of an application for connection to the distribution system. The physical connection to the network was made on average in the period from one to three days; at eight DSOs in one day. At two operators the connection procedure lasted 20 or 30 days, which a significant difference.

By performing regular and unplanned maintenance the gas DSOs provided reliable and safe operation of the networks. The TSO carried out 12 planned, and 264 unplanned maintenance works on the transmission network. There were no interruptions of supply.

On the distribution networks more than 5,100 planned works were carried out, the number increased by 21% in comparison to the previous year, while the total duration of works was reduced by less than 4%. Execution of planned activities resulted in 608 hours of gas supply interruptions, which is almost 56% less than the year before. In the case of nine operators, the planned works were carried out without interruptions or suspension of supply. At two operators the total duration of interruptions was less than 15 hours. The recorded time of individual interruption was at least one hour and up to 56 hours.

Unplanned interventions on distributions systems were 486 and caused 71 supply interruptions. The total time of unplanned interventions was 7,939 hours, while almost 96% of the time is referring to only one event or more precisely an interruption due to a landslide in the area of one DSO. At six operators there were no such interruptions.

On distribution networks 429 works were also carried out on demand and for the needs of third parties; the total time of these works amounted to 2,808 hours. Table 25 present the number of connections, time spent for carrying out individual activities in the process of connecting consumers to the network, and data on performed maintenance activities on the transmission and distribution systems over the period 2014–2016.

Table 25

PARAMETERS OF CONNECTION AND MAINTENANCE WORK PERFORMED

	Transmission system operator			Distribution system operators		
		2015	2016	2014	2015	2016
Connection-related services						
Number of issued approvals	10	13	7	1,825	2,101	1,761
Average length of administrative procedure [days]	11	14	9	12	10	15
Maximum length of administrative procedure [days]	–	–	–	20	20	80
Minimum length of administrative procedure [days]	–	–	–	1	1	1
Number of performed connections	3	6	1	1,653	1,168	1,446
Average length of the entire connection procedure [days]	103	63	58	27	25	22
Maximum length of the entire connection procedure [days]	–	–	–	60	60	60
Minimum length of the entire connection procedure [days]	–	–	–	4	4	4
Maintenance work on the system						
Number of performed planned works	12	12	12	4,629	4,216	5,108
Total duration of the planned work [hours]	108,088	108,560	107,144	118,639	109,961	105,905
Total duration of supply interruption due to planned work [hours]	11	48	0	1,764	1,368	608
Maximum duration of each scheduled interruption [hours]	11	48	0	131	103	88
Minimum duration of each schedule interruption [hours]	11	48	0	16	9	7
Number of performed unplanned interventions	195	320	264	476	428	486
Total duration of unplanned interventions [hours]	521	789	502	1,947	2,097	1,761
Number of supply interruptions due to unplanned interventions	0	0	0	94	83	71
Total duration of supply interruption due to unplanned interventions [hours]	0	0	0	372	482	7,939

Source: Energy Agency

4.2.3 The network charges for gas transmission and distribution systems

4.2.3.1 Setting the network charge

The network charge for the transmission and distribution systems is set by the system operators within the regulatory framework with the approval given by the Energy Agency. The foundations for setting the network charge for 2016 for the transmission system were provided by Act on the methodology for determining the regulatory framework of the natural gas transmission system operator and Act Determining the Methodology for Charging for the Network Charge for the Gas Transmission System, and for the distribution systems Act on the methodology for determining the regulatory framework of the gas distribution system operator and the Act Determining the Methodology for Charging for the Network Charge for a Gas Distribution Network. All four legislative documents were prepared and adopted by the Energy Agency in 2015. In the methodologies for setting the network charge the mode, conditions, and method of setting the network charge, and the criteria for establishing the eligible costs of the system operator, which also include incentives for more efficient operation of the system operator, are determined. When setting the network charge the method of regulated network charge is used, which determines a causal relationship between the eligible costs and the revenues of the system operator. Network charge, which was in 2016 a part of the price for the use of the network is an annual revenue of the system operator, used for covering the eligible costs of a system operator as a provider of service of general economic interest.

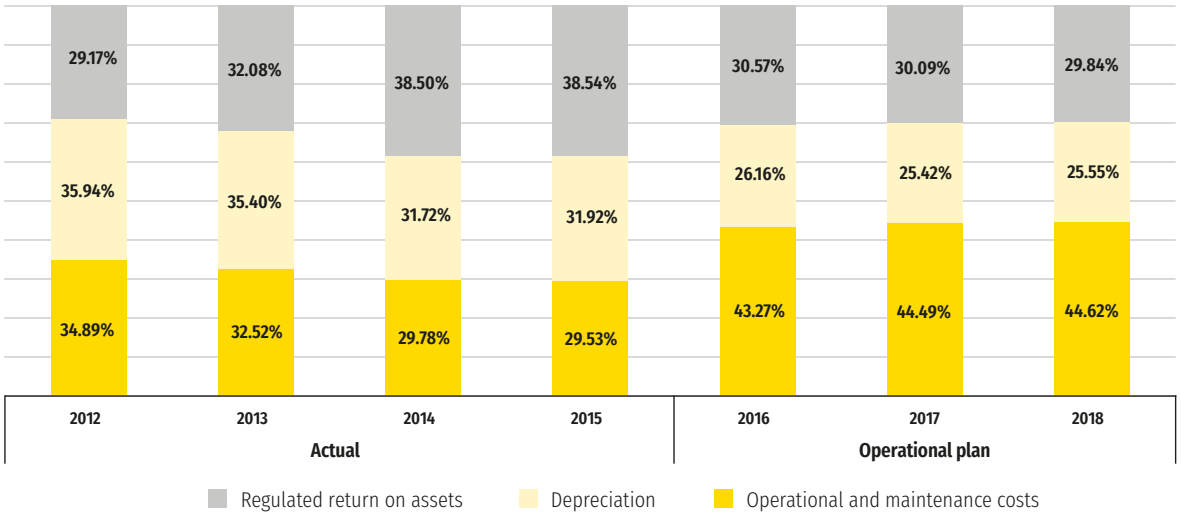
In the regulatory period 2016–2018 for the TSO EUR 181.9 million, and for the DSOs together EUR 163.4 million of planned eligible costs

System operators for the regulatory period, which is determined on the basis of the methodology setting the network charge, establish the regulatory framework in a way that with the network charge the costs for carrying out the activities of the system operator. These include costs of the operation and maintenance, depreciation costs and regulated return on revenues. In setting the network charge, the system operators take into account also other incomes from operating activities as well as surpluses and deficits of the network charge from previous years.

For the period from 1 January 2016 to 31 December 2018, the gas TSO in the regulatory framework set the eligible costs in the amount of EUR 181.9 million. Individual gas DSOs for the same period planned eligible costs in the amount of EUR 163.4 million. The structure of eligible costs for systems operators in the period 2012–2018 is presented in Figure 83 and 84.

Figure 83

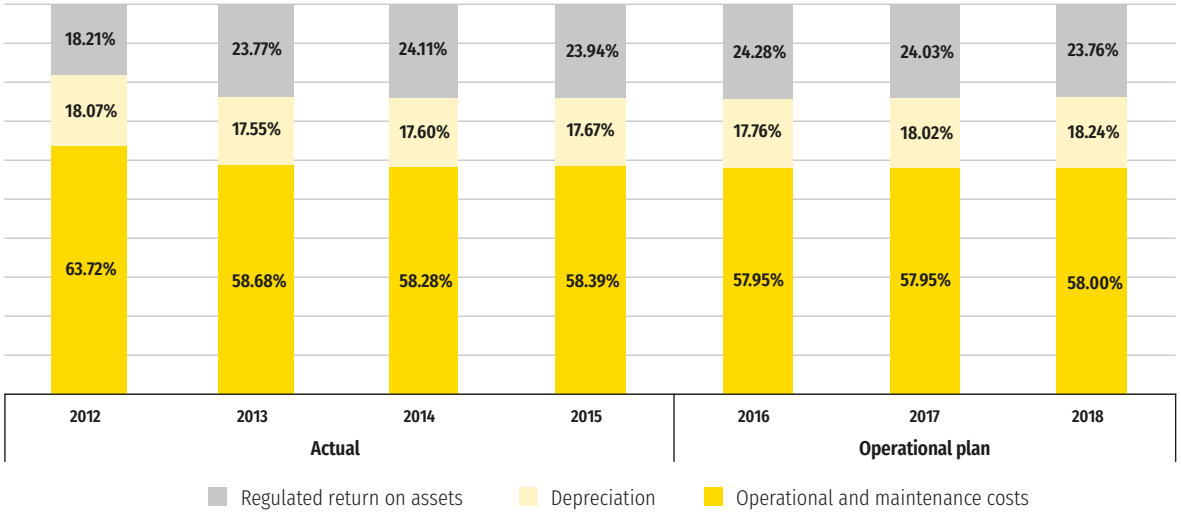
THE STRUCTURE OF THE ELIGIBLE COSTS OF THE TRANSMISSION SYSTEM OPERATOR



Source: Energy Agency

Figure 84

THE STRUCTURE OF THE ELIGIBLE COSTS OF THE DISTRIBUTION SYSTEM OPERATORS



Source: Energy Agency

System operators must after the end of each calendar year identified the deviation from the regulatory framework for this calendar year. Deviation from the regulatory period is determined as the difference between the planned and actual eligible costs and as the difference between planned and actual financial resources for covering eligible costs. The Energy Agency must issue a separate decision if it concludes that deviations identified by an individual system operator were not calculated in accordance with the methodology.

4.2.3.2 **The network charge for the natural gas transmission system**

The network charge for the gas transmission system is charged to the users of the transmission system with the following items:

- network charge for entry points;
- network charge for exit points;
- network charge for own use;
- network charge for metering.

The network charge tariffs are determined by the gas TSO before the start of the regulatory period of each year of the period and with the Energy Agency's prior consent to the regulatory framework.

2.1%
on average were higher entry and exit charges for the use of the natural gas transmission system

The method for setting the network charge for entry and exit points is based on the method of entry-exit points, which means a system of uniform tariffs for individual entry or exit point. Calculation of the network charge for entry and exit points takes into account the leased contractual capacity. The network charge for own use depends on the transferred gas at an individual exit point. The network charge for metering takes into account the size of the measuring device, the number of pressure reduction units, and the ownership of a measuring device at the exit points.

In accounting the network charge for standard capacity products, which determine daily, monthly and quarterly lease of capacity, is in addition to the network charge also considered the network charge item. The charging for the interruptible capacity is conducted in a way that in the event of termination or reduction of the contractual capacity the gas TSO charges a system user the network charge with the corresponding amount of discount.

The entry and exit network charges for 2016 increased by 2.1% in comparison with 2015. In 2016, for the first time was determined the tariff for entry points inside Slovenia in the amount of 0.07973 EUR/kWh/day for the standard product of yearly capacity.

4.2.3.3 **The network charges for the natural gas distribution systems**

Consumers connected to the distribution systems pay the network charge to the system operators; the network charge includes the costs related to the use of the transmission system at the exit points in Slovenia. When setting the network charge the method of regulated network charge is used, which determines a causal relationship between the eligible costs and the revenues of the system operator.

Tariffs for the distribution networks are unified for individual consumers groups for individual geographical areas, where a DSO carries out the distribution activity. Tariffs of the same DSO may differ only in cases where the systems are not comparable. Prices for all typical customers in different areas are not the same as the prices reflect different costs of DSOs in the individual geographical area. Individual consumers groups are defined in line with the methodology for charging for the network charge.

Tariffs for the distribution networks were determined by the individual acts on setting the network charge for the distribution system and for individual areas.

In 79 municipalities 18 acts on setting the network charge for the distribution system were used.

The network charge for the distribution system depends on the leased distribution capacity and power, distributed volumes of natural gas, the metering device and other parameters under the methodology for calculation of the network charge.

DSO charged for the network charge by disclosing separately:

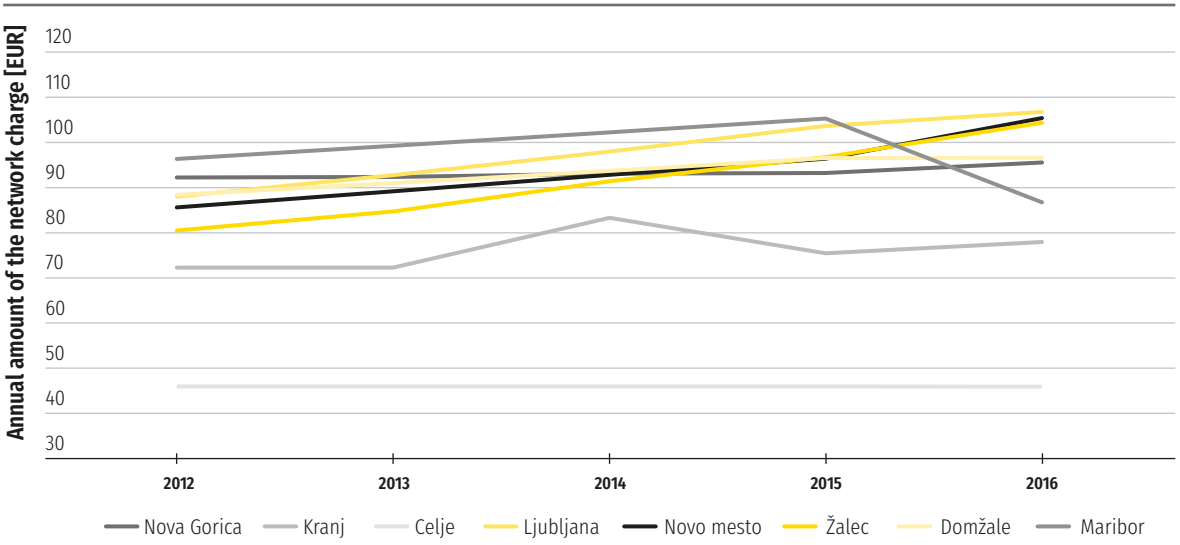
– the amount of natural gas distribution and
– the metering charging.

Figures 85, 86, 87 and 88 show the movement of distribution network charges for a typical household consumer and medium-sized industrial consumers in the period from 2012 to 2016 in the eight largest municipalities; in these municipalities more than 72% of all consumers connected to the distribution systems are supplied with gas.

For small household consumers (consumer group D1, annual consumption 350 Sm³) in five out of eight geographical areas the annual amount for network charge compared to the previous year in 2016 slightly increased. In the case of medium-sized household consumers (group D2, annual consumption 3,000 Sm³) the network charge increased in seven geographical areas, and for large household consumers (group D3, annual consumption 20,000 Sm³) in five geographical areas. For medium-sized and large household consumers in individual cases the annual amounts for the network charge were lower than five years ago. The network charge for medium-sized industrial consumers (group I3, annual consumption 800,000 Sm³) on average level increased by around 4%. The changes in annual costs are related to all eight largest municipalities, while in the five-year period the annual amounts of network charges varied depending on economic and technical criteria of the operation of the distribution system in an individual municipality. Differences in annual amounts of the network charge by individual municipalities are an indication of incomparable structure of consumers and their consumption as well as age and extent of the distribution system.

Figure 85

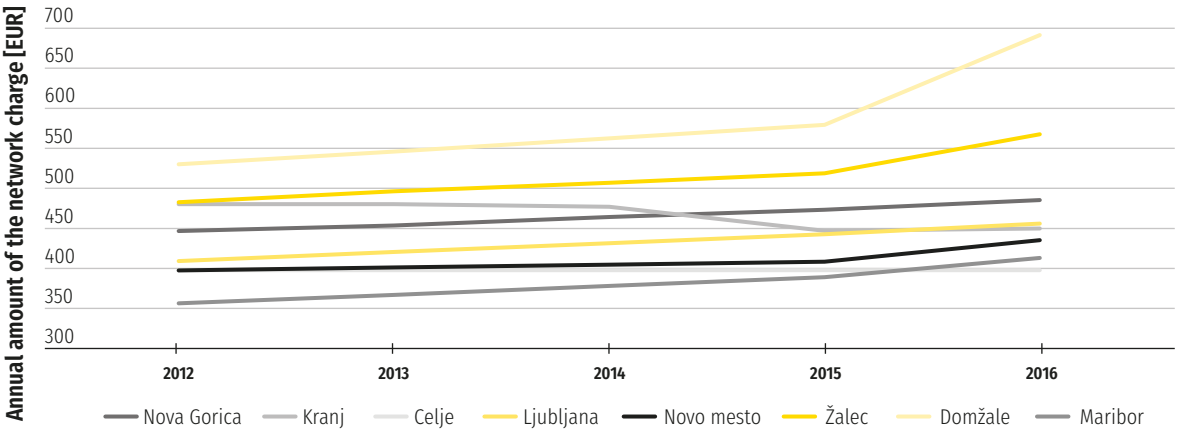
THE ANNUAL AMOUNT OF THE NETWORK CHARGE FOR SMALL HOUSEHOLD CONSUMERS – D1 [350 Sm³]



Source: Energy Agency

Figure 86

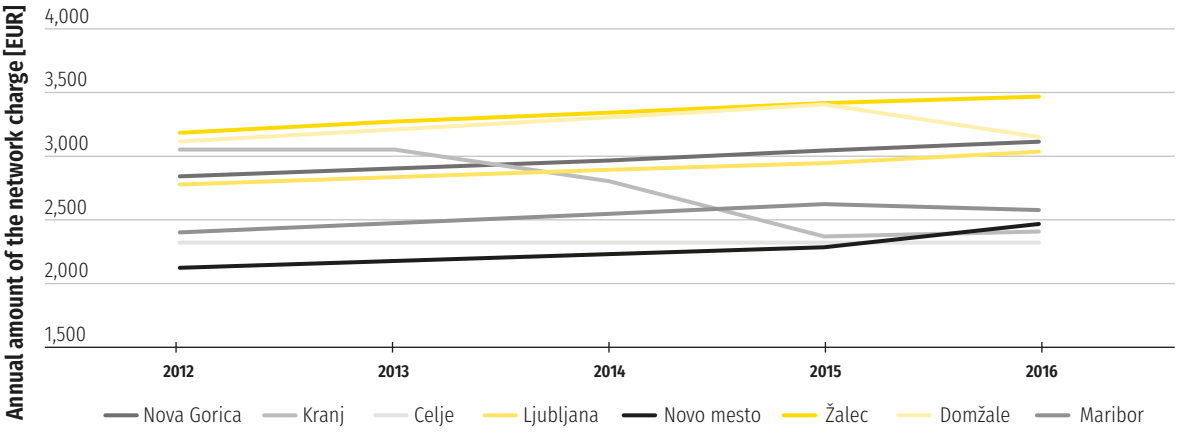
THE ANNUAL AMOUNT OF THE NETWORK CHARGE FOR MEDIUM-SIZED HOUSEHOLD CONSUMERS – D2 [3,000 Sm^3]



Source: Energy Agency

Figure 87

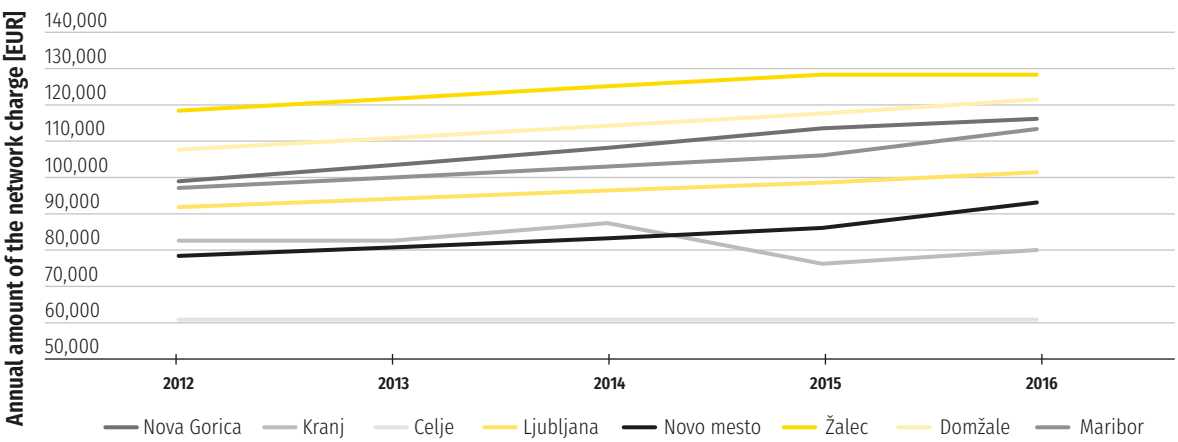
THE ANNUAL AMOUNT OF THE NETWORK CHARGE FOR LARGE HOUSEHOLDS – D3 [20,000 Sm^3]



Source: Energy Agency

Figure 88

THE ANNUAL AMOUNT OF THE NETWORK CHARGE FOR MEDIUM-SIZED INDUSTRIAL CONSUMERS – I3 [800,000 Sm^3]



Source: Energy Agency

By the end of 2016, the period in which for calculation of natural gas distribution and supply as an accounting unit was used a standard cubic meter (Sm³) ended. In accordance with the provisions of the new Regulation on the operation of the natural gas market, which entered into force on 8 October 2016, as the new unit of account is determined kilowatt or megawatt hour (kWh, MWh); the Energy Agency in compliance with these provisions in December set up the conditions for a successful transitions to a new billing method by preparing and issuing Act amending the Act on the Methodology for Determining Network Charge for the Natural Gas Distribution System. This act, among other, determines: the method of conversion by the Energy Agency already approved distribution tariffs' values (previously expressed in Sm³), the use of data on the upper calorific value of natural gas for the purpose of converting tariffs and determination of accounting quantities in kWh, as well as the method of converting measured volumetric units into a normal cubic meter (Nm³) if a metering device does not measure the consumption in Nm³, the method for determining the accounting quantities in kWh, and publication of billing information.

New accounting unit kilowatt or megawatt hour (kWh, MWh)

4.2.4 Capacity at border points

The Slovenian transmission system is connected with neighbouring transmission systems in three border points, that is in Ceršak, Rogatec and Šempeter. The transmission of natural gas through the border point Ceršak is enabled only in direction from Austria to Slovenia, and through the border point Rogatec the transmission is possible in the direction from Slovenia to Croatia. At the border point Rogatec the gas TSO has been granted an exemption from enabling bi-directional capacity. The transmission of natural gas through the border point Šempeter is possible in both directions, from Italy to Slovenia and vice versa.

The capacities were allocated on the basis of market methods through the online booking platform PRISMA. Auctions of monthly and daily standard capacity products were carried out. There were 5,379 auctions announced at which individual and bundled capacity were offered.

5,379
capacity auctions based on market methods

Table 26
TRANSMISSION CAPACITY AUCTIONS IN 2016

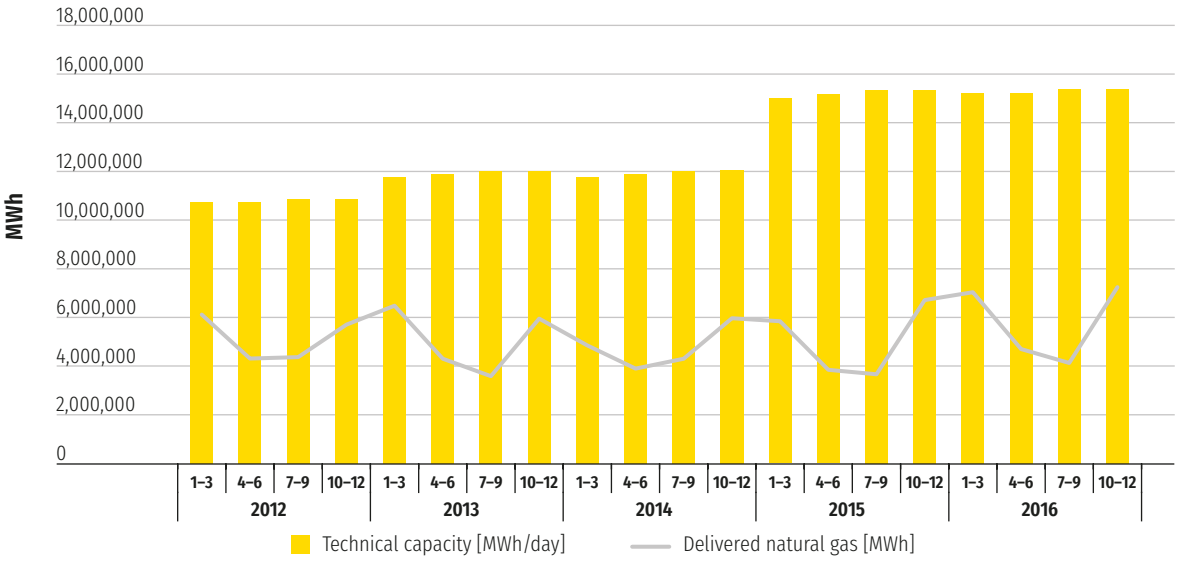
Year 2016		Number
All announced auctions		5,379
Successful auctions	Annual	6
	Quarterly	7
	Monthly	27
	Daily	319
	Within-day	81
Successful auctions of bundled capacity		197
Successful auctions of interruptible capacity		85

Source: Plinovodi

The individual connection points of the transmission system have different technical capacity, which is variously utilised within long-term and short-term capacity leases.

Figure 89

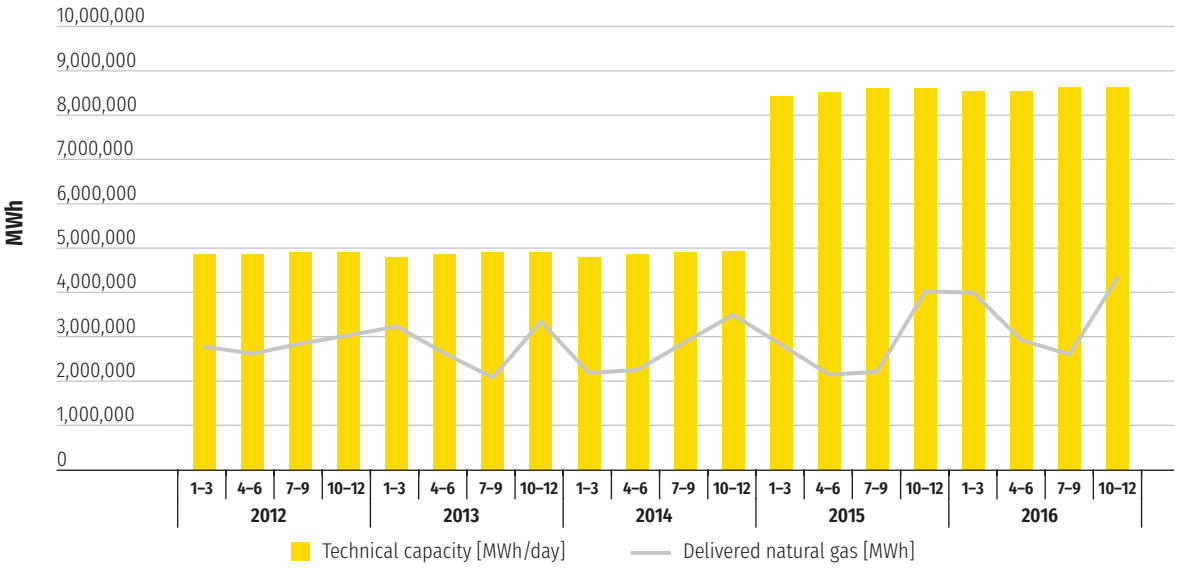
QUARTERLY TECHNICAL CAPACITY AT BORDER ENTRY POINTS AND DELIVERED VOLUMES OF NATURAL GAS TO SLOVENIA IN PERIOD 2012–2016



Sources: Energy Agency, Plinovodi

Figure 90

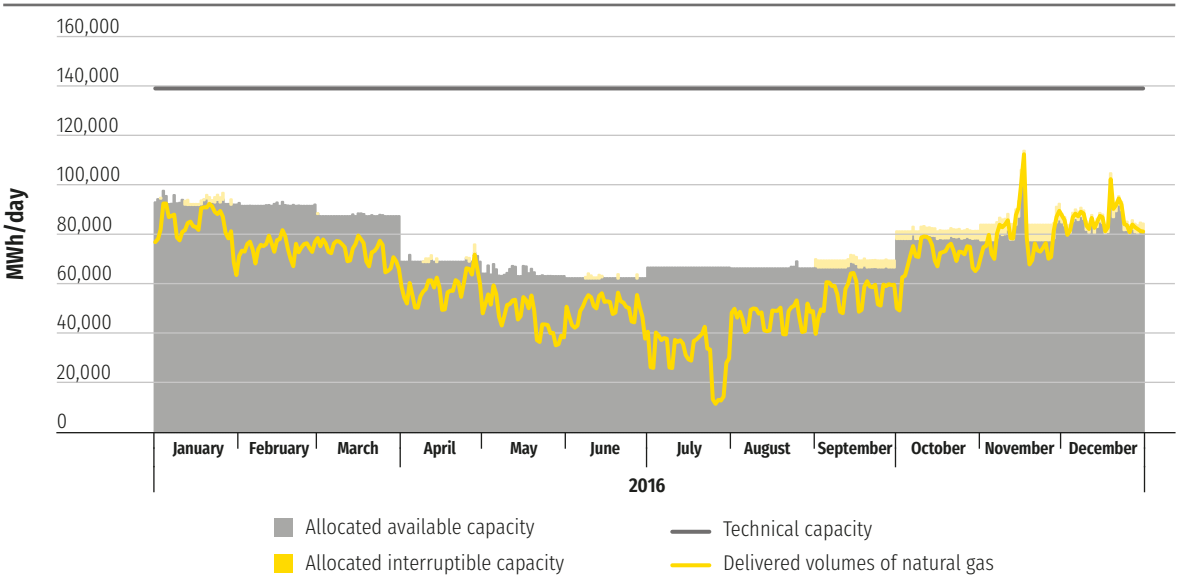
QUARTERLY TECHNICAL CAPACITY AT BORDER ENTRY POINTS AND DELIVERED VOLUMES OF NATURAL GAS FROM SLOVENIA IN PERIOD 2012–2016



Sources: Energy Agency, Plinovodi

Figure 91

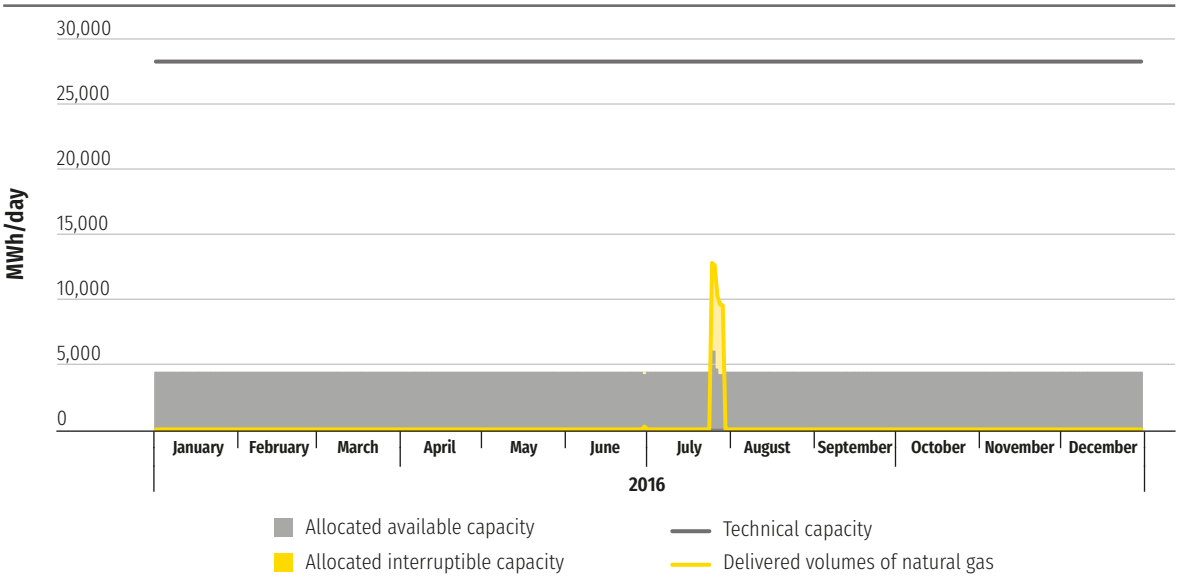
DYNAMICS OF DAILY DELIVERED VOLUMES OF NATURAL GAS, TECHNICAL CAPACITY, AVAILABLE ALLOCATED, AND INTERRUPTIBLE CAPACITY AT THE ENTRY BORDER POINT CERŠAK



Sources: Energy Agency, Plinovodi

Figure 92

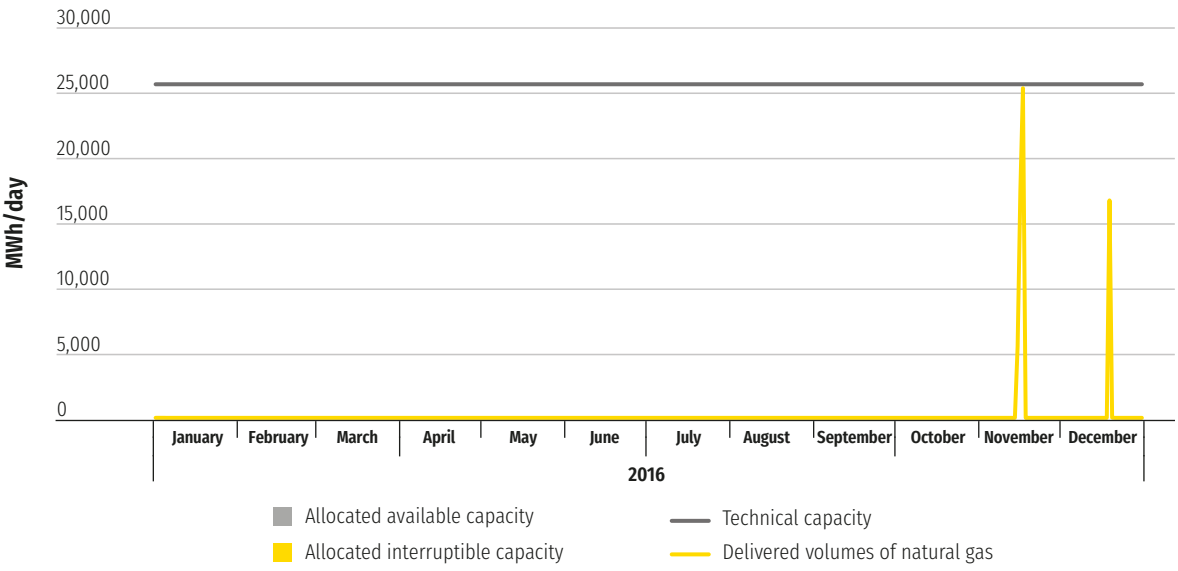
DYNAMICS OF DAILY DELIVERED VOLUMES OF NATURAL GAS, TECHNICAL CAPACITY, AVAILABLE ALLOCATED, AND INTERRUPTIBLE CAPACITY AT THE ENTRY BORDER POINT ŠEMPETER



Sources: Energy Agency, Plinovodi

Figure 93

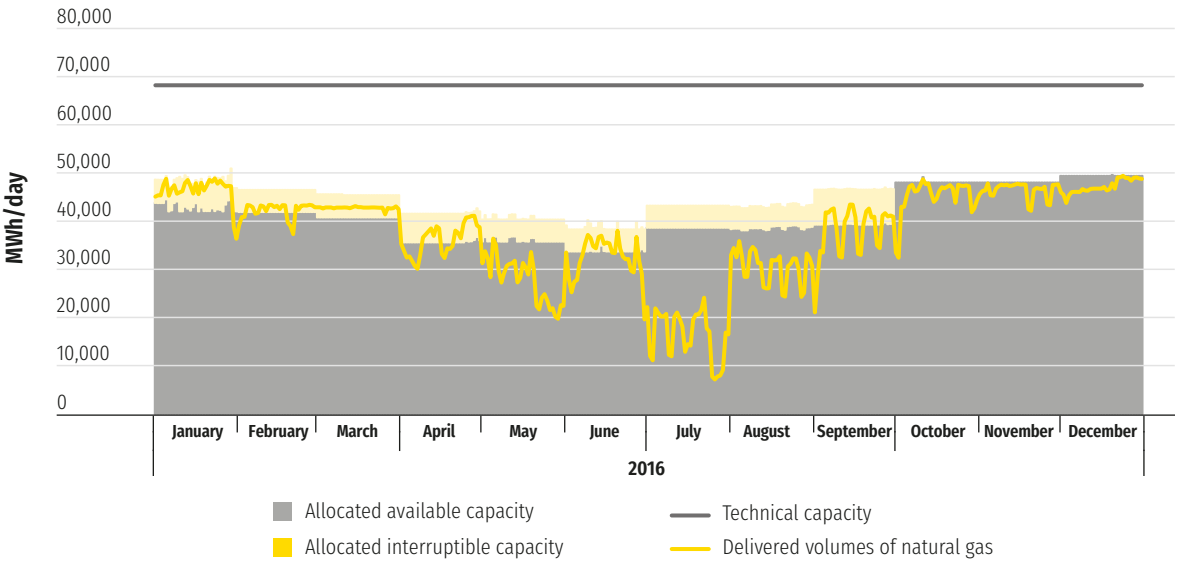
DYNAMICS OF DAILY DELIVERED VOLUMES OF NATURAL GAS, TECHNICAL CAPACITY, AVAILABLE ALLOCATED, AND INTERRUPTIBLE CAPACITY AT THE EXIT BORDER POINT ŠEMPETER



Sources: Energy Agency, Plinovodi

Figure 94

DYNAMICS OF DAILY DELIVERED VOLUMES OF NATURAL GAS, TECHNICAL CAPACITY, AVAILABLE ALLOCATED, AND INTERRUPTIBLE CAPACITY AT THE EXIT BORDER POINT ROGATEC



Sources: Energy Agency, Plinovodi

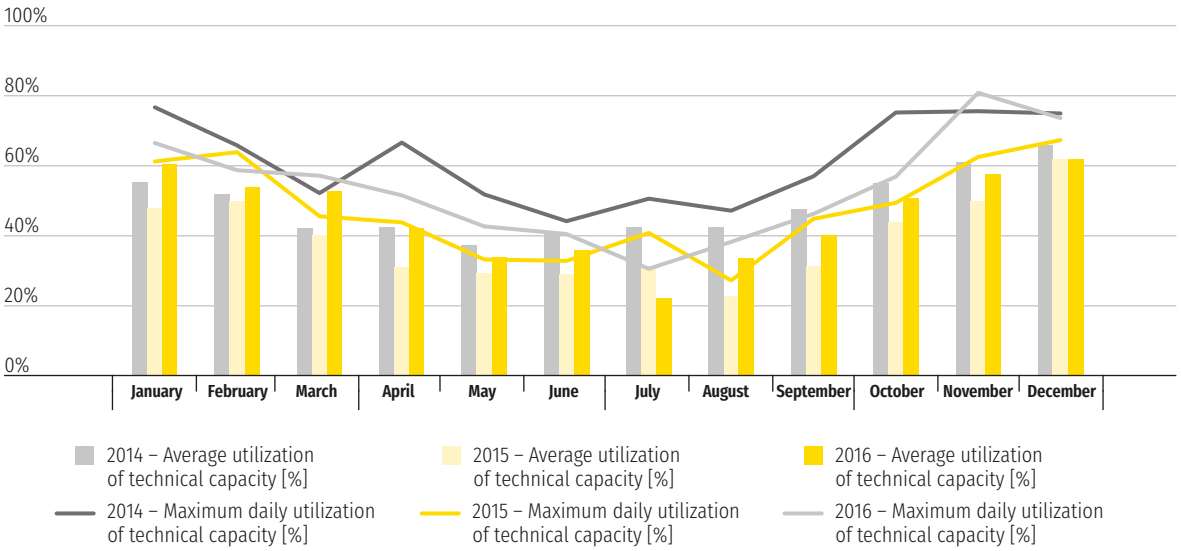
Capacity utilization of connection points with adjacent transmission systems slightly decreased

Capacity utilization of connection points with adjacent transmission systems slightly decreased in comparison with previous years. The highest utilization of technical capacity was achieved at the exit point Šempeter (99.1%), but only for one day out of five, when the transfer was carried out through this exit point. During the year, the most utilised was the connection point Rogatec towards Croatia, where the technical capacity on monthly level was, on average, utilised to 55.2%. At this point also the maximum utilization of monthly capacity, 69.1%, was achieved, but was by 9% lower than the previous year.

In the most efficient entry border point Ceršak the maximum utilization of daily capacity was achieved, that was 80.8%; the average monthly utilization of technical capacity was 45.4%, and the highest monthly utilization was 61.8%, which the same as in 2015. The highest daily utilization of technical capacity at the common exit point in Slovenia was with 61.1% for 2.4% higher than the year before, and the average monthly utilization of 34.6% did not differ much from the value in 2015, while the highest monthly utilization, 52%, was by 2.3% higher than the year before.

Figure 95

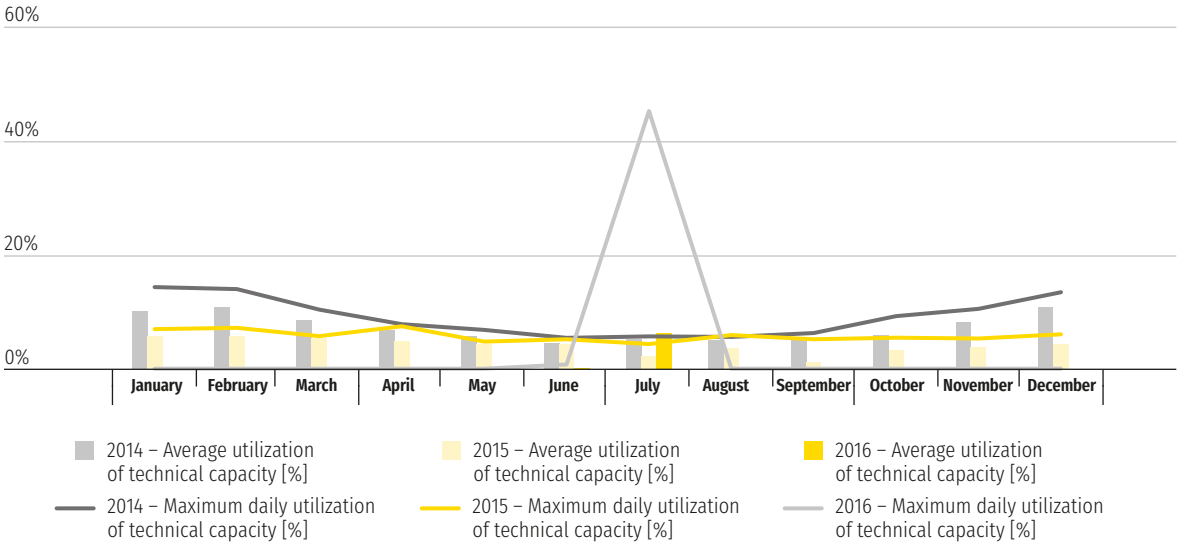
MAXIMUM DAILY AND AVERAGE MONTHLY UTILIZATION OF CAPACITY AT THE ENTRY BORDER POINT CERŠAK



Sources: Energy Agency, Plinovodi

Figure 96

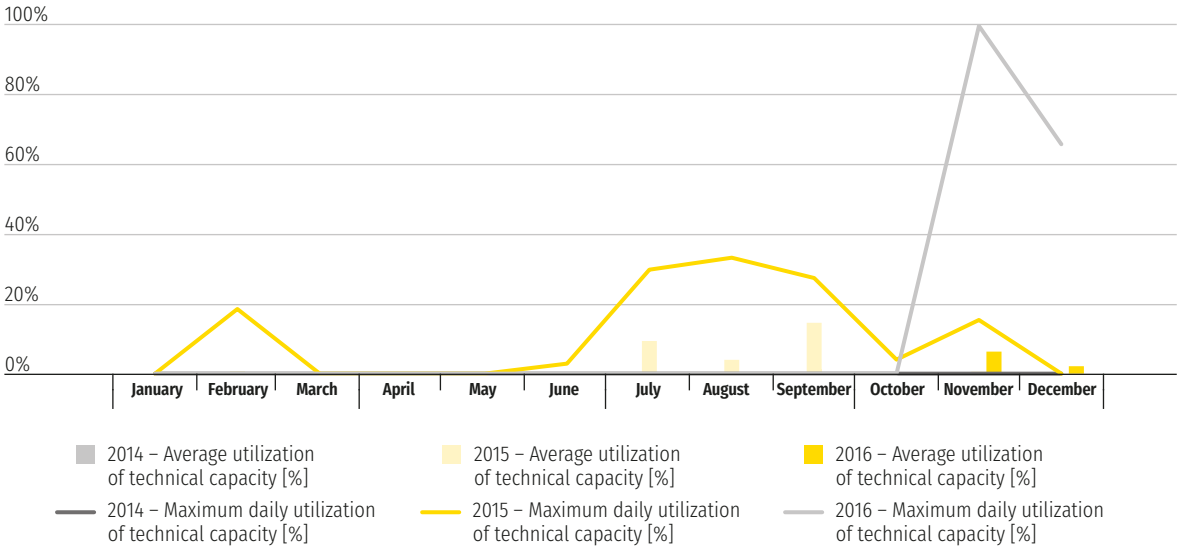
MAXIMUM DAILY AND AVERAGE MONTHLY UTILIZATION OF CAPACITY AT THE ENTRY BORDER POINT ŠEMPETER



Sources: Energy Agency, Plinovodi

Figure 97

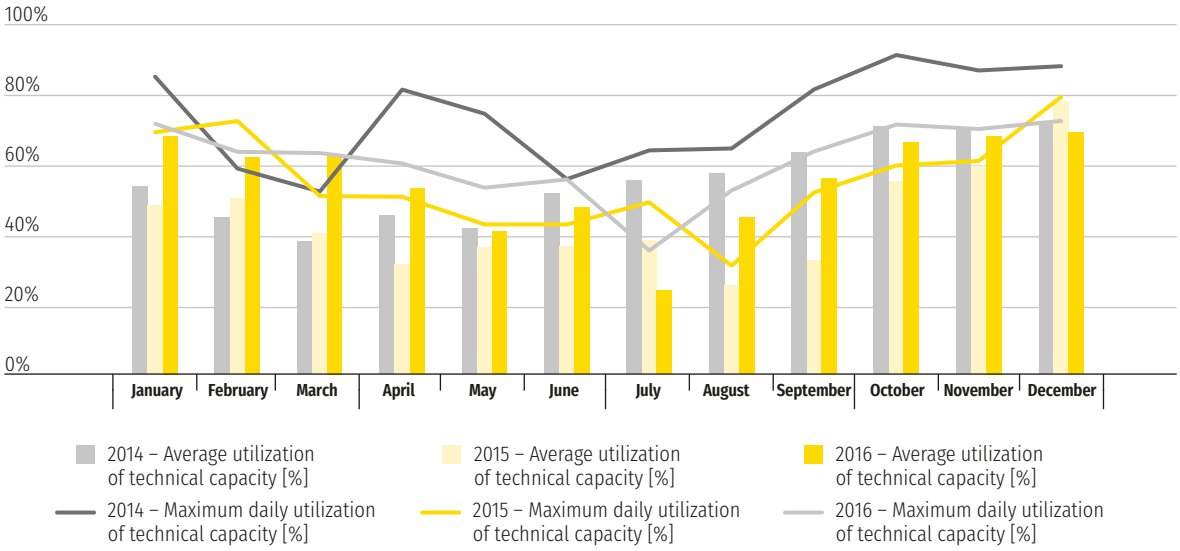
MAXIMUM DAILY AND AVERAGE MONTHLY UTILIZATION OF CAPACITY AT THE EXIT BORDER POINT ŠEMPETER



Sources: Energy Agency, Plinovodi

Figure 98

MAXIMUM DAILY AND AVERAGE MONTHLY UTILIZATION OF CAPACITY AT THE EXIT BORDER POINT ROGATEC



Sources: Energy Agency, Plinovodi

There were no restrictions on the access to the Slovenian transmission system

There were no restrictions on the access to the Slovenian transmission system. In 2016 there were also no restrictions on the access to border entry-exit points since the demand for capacity was within the available capacity. Therefore, the TSO did not need to take measures to eliminate congestion.

4.2.5 Ensuring compliance with energy legislation

The Energy Agency must in accordance with Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC (hereinafter referred to as Directive 2009/73/EC) comply with and carry out all relevant legal binding decisions of the European Commission and ACER to ensure the compliance with this Directive and Regulation (EC) No 715/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the natural gas transmission networks and repealing Regulation (EC) No 1775/2005 (hereinafter referred to as Regulation (EC) No 715/2009).

The Energy Act issued 12 approvals to the TSO's commercial and financial contracts with vertically integrated company and gave consents to the Rules on terms and conditions for capacity allocation mechanisms at interconnection points of the transmission system through auctions, and to the Rules on the procedure for the allocation of capacity on the transmission system for the entry and exit points in the Republic of Slovenia, the congestion management procedure and capacity trading on the secondary market. In accordance with the Regulation (EU) No 994/2010 of the European Parliament and of the Council of 20 October 2010 concerning measures to safeguard security of gas supply and repealing Council Directive 2004/67/EC was acquired an updated expert assessment of the risks affecting the security of natural gas supply. In compliance with this assessment, a revised Preventive Action Plan was adopted, while Emergency Plan remained unchanged and valid. The Energy Agency informed the European Commission about both issues.

The Energy Agency monitored the compliance with Regulation (EC) No 715/2009 and guidelines adopted under this Regulation and supervised whether the gas undertakings were fulfilling the obligation arising from the European legislation. In particular, it monitored the correctness of publication of data on the TSO's website, finding that published data are in a vast majority in compliance with the legislation, and some minor deficiencies are being eliminated.

The Energy Agency also monitored the implementation of the Regulation (EC) 312/2014 concerning Network Code on Gas Balancing of Transmission Networks. In accordance with the findings in ACER's report on the implementation of the network code on gas balancing the Energy Agency proposed some to the TSO some changes and harmonization of system operating instructions as well as amendments of published data.

No breaches of the European legislation were identified, thus, no penalties were imposed in 2016.

4.3 Promoting competition

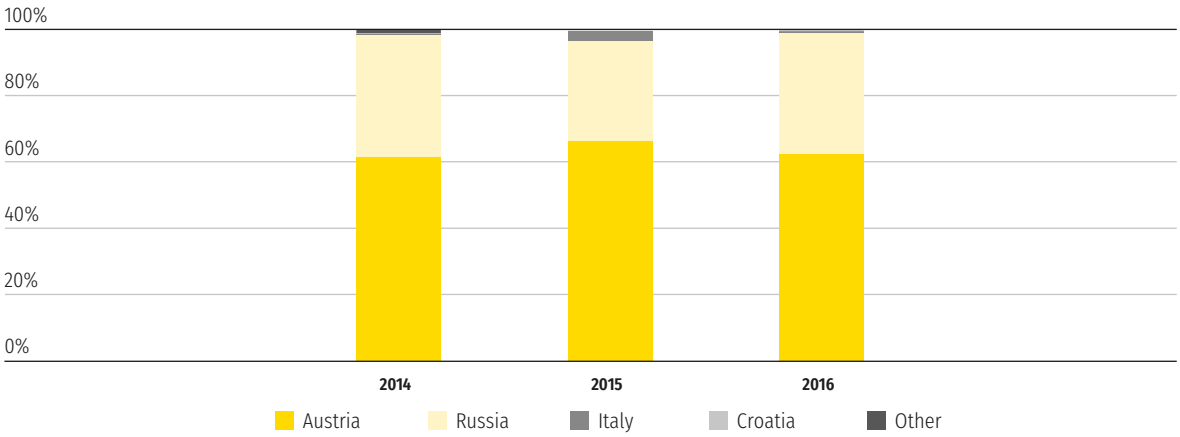
4.3.1 Wholesale market

Since Slovenia does not have its own sources of natural gas, storages of natural gas or LNG terminals, therefore, the wholesale natural gas market is limited by imports of gas through neighbouring transmission systems. We do not have an organized natural gas market, where organized trading among sellers and buyers of natural gas standard products would be carried out. Therefore, the Slovenian wholesale market is mostly bilateral sale and purchase of natural gas between traders and suppliers. Traders, who are also importers of gas, deliver gas through neighbouring transmission systems to the Slovenian transmission system. Natural gas traded on the wholesale market comes from transmission systems of neighbouring countries with their own gas sources. The wholesale market is supplied by gas from Austria and Italy, the supply form Croatia is possible only through the virtual flows. Figure 99 shows that Slovenian suppliers among the options mostly use the supply through Austria, where in the Baumgarten gas hub and Austrian storages most of the gas is purchased. In the observed period this share was higher than 60%. Unfavourable price differences are the reason that in the Slovenian wholesale market the share of gas from Italy decreased.

Most of the natural gas for Slovenian consumers was imported from Austria

Figure 99

NATURAL GAS SOURCES IN THE PERIOD 2014–2016



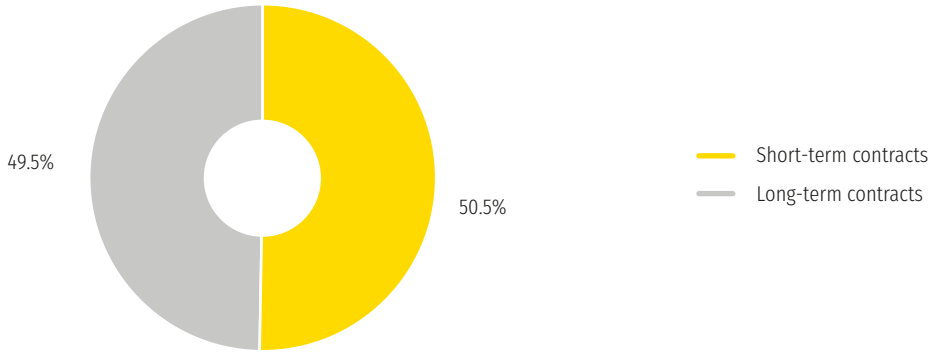
Source: Energy Agency

Due to market liberalization, in 2015 the number of long-term contracts signed directly with natural gas producers from Russia. These contracts were replaced by short-term contracts concluded at gas hubs, power exchanges and other points in EU. But in 2016, in the Slovenian wholesale market again more gas was purchased on the basis of long-term contracts. As shown in Figure 100, the share of natural gas purchased under short-term contracts is almost the same as the share of gas bought under long-term contracts.

The maturity of contracts or the relationship between long-term and short-term contracts can affect reliability of supply, since in the event of gas shortages insufficient supply of gas can occur because it is not possible to buy necessary quantities on spot markets.

Figure 100

STRUCTURE OF IMPORTED GAS IN RELATION TO CONTRACTS MATURITY



Source: Energy Agency

High level of concentration in the Slovenian wholesale natural gas market

Among the volumes of gas traded on the Slovenian wholesale market only those volumes of gas are registered that are sold by traders to other traders or suppliers. These volumes exclude the volumes that are imported for the supply of the consumers on the retail market when a supplier of the retail market is at the same time also an importer of natural gas. With this methodology we can determine market shares and the Herfindahl-Hirschman index (HHI) of the Slovenian wholesale market. The calculated values are presented in table 27. The largest market share had again the company Geoplin, d.o.o, Ljubljana, and almost one fourth belonged to Petrol Energetika, d.o.o. By taking into account the distribution of the market share, displayed data indicate that important suppliers to the retail market purchase gas independently on the foreign markets while smaller suppliers buy gas from importers. Market concentration measured by HHI shows a very high degree of concentration on the Slovenian wholesale market. The HHI value strongly exceeds the limit, which is a boundary between middle and high concentration level.

Table 27

MARKET SHARES AND THE HHI OF THE NATURAL GAS WHOLESALE MARKET

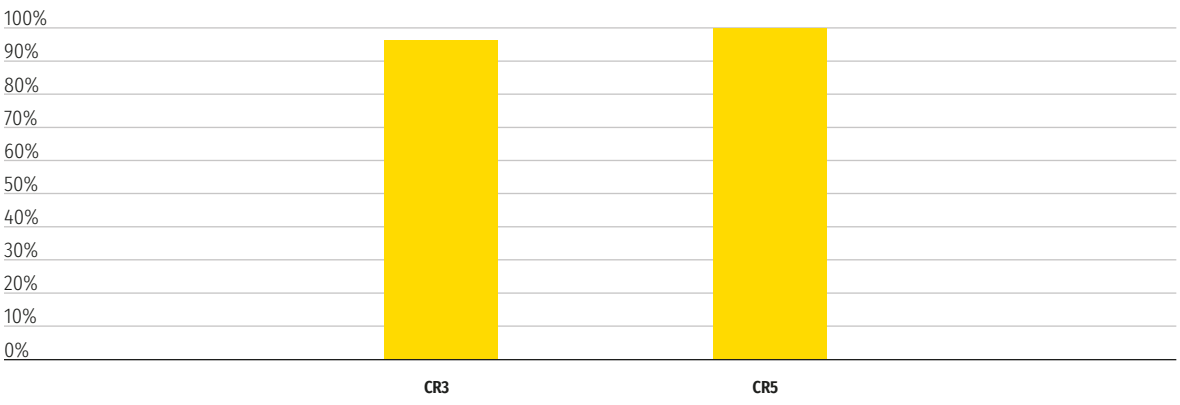
Company	Share
Geoplin	69.01%
Petrol Energetika	24.25%
Adriaplin	3.20%
GEN-I	3.20%
ENOS	0.22%
Istrabenz Plini	0.12%
Skupaj	100%
HHI of the wholesale market	**5,371**

Source: Energy Agency

A high degree of concentration is also indicated by CR3 and CR5 indexes shown in Figure 101. Index CR3 shows the market shares of the three largest suppliers, while CR5 of the five largest suppliers. The three largest suppliers manage 96.46% of the wholesale market, and the largest ones almost the entire market (99.88%).

Figure 101

THE CONCENTRATION OF THE WHOLESALE GAS MARKET



Source: Energy Agency

4.3.1.1 **The level of market transparency**

REMIT and implementing regulation together with the Energy Act represent a comprehensive legal framework for ensuring the transparency of the wholesale electricity and natural gas market. This issue is in more details addressed in the Chapter 3.3.1.2.

4.3.1.2 **The level of market effectiveness**

In October 2015 the TSO set up a virtual point for gas. It is intended for transactions with natural gas, the operation of a trading platform for balancing and for the bulletin board.

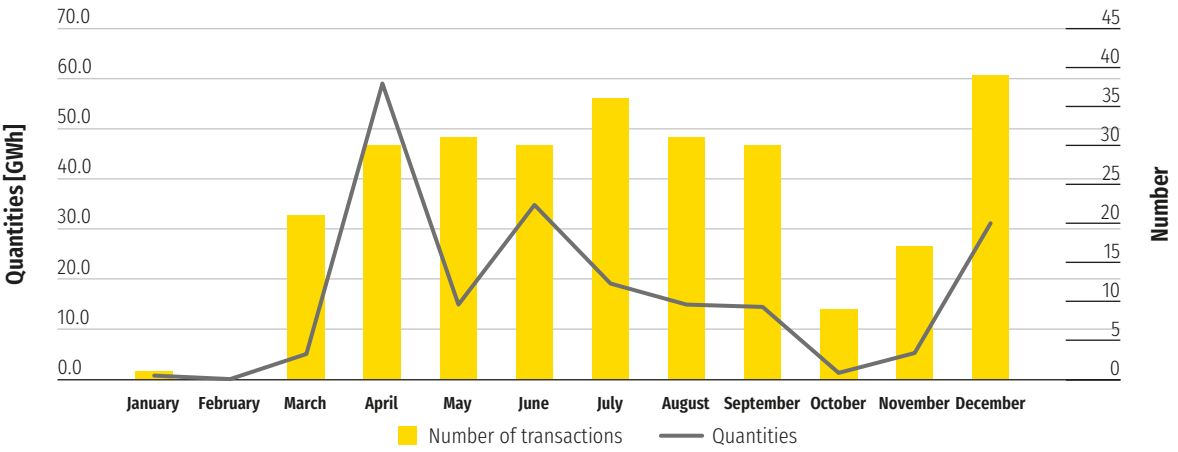
Within the transactions, that is trading on an open market, the members of the virtual point perform all transactions with natural gas in the Slovenian transmission system. The transaction is any legal operation that makes a change in the right to dispose with a certain amount of gas in the Slovenian transmission system.

Natural gas trading via virtual point has started

The first transaction with quantities in the open market was carried out in January 2016. After worse trading in the next month, in March and April, a significant increase in the number of performed transactions was recorded and accordingly also an increase in the exchange quantities. This growth is also evident from Figure 102. Trading in an open market began to recover again in November 2016 after a major downturn in October. In total, 275 transactions were carried out in an open market, in which 200.4 GWh of natural gas were exchanged; out of these seven transactions were carried out for delivery on a within day and others for day ahead.

Figure 102

TRADING IN AN OPEN MARKET (VIRTUAL POINT)



Source: Plinovodi

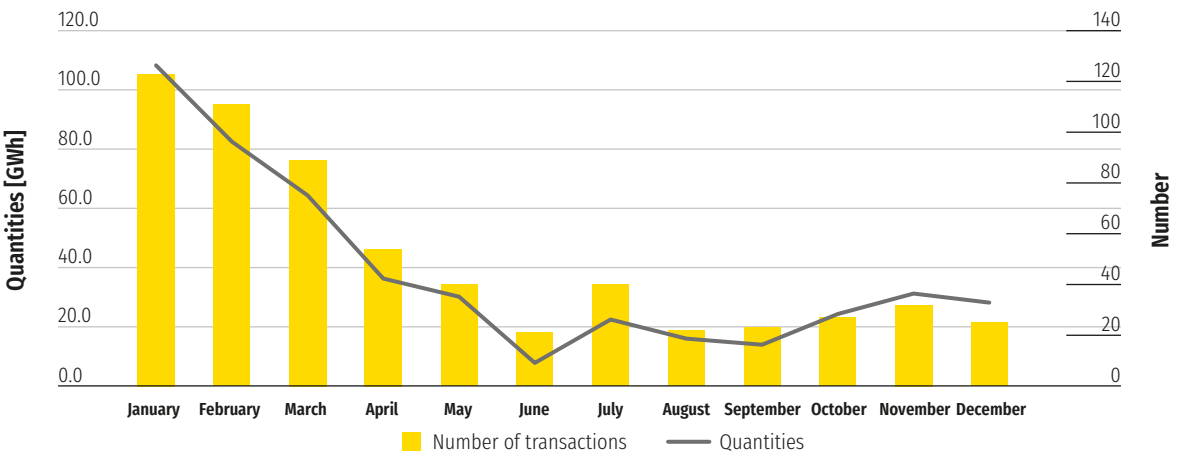
As a service of the virtual point, a trading platform was also introduce. A trading platform enables balance group leaders trading within day and day ahead with gas for balancing. On the trading platform, the trading with short-term standardised products is possible. On the trading platform, the TSO on an equal footing with other participants trades with gas for balancing of the transmission system. If the TSO by trading on the trading platform at the end of an account day cannot successfully balance quantities in the transmission system, may use balancing service that is based on an annual contract with the most favourable bidder.

On the basis of performed transactions on the trading platform within the virtual point, 466 GWh of natural gas for balancing the transmission system were purchased or sold. All together 607 transactions for balancing were carried out, 271 of these with the short-term standardised product within day,

and 336 on the basis of standardised product day ahead. Exchanged quantities of natural gas and the number of performed transactions at the trading platform for 2016 by months are shown in Figure 103.

Figure 103

TRADING ON THE TRADING PLATFORM (BALANCING MARKET)

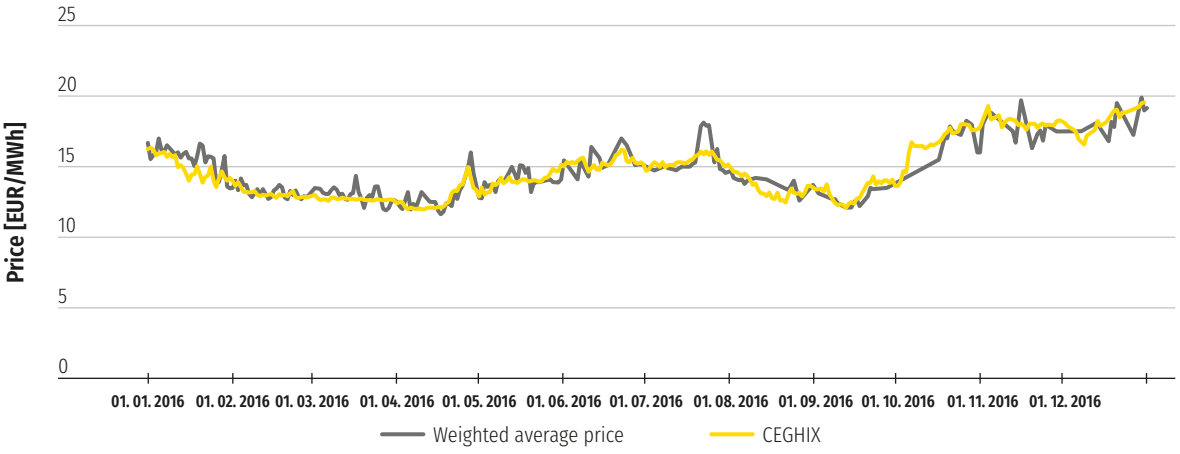


Source: Plinovodi

For each transaction, carried out through the trading platform, the price at which natural gas was purchased or sold is recorded. Balancing of these prices with exchanged quantities gives us a weighted average price achieved on the trading platform. Since also this index is set at a daily level, is comparable to the stock market index CEGHIX. CEGHIX is the index of Central European Gas Hub AG (CEGH), located in Vienna. A comparison of weighted average price and CEGHIX is shown in Figure 104. It is evident that there is a strong correlation between the indexes. Due to lower liquidity on the trading platform, there were also days in 2016 when in the balancing market no transaction was carried out. For these days the index of weighted average price cannot be determined. For the illustration of weighted average price, as shown in the figure, the values for those days were determined by the linear interpolation method.

Figure 104

WEIGHTED AVERAGE PRICE ON THE TRADING PLATFORM (BALANCING MARKET) AND VALUES OF CEGHIX



Sources: Plinovodi, CEGH

In addition to trading in the open market and trading platform, the virtual point includes the bulletin board. This board provides members of the virtual point transparent publication of bids and demands for quantities of natural gas in the Slovenian transmission system. Published announcements do not include prices.

4.3.2 **Retail market**

In the retail natural gas market suppliers are selling gas to consumers. Consumers can choose between the offers of all suppliers, which are active in their local communities. In the market there also suppliers of natural gas, which supply gas only to certain local communities. Consumers pay for the delivered natural gas according to actual consumption, which is metered by appropriate metering devices. Slovenia imports the entire amount of natural gas from neighbouring countries, since it does not have its own production nor storages. Our country totally depends on the situation on European energy markets.

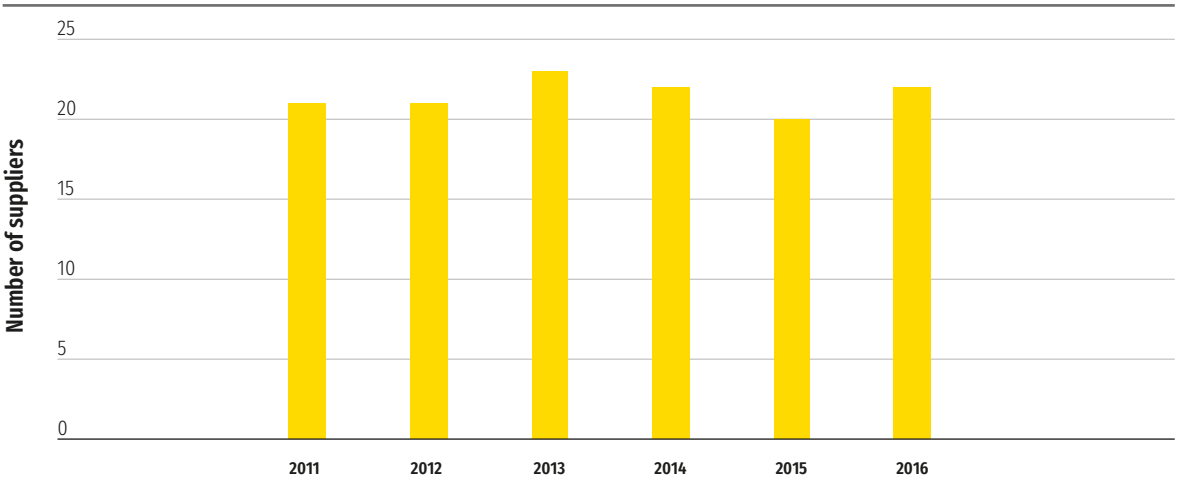
22

suppliers in the retail market supplied 810,629,965 Sm³ of natural gas to 133,439 consumers

In 2016, in the Slovenian retail market were active 22 natural gas suppliers, which according to contracts supplied gas to 133,439 consumers. On the basis of suppliers' data in 2016 delivered 810,629,965 Sm³ of natural gas. Two new suppliers entered the retail natural gas market, companies Proenergy, d.o.o., and M-energetika; both of them supply natural gas to business consumers.

Figure 105

THE NUMBER OF NATURAL GAS SUPPLIERS IN SLOVENIA IN THE PERIOD 2012–2016



Source: Energy Agency

4.3.2.1 **Retail natural gas prices**

In the retail market, for the fifth consecutive years, we recorded a decrease in the prices of this energy source, and the reasons for falling prices are changed conditions on wholesale markets, increased market activities, and competition among supply natural gas suppliers in the retail market. The Energy Agency actively monitors prices in the retail market on the basis of prices and offers in the markets for households and small business consumers; data are acquired monthly from suppliers. On the Energy Agency's website within the single point of contact comparision services of supply with natural gas are available. Suppliers to households and business consumers offer natural gas in the form of various products. Individual suppliers of natural gas due to their business model and size do not supply gas to all local communities. Next to offers based on regular price list, supplier provide other offers, which can be further divided to promotional offers (based on regular price lists), package offers (apart from natural gas other services are available), and other offers, which

For the fifth consecutive years a decrease in the natural gas prices in the retail market

due to their special features cannot be placed within before mentioned offers. Regular offers are the products, which are available all consumers in a local community in which a selected suppliers provide natural gas without time-limit conditions or penalties. Consumers can change their suppliers at any time. With comparision services within the single point of contact, only regular offers can be compared. Other offers (package, promotional and others) can be limited to a specific circle of customers (purchase of electricity from the same supplier, paying by standing order, etc.). Such offers may include contractual penalties if a client withdraws from the contract, and that can hinder the possibility of switching a supplier. At some suppliers, promotional and packages offers are due to their aggressive marketing very often.

Delivery conditions and supply prices are influenced by several factors – binding conditions (for example package offers), the way of billing, payment methods (e.g. standing orders). Price is only of the characteristics of an individual product, which is monitored by the Energy Agency.

Retail Price Index

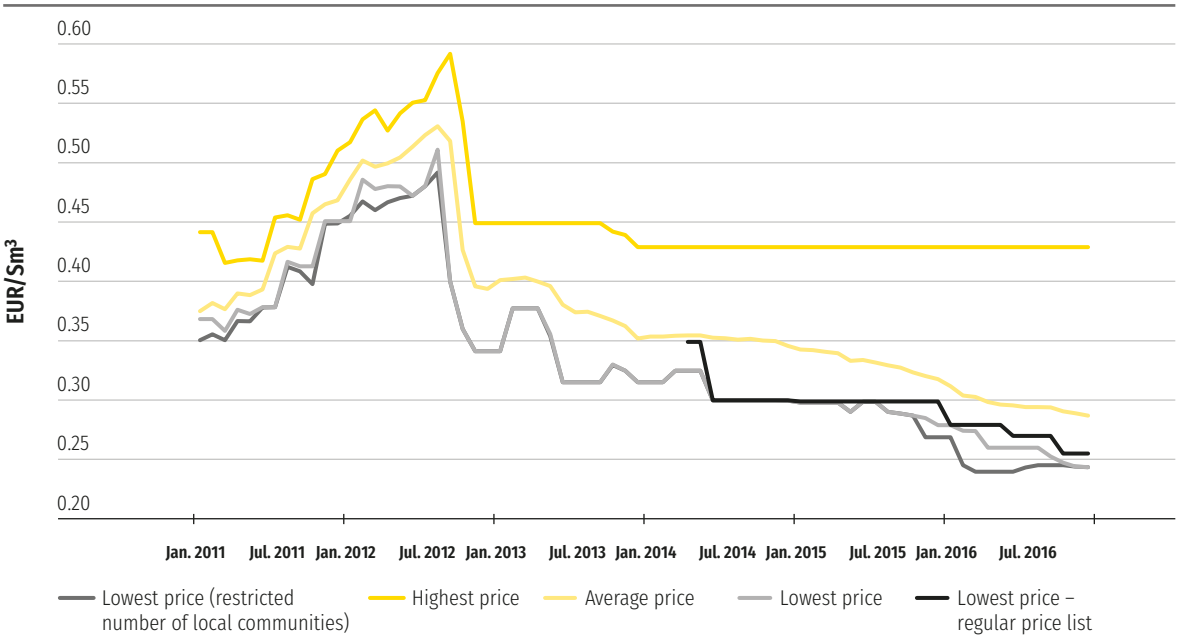
On the basis the retail market monitoring, the Energy Agency determines the retail price index (RPI). RPI is based on the cheapest, to all consumers available offer on the market, which allow switching supplier at any time without contractual penalties.

Figure 106 shows the trend of typical natural gas prices for standard household consumer:

- the lowest price (restricted number of local communities);
- the lowest price for all local communities;
- the lowest price – regular price list;
- the average price of all suppliers;
- the highest price in the retail market.

Figure 106

RETAIL PRICE INDEX OF NATURAL GAS AND SOME TYPICAL NATURAL GAS PRICES EXCLUDING NETWORK CHARGE, DUTIES AND VAT



Source: Energy Agency

Prices started to fall in September 2012, when a new supplier entered to the retail natural gas market, and prices continued to fall through the whole observed period. The highest price in the market has been from the beginning of 2014 the same and is dictated by the supplier with an offer, which is still valid but not available for new entries. The average price in 2016 decreased, which is the consequence of decreasing of individual prices. Many times in 2016 the lowest regular price also decreased. The lowest price offered on the market and available in all local communities also decreased and was even lower than in 2016 the lowest regular price. This fact could indicate that suppliers determine their bundled and promotional offers on the basis of the starting point represented by the regular price. The difference between the lowest price (limited availability) and the lowest price available in local communities was in the first half of 2016 significant, but later on the prices almost equalled. The lowest price was determining by the same supplier, but this supplier does not offer natural gas to all local communities, so not all consumers could sign the contract.

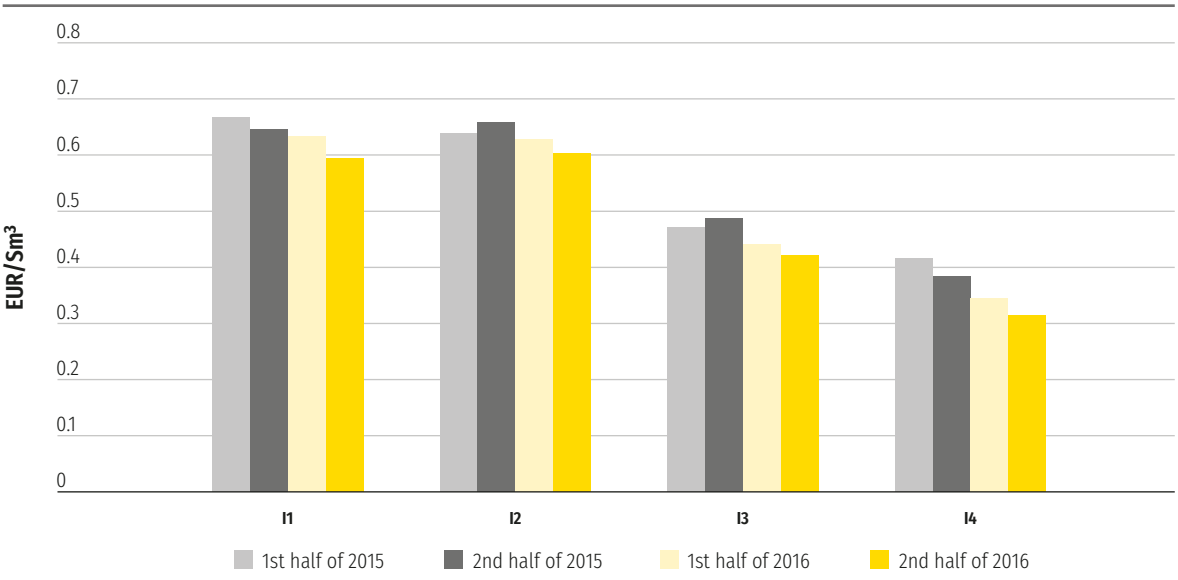
Comparative analysis of prices for typical natural gas supply types at the national and EU level

Final prices of natural gas decreased for all consumption groups in comparison with 2015

Final prices of natural gas decreased for all consumer groups in comparison with 2015. Natural gas prices were in the second half of 2016 lower than in the first half (e.g. for the group of the largest industrial consumers I4 by more than 9%). For the groups of smaller industrial consumers I1 and I2, a comparable price level had been preserved. Lower final prices have favourable effects on the economy since for companies reduce their costs and consequently increase competitiveness. In Figure 107 is presented the described price movement.

Figure 107

FINAL NATURAL GAS PRICES INCLUDING ALL TAXES AND LEVIES FOR INDUSTRIAL CONSUMERS IN SLOVENIA IN 2015 AND 2016

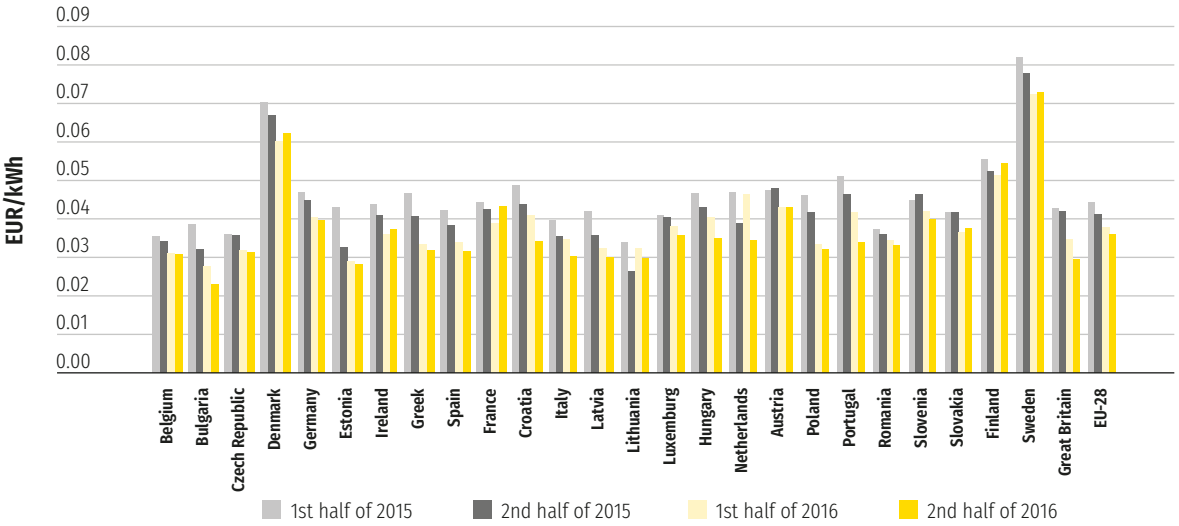


Source: Statistical Office of the Republic of Slovenia

Figure 108 shows semi-annual natural gas price movements including all taxes and levies in 2015 and 2016 in Slovenia and EU countries for large industrial consumers (group I3) with annual consumption between 264,349 and 2,643,489 Sm³. In most EU countries, prices for this consumer group slightly decreased in comparison with 2015. In some countries prices in the second half of 2016 slightly increase, but were still lower than in 2015. Price decreasing in most EU countries is reflected in the negative trend of movement the average price of the EU-28. Natural gas price in Slovenia remained above the average price of the EU-28.

Figure 108

FINAL NATURAL GAS PRICES INCLUDING ALL TAXES AND LEVIES FOR TYPICAL INDUSTRIAL CONSUMERS I3 IN SLOVENIA AND INDIVIDUAL EU COUNTRIES

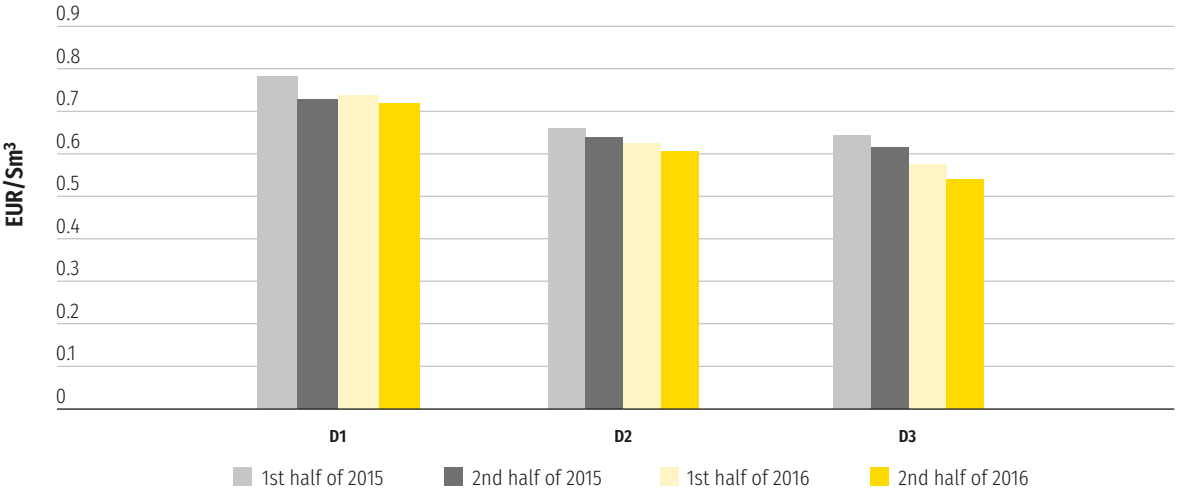


Source: Eurostat

Figure 109 shows the movement of natural gas price with all taxes and levies for household consumers in 2015 and 2016. Since the beginning of 2015, natural gas prices were decreasing for all consumers groups. The price in the largest group D3 was approaching 0.5 EUR/Sm³.

Figure 109

FINAL NATURAL GAS PRICE INCLUDING ALL TAXES AND LEVIES FOR HOUSEHOLD CONSUMERS IN SLOVENIA IN 2015 AND 2016



Source: Statistical Office of the Republic of Slovenia

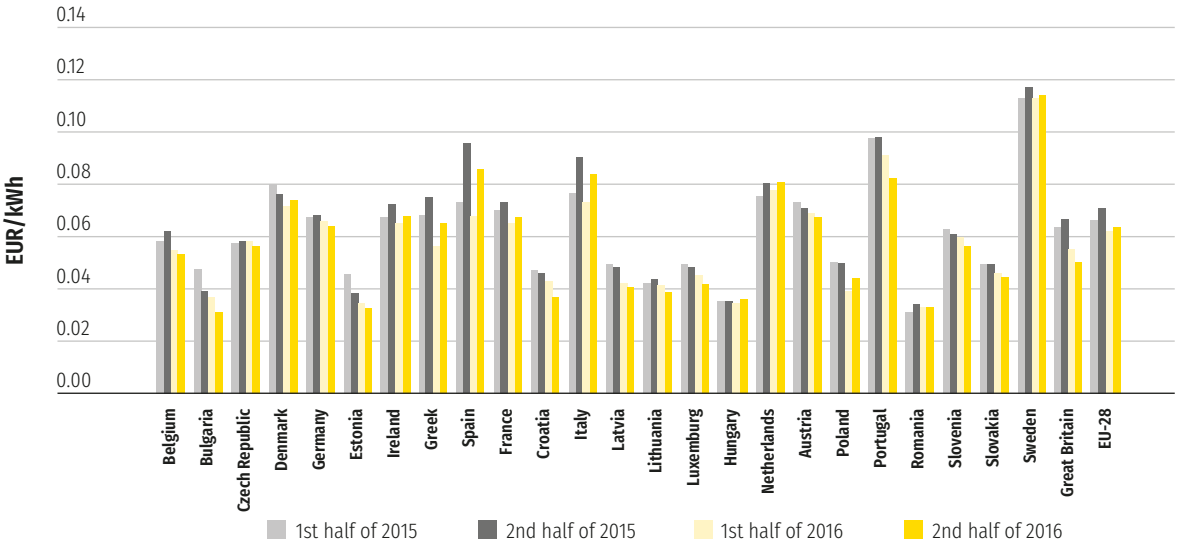
Figure 110 shows prices for natural gas for typical household consumers (group D2) with annual consumption from 529 to 5,287 Sm³ in Slovenia and EU countries. In most of the countries, the prices of natural gas in comparison to 2015 decreased, which is reflected also in the average price of the EU-28. In Slovenia, these prices are lower than the average prices EU-28.

11.5%

lower natural gas final prices for a typical household consumer in comparison to the average price EU-28

Figure 110

FINAL NATURAL GAS PRICES INCLUDING ALL TAXES AND LEVIES FOR TYPICAL HOUSEHOLD CONSUMERS (D2) IN SLOVENIA AND INDIVIDUAL EU COUNTRIES IN 2015 AND 2016



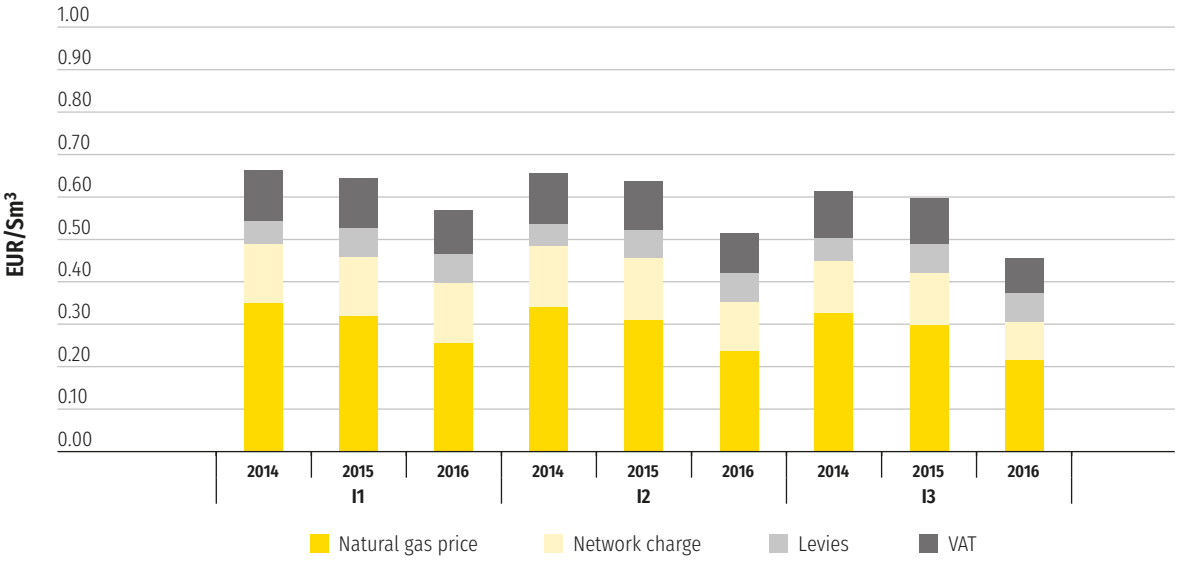
Source: Eurostat

Structure of final natural gas price

Figures 111 and 112 show the structure of final price for a typical household and business consumers, connected to the distribution systems in the period 2014–2016. Breakdown of final prices in recent years largely changed, mainly due to a smaller share of energy price in the final price.

Figure 111

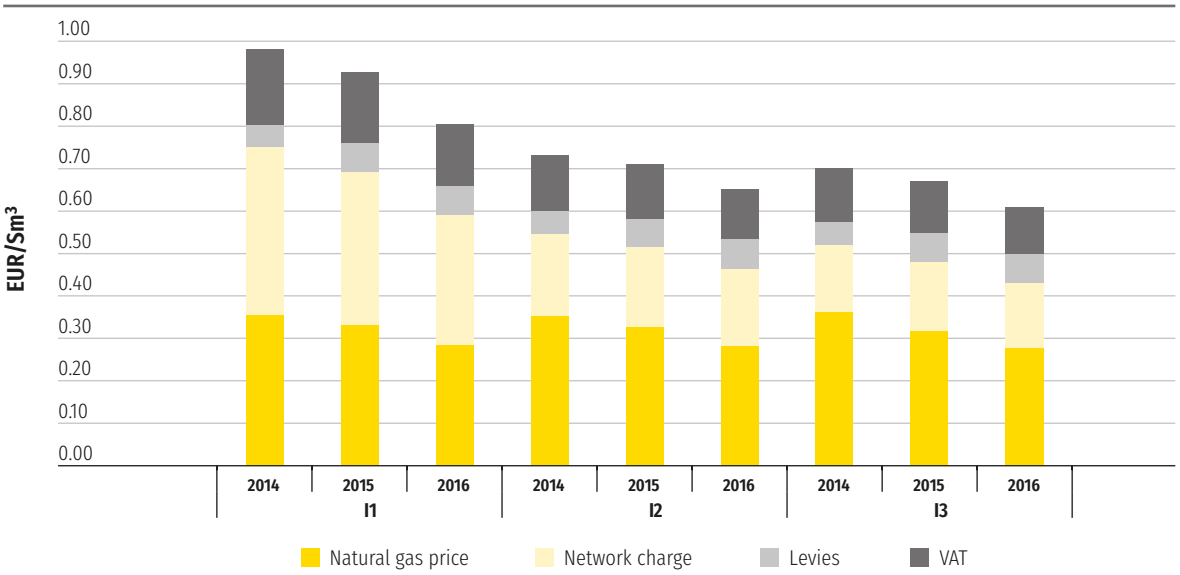
STRUCTURE OF FINAL NATURAL GAS PRICE FOR BUSINESS CONSUMERS IN THE PERIOD 2014–2016



Sources: Suppliers' data

Figure 112

STRUCTURE OF FINAL NATURAL GAS PRICE FOR HOUSEHOLD CONSUMERS IN THE PERIOD 2014–2016



Sources: Suppliers' data

Disaggregations of the final price for the supply from the distribution systems show a favorable downward trend in the supply costs, mainly due to lower prices of gas as an energy source, which is, despite a slight increase in network charge and duties in certain segments predominant and, thus, decreases the final price.

Evaluation of potential benefits of changing the supplier or the service of natural gas supply

Switching a supplier of natural gas or a service of natural gas supply at s current supplier a consumer of natural gas can reduce annual supply costs. Quantitative benefit assessment is based on determining the maximum potential savings on annual level at switching supplier on the basis of a difference between the highest and the lowest annual costs of energy supply.

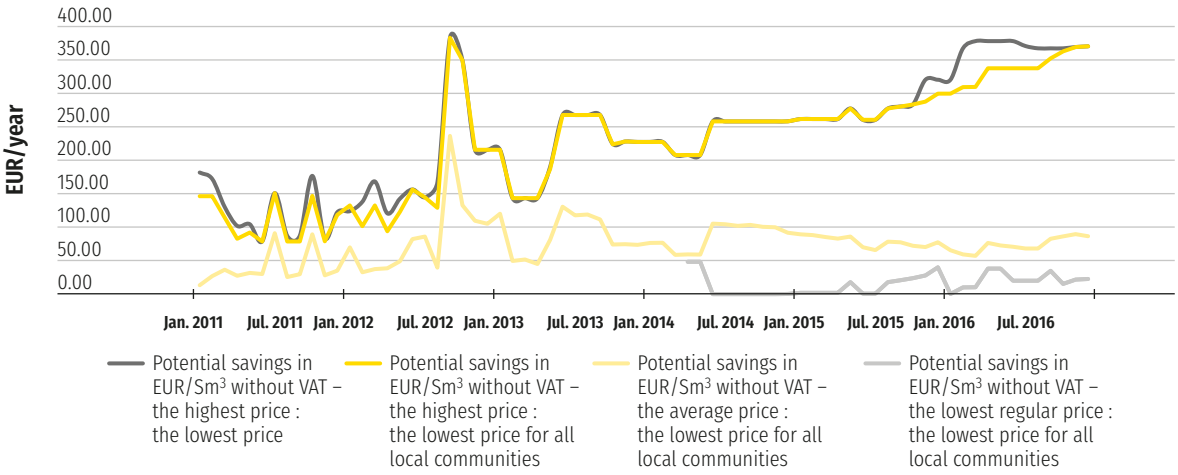
Figure 113 shows the movement of the potential savings for a consumer with an annual consumption 2,000 m³. Collected data show that the difference between the highest and the lowest price was increasing, which means that potential savings were higher as well. In case of switching from the supplier with the highest price to the supplier with the lowest price, it was possible in 2016 save between EUR 300 and EUR 370. At switching based on the average price the potential savings were between EUR 65 and EUR 90, while potential savings on the basis of the lowest regular price would be insignificant, ranged between zero and EUR 40.

EUR 300

or more savings by switching gas supplier with the highest price to the one with the lowest price

Figure 113

POTENTIAL SAVINGS BY SWITCHING SUPPLIER FOR A HOUSEHOLD CONSUMER



Source: Energy Agency

4.3.2.2 **Market transparency**

The financial transparency of suppliers

Suppliers must make public their annual reports and provide data for the needs of national statistics to Agency of the Republic of Slovenia for Public Legal Records and Related Services (AJPES). The Energy Agency within the context of market monitoring analysis annual reports and prepares relevant internal reports on business performance, which are used in correlation analysis for market monitoring purposes. Framework legislation provides a sufficiently high degree of financial transparency of suppliers in the retail market.

Energy bill transparency

Energy bill transparency is systemically regulated. On the bill for the delivered natural gas are separately disclosed items for consumed gas, network charge (costs for distribution and metering) and other contributions, excise duty and VAT.

Obligation to establish a regular offer and publication of supply services

Gas suppliers must provide household and small business consumer with transparent information on applicable prices and tariffs and on standard terms and conditions in respect of natural gas supplies and associated price lists, at least by publishing these on their websites. They must also prepare and publish an offer based on regular price list if they have it. Regular price list means a price list for a particular type of customer (a household, or small business consumer), which applies to all consumers that conclude a supply contract with the supplier for a particular type of consumer, with the exception of promotional or package price lists, and includes at least 50% of consumers and at least 250 consumers with each supplier.

The Energy Agency's activities for providing transparency

The Energy Agency regularly carries out the monitoring of the natural gas retail market, meaning monitoring price movements, number, and characteristics of offers with an emphasis on possible rapid actions in case of malpractice. The information on current tenders and any modification of their characteristics are by liable entities every month sent to the Energy Agency, which in the single point of contact uses this information to inform all stakeholders.

To ensure transparency of the natural gas retail market, the e-services are available on the Energy Agency's websites, among which is a web application for comparison the gas supply offers. The application allows the calculation and comparison of the costs for the gas supply for an individual type of consumption according to price lists entered in the application by suppliers.

The web application for comparison of gas supply also includes the service "Check the bill", which allows a consumer to check the accuracy of a bill for supplied gas, according to the supply and consumption profile. Billing on a monthly basis is shown separately in line with legal components.

A comparison of the costs is in the publicly available part of the comparative services from the implementation of the Energy Act-1 onward restricted to regular price lists. This means that consumers no longer have the single access to all price lists and offers and that they have to search for this information at an individual supplier. Nevertheless, by using the application for comparison the gas supply offers the users have the quick access to websites of all suppliers and their price lists..

4.3.2.3 **The level of market effectiveness**

Monitoring of the natural gas retail market effectiveness and competitiveness is carried out on the basis of continuous data collection from reporting entities sent to the Energy Agency. We are describing some indicators for measuring market effectiveness and competitiveness of the natural gas retail market in Slovenia. Table 28 shows market shares of the suppliers in the retail market in Slovenia. The competitiveness of the natural gas retail market with had improved also in 2016. HHI in this highly concentrated market in comparison to 2015 decreased by almost 200 points to a value of 2,695. This is mainly the consequence of the changed relationships between companies with the largest market shares. High concentration in the market itself does not constitute an abuse of market power, nevertheless, it requires detailed monitoring by the competent authorities.

The competitiveness of the natural gas retail market improved also in 2016 mainly because of a lower concentration in the market for business consumers

Table 28

MARKET SHARES AND HHI OF THE NATURAL GAS RETAIL MARKET

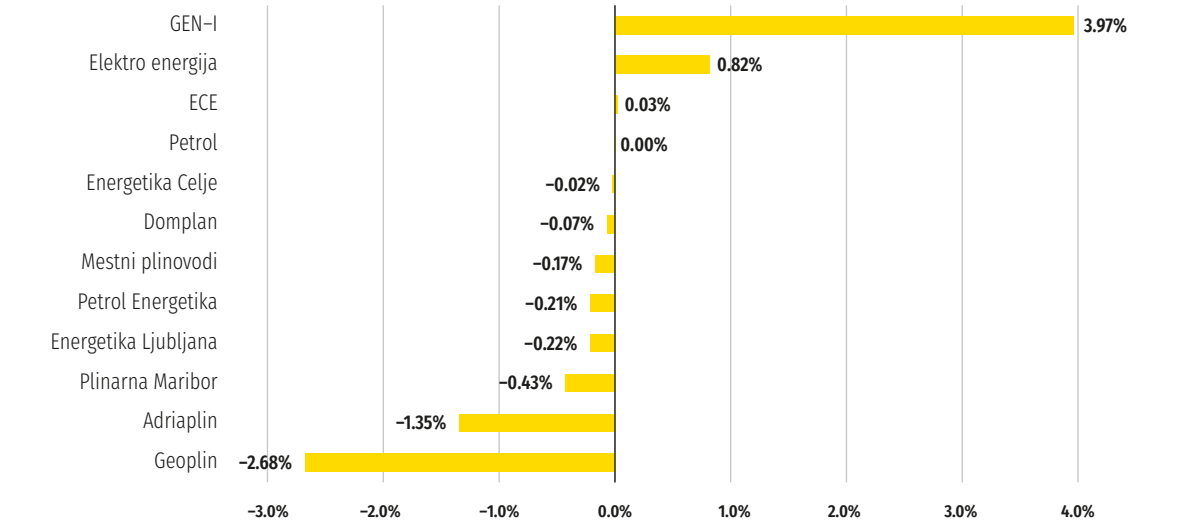
Company	Share
Geoplin	47.8%
GEN-I	14.7%
Adriaplin	8.7%
Energetika Ljubljana	6.1%
Plinarna Maribor	6.0%
Petrol	4.2%
Petrol Energetika	3.5%
Domplan	1.8%
Energetika Celje	1.5%
Elektro energija	1.3%
Mestni plinovodi	1.1%
ECE	1.0%
Other	2.2%
Total	**100%**
HHI of the retail market	**2,695**

Source: Energy Agency

Relatively, the market share of the company Elektro energija, which was in the process of ownership integration with the company GEN-I, increased the most. For the second consecutive year we record a significant absolute increase in the market share of the company GEN-I (by almost 4 percentage point). For the fifth consecutive year the largest and significant decrease in market share had the company Geoplin; by more than one percentage point the market share decreased for company Adriaplin. Changes in markets shares in comparison to 2015 are shown in Figure 114.

Figure 114

CHANGES IN MARKET SHARES IN 2016 IN COMPARISON TO 2015

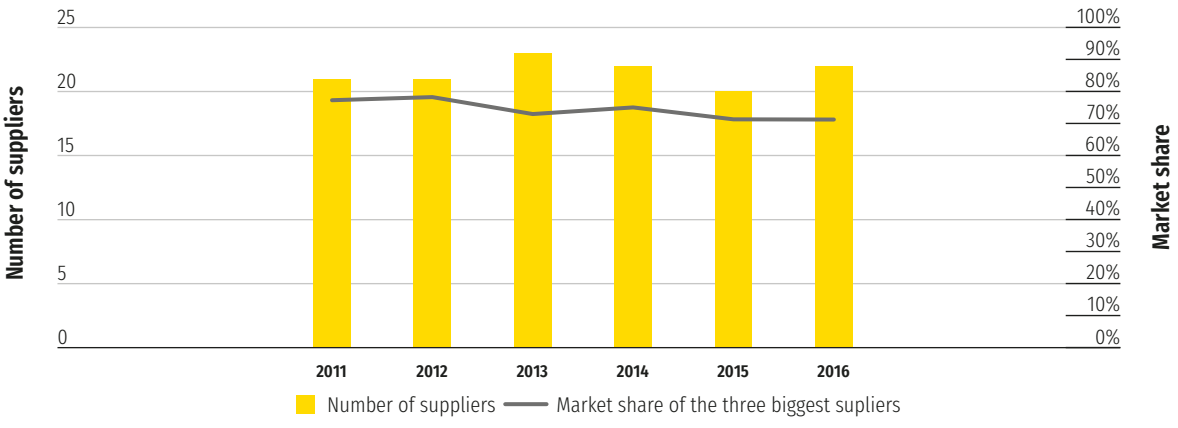


Source: Energy Agency

Figure 115 shows the trend in the number of suppliers between 2012 and 2016 and total market share of the three largest suppliers to all consumer in the retail market in Slovenia. During this period there were at least 20 suppliers or more in the Slovenian natural gas retail market. Trend of market shares of the three largest suppliers indicates high market concentration. In 2011, the three largest suppliers had 77.3% of market share. In 2016, this share was 71.2%.

Figure 115

MARKET SHARES OF THE THREE LARGEST SUPPLIERS IN THE NATURAL GAS RETAIL MARKET AND THE NUMBER OF ALL SUPPLIERS IN THE PERIOD 2012–2016



Source: Energy Agency

Market shares of the suppliers in the natural gas retail market for household consumers in 2016 are shown in Table 29. The largest share had Energetika Ljubljana, followed by GEN-I and Plinarna Maribor. The company Geoplin was not active in the retail market for households.

Table 29

MARKET SHARES OF SUPPLIERS IN THE NATURAL GAS RETAIL MARKET TO ALL HOUSEHOLD CONSUMERS IN 2016

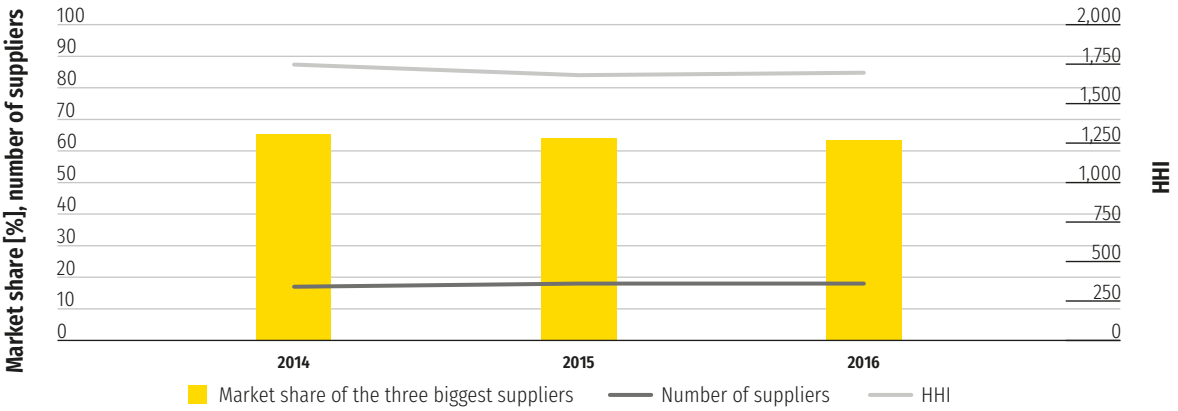
Houshold consumers	
Company	**Market share 2016**
Energetika Ljubljana	29.8%
GEN-I	21.2%
Plinarna Maribor	12.4%
Petrol	8.4%
Adriaplin	8.2%
Energetika Celje	4.7%
Domplan	3.1%
Mestni plinovodi	2.5%
Istrabenz plini	2.0%
Petrol Energetika	2.0%
ECE	1.1%
Other	4.5%
Total	**100%**
HHI	**1,695**

Source: Energy Agency

Figure 116 shows the trend in HHI, markets shares of the three largest suppliers (CR3) and the number of suppliers in the retail market for households in the period 2014–2016. The high degree of market concentration during the last three years did not change significantly, nor the shares of the three largest suppliers. The structure of this market hasn't changed much in recent years, the level of market concentration remains below high concentration, and the number of suppliers remains almost unchanged.

Figure 116

TREND IN HHI, MARKET SHARES OF THE THREE LARGEST SUPPLIERS AND THE NUMBER OF SUPPLIERS IN THE NATURAL GAS RETAIL MARKET FOR HOUSEHOLDS



Source: Energy Agency

Market shares of natural gas suppliers in the retail market to business consumers in 2016 are presented in Table 30. The highest market share had the company Geoplin, followed by GEN-I and Adriaplin.

Business consumers

Table 30

MARKET SHARES OF SUPPLIERS IN THE NATURAL GAS RETAIL MARKET TO ALL BUSINESS CONSUMERS IN 2016

Business consumers	
Company	**Market share 2016**
Geoplin	55.0%
GEN-I	13.7%
Adriaplin	8.8%
Plinarna Maribor	5.0%
Petrol Energetika	3.7%
Petrol	3.6%
Energetika Ljubljana	2.5%
Domplan	1.6%
Elektro energija	1.4%
ECE	1.0%
Energetika Celje	1.0%
Others	2.6%
Total	**100%**
HHI	**3,366**

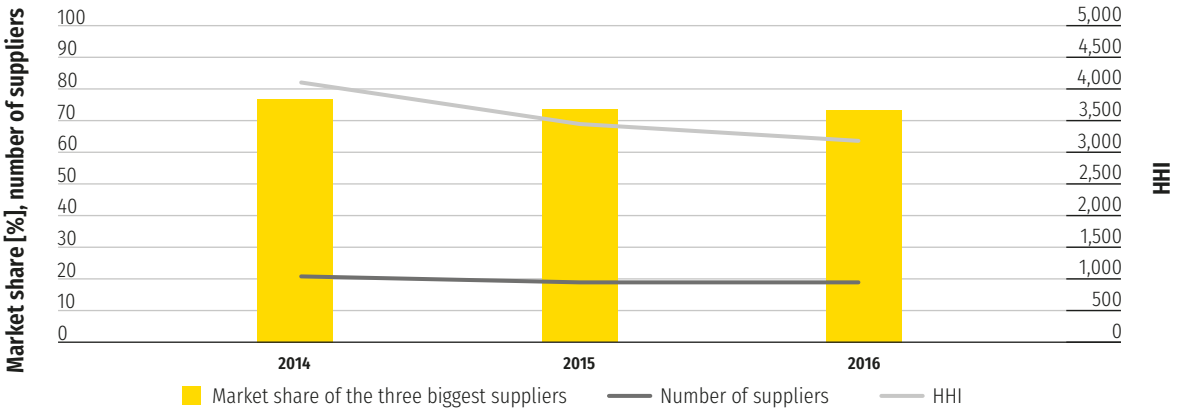
Source: Energy Agency

Figure 117 shows the trend in HHI, market shares of the three largest suppliers (CR3) and the number of suppliers in the retail market for business consumers. In recent years no major changes in the number of suppliers and market shares of the three largest suppliers occurred, nevertheless, the effectiveness of the market over the last three years considerably improved. This is due to the decrease in the market

share of the largest supplier of this market, that is the company Geoplin, and at the same time the strengthening of GEN-I, which directly affects HHI.

Figure 117

TREND IN HHI, MARKET SHARES OF THE THREE LARGEST SUPPLIERS AND THE NUMBER OF SUPPLIERS IN THE NATURAL GAS RETAIL MARKET FOR HOUSEHOLDS



Source: Energy Agency

Switching supplier

In 2016, 6,326 consumers connected to distribution systems switched a natural gas supplier. Most of the switches were carried out in January and February. Switches largely depend on heating season, when consumption is higher, and energy prices have significant influence on costs for natural gas supply. The reasons for more switches are probably the result of higher potential savings at changing supplier; more switches are recorded from the second half of 2015.

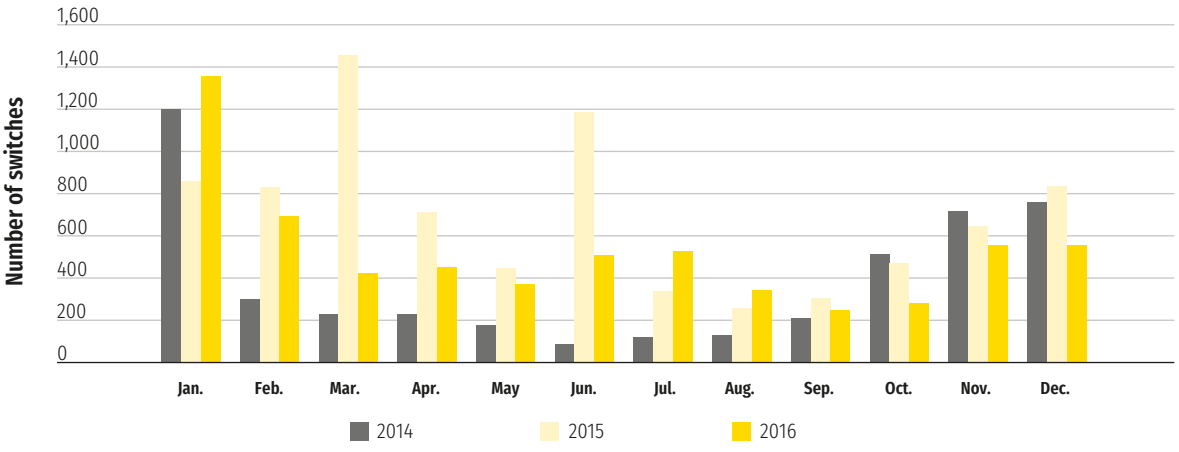
Numbers of switches in 2014, 2015 and 2016 are shown in Figure 118.

6,326

consumers connected to distribution systems switched natural gas supplier, which is 16.2% less than in 2015

Figure 118

NUMBERS OF SWITCHES BY MONTHS IN 2014, 2015 AND 2016



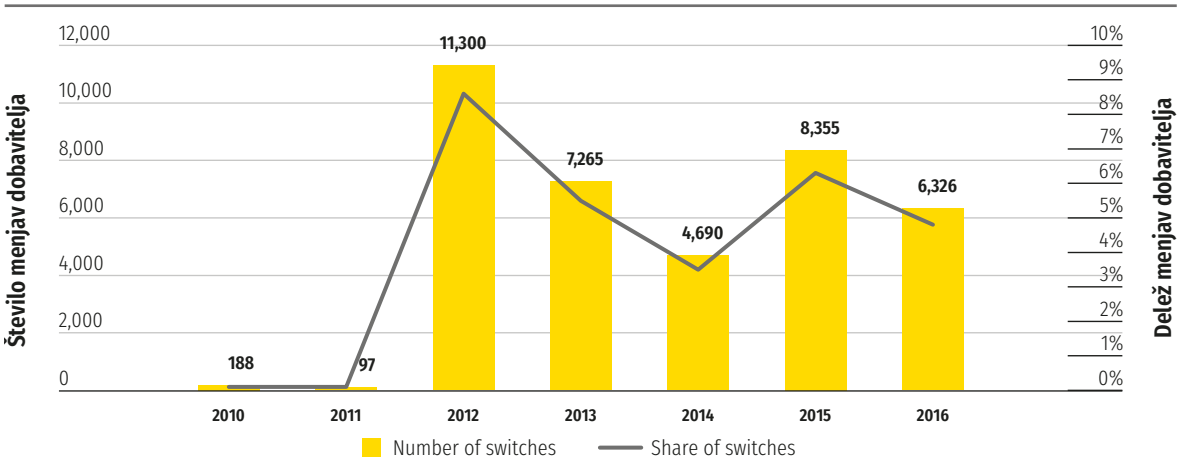
Source: Energy Agency

Compared to 2015, when 8,355 consumers changed their natural gas supplier[14] or 7,550[15], in 2016 the number of switches decreased again. A record number of switches took place in 2012 when the company GEN-I entered the market.

The rate of supplier switching was in 2016 below 5%, and years before it was higher by slightly more than one percentage point. The intensity of switching over the years is shown in Figure 119.

Figure 119

NUMBERS OF SWITCHES IN THE PERIOD 2010–2016



Source: Energy Agency

4.3.2.4 Recommendations on supply prices, investigations and measures to promote effective competition

Natural gas retail prices are not regulated, therefore, the Energy Agency does not give any recommendation on these prices.

All prices in the wholesale and retail markets are set freely. The natural gas retail market price is made up of the costs for an energy source, network charge for the distribution and measurements, contributions, taxes, levies, and VAT. The price of natural gas as an energy source largely depends on business strategies of an individual supplier and supply conditions on the wholesale market. The purchase price is influenced by several factors, which are characteristics of signed contracts, movements of prices of oil and oil products, foreign exchange rates, weather conditions, supply offers on international power exchanges and competition on the market.

One of the Energy Agency's task is consumers protection. The Energy Agency continuously monitors the retail market, cooperates with regulatory and supervisory authorities on the national level (Market Inspectorate, Competition Protection Agency) and with independent and non-profit consumers organizations. It is also responsible for updating of information on market developments and ensures market transparency with activities and services that are provided in the single point of contact.

For the natural gas market, the same rules on the prohibition of restriction of competition and abuse of a dominant position are applied as for other types of commodities.

From the publicly available data, it is evident that the Slovenian Competition Protection Agency of the Republic of Slovenia in 2016 in case of companies operating in the natural gas market did not identify

14 The campaign run by the Slovenian Consumers' Association directly affected the number of switches

15 As of 1 June 2015, the supply of natural gas ceased to be carried out by Loška Komunala; consequently, all the customers had to choose a new supplier

any restrictive practices or potential in dominant positions in the market. In the context of a concentration assessment in 2016 it was determined that the concentration of SIAD (Societa Italiana Acetillene e Derivate) and the company Istrabenz Plini, Plini in Plinske Tehnologije, d.o.o., is in accordance with the competition rules, the notified concentration of the Republic of Slovenia for the acquisition of a business share in the company Plinovodi, d.o.o., was not a subject to the provisions of Prevention of Restriction of Competition Act, thus, deciding on compliance with the competition rules was not necessary.

In the area of measures carried out in accordance with the third package of energy legislation to harmonisation of data exchange at the national and regional level. The Energy Agency implemented amendment of the Act on the Identification of Entities in the Data Exchange among Participants in the Electricity and Natural Gas Market. This act binds market participants to use standardized identifiers of key data entities in the electronic exchange of data in the market, and the amendment provides the integrity of the identifiers used in end-to-end data exchange. As a part of its activities in ebIX, the Energy Agency actively contributed to the implementation of standard models of data exchange in the natural gas market (see 3.3.2.4).

4.4 Security of supply

The supply of natural gas was in 2016 reliable; there were no unplanned interruptions of supply or interruption of the transmission of natural gas to users in the neighbouring countries to which the natural gas is transported through the Slovenian transmission system. For the first time, an announced interruption of supply at border entry point Ceršak occurred due to maintenance work in the Austrian transmission system.

The gas companies were well prepared for providing gas supply. The suppliers in different ways ensure the supply of gas to protected consumers in accordance with Regulation 994/2017 and Energy Act-1. In Slovenia, there are no natural gas storages or LNG terminals, with which the consequences of the unplanned gas supply outages could be controlled. Due to exposure to failure of the border entry point Ceršak, the TSO is preparing long-term measures for reducing risk with the appropriate investments in the transmission system. These measures include system's upgrades, an increase in the capacity of the existing transmission system, and the establishment of the reverse flows. On short-term, it enables the supply of consumers in Slovenia from another source through the border point Šempeter. The existing capacity of this border point allows up to 57% of peak demand in winter in Slovenia; in the event of exceptional circumstances with special measures, additional interruptible capacity can be provided to cover up about 85% of peak demand in winter.

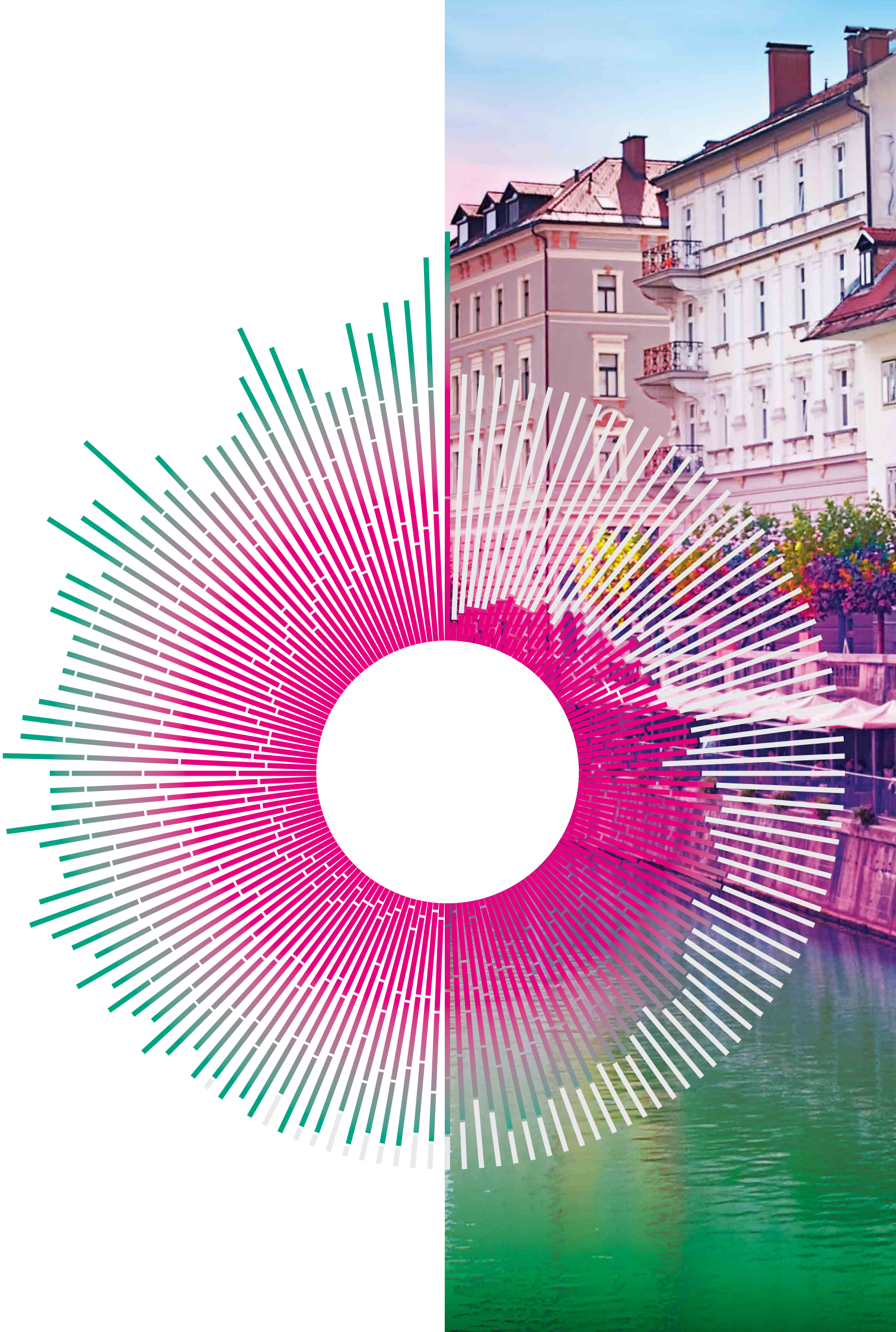
High level of the security of natural gas supply in 2016

The Energy Agency is the competent authority for the provision of a reliable supply of natural gas. In 2016, the Energy Agency published an updated assessment of the risks that affect the security of natural gas supply in Slovenia. On the basis of this assessment, the new Preventive Action Plan was implemented, which together with valid Emergency Plan provides for the provision and verification of the natural gas preparedness to potential negative impacts on natural gas supply. In accordance with the both documents the Energy Agency demanded from suppliers sufficient diversification of natural gas supply sources.

The valid methodology for assessment of supply standard sets up that on the basis of temperature deficits the correction factors for a seven-day period with the lowest temperatures and at least 30-day period with the highest consumption in the last 20 years are determined. For determination of additional volumes of gas for the supply of protected consumers in case of extremely low temperatures during a 7-day peak period, the correction factor in 2016 amounted to 37.27%. For determination of additional volumes of gas for the supply of protected consumers in case of a period of at least 30 day period with peak consumption the correction factor for 2016 amounted to 14.09%.

Two suppliers also have leased storage capacity in Austria.

The Report on Ensuring the Security of Natural Gas Supply for the period 2016–2016 was published, in which the details on how to meet the supply standard and requirements of the protected customers are presented. According to data for 2015, for protected customers, 137 million Sm^3 of natural gas was imported and consumed, which is around 16.6% of the total amount of natural gas consumed in Slovenia.



05

Consumer Protection

The rights of electricity and gas consumers are protected by the Energy Act (EA-1) and Consumer Protection Act. The suppliers are obliged to enable consumers to use out-of-court settlement of consumers' disputes according to the legislation regulating this area.

6,045

household electricity consumers was disconnected in 2016 because of default of payment, which is 1.6% more than the previous year. No consumer was supplied under the terms of emergency supply.

86

monitoring procedures, 72 related to electricity and 14 to natural gas.

5.1 Protection of electricity and natural gas consumers

A household consumer purchases electricity or natural gas for his own household consumption. His rights are protected with the regulations regulating the energy market and also with Consumer Protection Act. The suppliers are obliged to enable consumers to use out-of-court settlement of consumers disputes according to the legislation regulating this area.

Contractual conditions set by the suppliers must be clear, understandable and may not be unfair towards consumers. The suppliers are obliged to provide consumers out-of-court settlement of a dispute in accordance with the law governing the out-of-court settlement of consumer disputes.

A household consumer has the right to choose an electricity or natural gas supplier free of charge

The Energy Agency on its website provides for household consumers a single point of access to information on their rights, valid regulations and general acts for the exercise of public authority and the methods for handling complaints in the event of a dispute with a supplier or electricity or gas DSO.

Prior to connection to the system, the electricity or gas DSO must inform the consumer of his rights and obligations in connection with the choice of supplier and about the last resort or emergency supply.

A household consumer has the right to free periodic information about his consumption of electricity and gas consumption characteristics; information should be as often as necessary that consumer can manage his own consumption. The right to be informed has also a household gas consumer, who must be informed about his consumption by gas DSO.

A household consumer has also a right to quality supply of electricity or to the supply of quality gas.

5.1.1 **Supply contract and general terms and conditions**

A household consumers enters into contract for the supply of electricity or natural gas, which can be freely chosen. A supplier has to provide for household consumers on its website information on applicable prices and tariffs, and on standard terms and conditions on supply. An integral part of the supply contract are the contractual terms, which may not be unfair; a supplier has to inform a household consumer, prior to signing a supply contract, even if the contract is concluded through an intermediary. Supply contract must include information on consumer's rights, including information on handling the complaints relating to the system of reimbursement and compensation, if the level of quality of services under the contract is not achieved; in the of case a contract on gas supply also a notice that a household consumer is a protected consumer must be involved.

A supplier must inform a household consumer at least one month prior to their taking effect, about any intended changes to the contractual terms and conditions. At the same time, due to a modification of the standard terms and conditions, a consumer has to be informed about the right to withdraw from a supply contract within one month following the entry into force of modified general terms and conditions without notice and without being subject to a penalty payment. A supplier must also inform a household consumer about the electricity price increase at least a month before the introduction of higher price, or about an increase in natural gas price on time, which is before the end of the accounting period following the price increase.

Suppliers must offer household consumers a choice of payment methods for electricity or gas, including prepayment systems. Household consumers may not be charged for flat-rate operating costs on the basis of a regular price list; they may be charged for in action or bundled offers.

A household consumer may withdraw from a supply contract without paying a penalty, damages, compensation or any other form of payment for reasons of withdrawal from the contract prior to the expiry of the set time limit, provided that such withdrawal takes effect at least one year following the conclusion of the contract

A household consumer has a right to choose and switch an electricity or gas supplier. Switching a supplier must be carried out within 21 days of a completed request being submitted. A consumer may not be charged for changing supplier. If a household consumer terminates a supply contract at least one year after the conclusion of a contract due to supplier switching, he can withdraw from a contract without a notice period. If a consumer withdraws from a supply contract prior to one year following the conclusion of the contract, may be obliged to bear the consequences of early withdrawal laid down in the supply contract.

On the electricity bills electricity suppliers must indicate the shares of individual energy production sources in the whole structure of the electricity of individual supplier in the preceding year as well as information on the environmental impact in terms of CO2 emissions and the quantity of radioactive waste resulting from the electricity generated by the overall structure of electricity production sources used by the supplier over the preceding year. In that way, a reasonable comparison of different suppliers at the national level is possible.

5.1.2 Disconnection of a household consumer

A DSO may disconnect a household consumer at an individual delivery point upon prior notice if the system user fails to comply with its obligations within the time limit specified in the notice. A household consumer must be informed at least 15 days in advance. A DSO may not disconnect a vulnerable consumer if he is eligible for an emergency supply. If the disconnection exceeds a period of three years, a household consumer, prior to the reconnection, must obtain a new approval for connection to the system as any other system user, and conclude a new contract for connection.

In 2016, due to non-payment of the network charge for the use of the system 6,045 household consumers of electricity were disconnected. This number represents for 0.01 percentage point higher number of disconnections of all household consumers than the year before when there were 5,949 disconnections. The number of disconnections due to non-payment was in 2016 in comparison with 2012 lower by 0.08 percentage point since 6,577 household consumers were disconnected in Slovenia that year.

Table 31

NUMBER OF DISCONNECTIONS OF ELECTRICITY HOUSEHOLD CONSUMERS DUE TO NON-PAYMENT IN THE PERIOD 2012–2016

	2012	2013	2014	2015	2016
Elektro Celje	753	1,058	2,640	575	853
Elektro Gorenjska	747	192	782	477	841
Elektro Ljubljana	1,698	2,628	1,791	2,256	2,133
Elektro Maribor	1,344	1,237	1,766	1,367	935
Elektro Primorska	2,035	1.762	947	1,274	1,283
Total	**6,577**	**6,877**	**7,926**	**5,949**	**6,045**
Number of all household consumers	825,198	827,902	831,185	834,664	838,505
Share of disconnections due to non-payment	**0.80%**	**0.83%**	**0.95%**	**0.71%**	**0.72%**

Sources: Electricity suppliers, SODO, Energy Agency

In 2016, gas DSOs disconnected 1,815 natural gas household consumers, 531 of them due to non-payment the network charge for the use of the system. This number represents for 0.16 percentage point lower number of disconnections of all household consumers than the year before, when 711 households were disconnected. The number of disconnections in 2016 was lower by 0.55 percentage point compared to 2012, when 1,167 households were disconnected.

Other reasons for disconnections were also invalid supply contract or withdrawal of the contract (35 disconnections), other reason (41 disconnections); permanently was disconnected to 1,159 users, that is 51 more than in 2015. Gas DSOs from 30 April to 1 October did not disconnect 122 household consumers after despite the fulfilment of conditions for disconnection after prior notice. 12 of them were referring to the rights of not being disconnecting because their lives and health would be endangered.

Table 32

NUMBER OF DISCONNECTIONS OF NATURAL GAS HOUSEHOLD CONSUMERS DUE TO NON-PAYMENT IN THE PERIOD 2012–2016

	2012	2013	2014	2015	2016
Number of disconnections	**1,167**	**1,207**	**861**	**711**	**531**
Number of all household consumers	118,154	119,468	119,025	118,719	119,583
Share of disconnections due to non-payment	0.99%	1.01%	0.72%	0.60%	0.44%

Sources: Natural gas suppliers, gas DSOs, Energy Agency

5.1.3 Protection of vulnerable consumers and emergency supply

Protection of vulnerable consumers is one of the most important forms of consumers protection. A vulnerable consumer is a household consumer who, due to his financial circumstances, income and other social circumstances and living conditions, is unable to obtain an alternative source of energy for household use that would incur the same or smaller costs for essential household use. An electricity or a gas DSO may not disconnect a vulnerable consumer from supply or restrict his consumption before it reaches a quantity that is absolutely necessary in view of the circumstances (season, temperatures, place of residence, health condition and other similar circumstances) in order not to jeopardise life and health of the customer and persons living in his household. Prior to disconnection, a DSO must inform the consumer of the possibilities of emergency supply and of the evidence to be provided by the consumer in order to be approved for emergency supply by the operator. Emergency supply as a measure of delayed disconnection is intended for extreme cases of jeopardising life or health of the vulnerable consumer.

Under the Act on the Criteria for Providing Emergency Supply of Electricity the Eligibility for the electricity supply of vulnerable customers is assessed by a DSO on the basis of criteria such as seasons and temperatures, as well as the health conditions of a consumer and persons living with him. The right to emergency supply can be exercised between 1 October to 30 April. To emergency supply due to health reasons is eligible a vulnerable consumer who uses medical devices, which for its functioning need electricity and disconnection of electricity would threatened the person's life. If the DSO considers that a household consumer meets the conditions for emergency supply, concludes a contract with a consumer for a period of postponement of disconnection. A disconnection of a vulnerable consumer is postponed for the time of planned disconnection and as long as there are circumstances that threaten life and health of persons living in a household, but for a maximum of duration of final decision of social work centre on granted regular social assistance benefit in cash. The costs of emergency supply of vulnerable customers are eligible costs of a DSO.

A household consumer of gas who has no means of subsistence and therefore his life and health or life and health of persons living with him would be endangered has the right to maintain the energy supply. More detailed regulation of the protection of vulnerable gas consumers is provided by gas DSOs in the system operating instructions. The costs of emergency supply of vulnerable customers are eligible costs of a DSO until they could be paid by a vulnerable consumer.

In 2016, no electricity consumer was provided by the emergency supply, the same as the year before. The right of vulnerable natural gas household consumer in 2016 exercised 12 consumers, that is 13 less than in 2015.

5.1.4 **Last resort supply**

In 2016, no electricity consumer was supplied under the terms of emergency supply or last resort supply

With last resort supply the electricity DSO automatically and without time limits ensure supply to final consumers connected to its system if the contract for supply is terminated because of measures resulting from the insolvency or illiquidity of a supplier. The electricity DSO must immediately inform the consumer of the termination of the contract for the supply and of the beginning of the provision of last resort supply. At the request of a consumer, the electricity DSO must provide a supply to each household consumer. The electricity DSO must inform consumers of the possibilities and conditions of last resort supply. In line with the provisions of General Conditions for the Connection to the Electricity Distribution Network last resort supply is time-limited to a maximum of 60 days, but may be extended at the request of a consumer. The price of last resort supply is set by the electricity DSO and is made public. The price must be higher than the market price of the supply to a comparable consumer but must not exceed the price by more than 25%.

The electricity DSO was publishing the conditions and prices for last resort supply. Under the terms of last resort supply, no consumer was supplied in 2016, while six consumers were served the year before.

5.1.5 **Consumers' complaints and dispute settlement**

The supply contract concluded with a household consumer must among other things contain information on how to initiate a procedure and handling complaints relating to electricity or gas supply.

Household consumers have the right to transparent, simple and inexpensive procedures for dealing with complaints on electricity and gas supply. A complaint in relation to alleged violations of the delivery contract can a consumer filed directly with an electricity and gas supplier. If a supplier within its internal procedure a month does not satisfy the complaint or does not entirely satisfy the complaint, a household consumer may initiate a procedure to resolve the dispute with an independent provider of out-of-the-court settlements of consumers' disputes. A supplier must, together with the reasons for rejecting the complaint, send information or data about an independent provider of out-of-the-court settlements, who can continue the procedure.

An independent provider of out-of-the-court settlements of consumers' disputes that meets the requirements and ensures the procedure in compliance with the Consumers' Act is appointed by the supplier alone or with other suppliers within the association among the providers registered at the Ministry of Economic Development and Technology.

Suppliers on their websites and in general terms of business publish the name of the appointed person for resolving disputes, and at least the company, e-mail address and telephone number of the appointed person.

Participation of an electricity or gas supplier in a procedure initiated by a household consumer before an independent provider of out-of-the-court settlements is obligatory. This procedure is for a household consumer free of charge since the dispute settlement is paid by the supplier or suppliers' association.

The person appointed must decide no later than in 90 days after the complete application for initiation of the procedure (if the dispute is more complex, the deadline can be extended). The binding decision can be challenged before the court under the law governing the arbitration.

Every appointed person has to publish on its website and business premises among other things more detailed rules on procedures and code of ethical standards for the conduct of procedures.

The suppliers of electricity and natural gas had to in accordance with amended provisions of the Energy Act harmonise the implementation of the out-of-the-court settlement of disputes related to the electricity or gas supply to household consumers with the new requirements within six months of the entry of the Energy Act into force; that is by 14 May 2016. By that date, the suppliers had appointed an independent person or several person responsible for deciding on alleged infringements of suppliers in execution of the supply contracts. The suppliers had also determined and on their websites published detailed rules regarding the person appointed to handle disputes, rules on informing household consumers of complaint handling, system of reimbursement and the procedure for complaint handling.

7,089

complaints received electricity suppliers, 60% of them were against issued electricity bills

Of all 838,505 electricity household consumers, suppliers in 2016 received 7,089 complaints, disagreements and arguments, which is less than one percent (0.84%) of complaints of all household consumers (in 2015 it was 1.14%); 411 complaints were rejected by the suppliers since they did not fulfil the conditions for examination. Most of complaints were the same as in 2015 related to the issued bill, that is 60% of all received complaints of household consumers (64% in 2015). Of all the complaints received, 42% were unjustified, the same as the year before. More detailed presentation of household consumers complaints against the suppliers in the period 2013–2016 and the reasons are shown in Table 33 and decisions taken on complaints in Table 34.

Table 33

HOUSEHOLD ELECTRICITY CONSUMERS COMPLAINTS AGAINST SUPPLIERS BY REASONS IN THE PERIOD 2013–2016

The reason for complaint	2013	2014	2015	2016
Terms of sale	35	65	115	73
Contract terms	406	294	1,271	907
Electricity price	311	179	150	146
Bill	4,313	3,386	6,114	4,241
Disconnection due to non-payment	187	86	96	123
Supplier switching	16	728	75	70
Technical reasons limiting the supply	0	3	34	30
Other	2,056	1,189	1,279	1,088
Total number of received complaints	**7,877**	**6,410**	**9,535**	**7,089**
Unjustified complaints	**2,559**	**1,820**	**4,013**	**2,996**

Sources: Electricity suppliers, Energy Agency

Table 34

DECISIONS ON COMPLAINTS BY ELECTRICITY HOUSEHOLD CONSUMERS AT ELECTRICITY SUPPLIERS IN THE PERIOD 2013–2016

Number of complaints	2013	2014	2015	2016
– received	7,877	6,410	9,535	7,089
– rejected	552	480	401	411
Number of complaints dealt with	**7,325**	**5,930**	**9,134**	**6,678**
– granted	4,765	4,110	5,121	3,682
– rejected	2,559	1,820	4,013	2,996

Sources: Electricity suppliers, Energy Agency

In 2016, the person appointed received two complaints or requests to initiate procedures related to suppliers' alleged violations from household consumers but both were rejected. In comparison with 2015, these are two complaints less.

The natural gas suppliers in 2016 received 1,555 complaints, disagreements and arguments of consumers, which is 1367 less than in 2015. The most of the complaints from household consumers were related to billing, that is 54%; in 2015 the share was 84%. Of all complaints, 602 or 39% were unjustified.

1,555

complaints received natural gas suppliers, 54% of them were related to billing

More detailed presentation of household consumers complaints against suppliers in the period 2013–2016 is shown in Table 35, and decisions taken on complaints in Table 36.

Table 35

HOUSEHOLD NATURAL GAS CONSUMERS COMPLAINTS AGAINST SUPPLIERS BY REASONS IN THE PERIOD 2013–2016

The reason for complaint	2013	2014	2015	2016
Terms of sale	163	27	55	89
Contract terms	438	67	181	114
Gas price	170	90	93	90
Bill	2,482	2,212	2,455	838
Disconnection due to non-payment	31	29	10	12
Supplier switching	1,202	27	34	41
Technical reasons limiting supply	46	73	77	68
Other	4	159	17	303
Total number of received complaints	**4,536**	**2,684**	**2,922**	**1,555**
Unjustified complaints	**1,099**	**979**	**1,384**	**602**

Sources: Natural gas suppliers, Energy Agency

Table 36

DECISIONS ON COMPLAINTS BY NATURAL GAS HOUSEHOLD CONSUMERS AT GAS SUPPLIERS IN THE PERIOD 2013–2016

Number of complaints	2013	2014	2015	2016
– received	4,536	2,684	2,922	1,555
–rejected	0	0	0	0
Number of complaints dealt with	**4,536**	**2,684**	**2,922**	**1,555**
– granted	3,437	979	1,538	953
– rejected	1,099	1,705	1,384	602

Sources: Natural gas suppliers, Energy Agency

The appointed persons in 2016 did not receive complaints from household consumers, while in 2015 received 13 complaints.

A household consumer may submit a request to the Energy Agency to decide on a dispute with a gas DSO. A request may be submitted to the Energy Agency if prior a preliminary procedure was carried out with a gas DSO.

In the area of gas, all DSOs received 1,204 complaints of consumers. Household consumers in 2016 filed 919 complaints, 948 less than in 2015 and as many as 1,840 complaints less than in 2013. Most of the complaints were related to metering, namely 54%, while in 2015 most of the complaints were related to billing, and was 62%. 406, or 44% of complaints from household consumers was unjustified. The details are shown in Table 37.

Table 37

COMPLAINTS OF NATURAL GAS HOUSEHOLD CONSUMERS AGAINST GAS DSOS IN THE PERIOD 2013–2016

The reason of complaint	2013	2014	2015	2016
Connection procedure	6	4	3	2
Planned interruption of supply	0	1	0	2
Unplanned interruption of supply	10	0	12	1
Network charge	59	8	31	33
Metering	752	446	569	494
General conditions	13	18	11	21
Bill	798	1,017	1,151	332
Supplier switching	1.060	25	40	6
Other	61	107	50	28
All complaints received	**2,759**	**1,626**	**1,867**	**919**
Unjustified complaints	**899**	**603**	**982**	**406**

Sources: Gas DSOs, Energy Agency

Possible violations of the general rules for the protection of household consumers in Slovenia are monitored and appropriately sanctioned also by the Market Inspectorate.

5.1.6 **Publication of prices**

Household consumers have the right to be informed of electricity and natural gas prices in a comprehensible manner, and to have possibility to compare these prices. All suppliers were publishing prices for households on their websites. Households could also use the Energy Agency's web application for comparison of electricity and gas supply costs, which are based on regular price lists and enable the comparison and calculation of the costs of supply on a monthly or annual level.

5.2 Consumer protection in administrative procedures

The Energy Agency decides on disputes related to:

- access to the system;
- amount charged for the use of the system;
- violations of the system operating instructions;
- establishing imbalances and amounts for covering the costs of imbalance settlement and violations of general acts governing imbalances and their settlement;
- other issues where stipulated by the EA-1.

These disputes arise from relations between the users of electricity or gas systems and system operators or electricity market operator.

The procedural condition for the Energy Agency's deciding on disputes at the first instance is the implementation of a preliminary ruling procedure at the respondent. The Energy Agency has in taking final decision extensive powers since it can, in addition to the decision on the review claim, order the party to carry out an action or prohibit to carry out an action, repeal, partially or in full, a contract or any other act, and decide on other matter if so provided by the legislation. The Energy Agency in an administrative procedure decides in the second instance on an appeal against a system operator's decision on issuing or rejecting a connection approval.

44

requests for decision in disputes and complaints received the Energy Agency, of which 28 at the instance and 16 at second instance

An appeal is not allowed against the decisions of the Energy Agency; only judicial protection in front of the Administrative Court is possible. The Energy Agency's decision cannot be abrogated or repealed by the right of scrutiny; only the Energy Agency may declare its decision null and void.

Procedures related to consumer protection conducted by the Energy Agency are free of charge since no administrative fees are charged for final decisions; all these procedures are short due to tight legal framework. The Energy Agency must decide on appeal within two months of receiving a full application; this deadline may be extended only with the consent of the applicant.

In comparison with 2015, when 20 requests were filed, this number in 2016 almost doubled. The Energy Agency received altogether 44 appeals for deciding; out of these 28 appeals for deciding at first instance (the number in comparison to 2015 almost tripled), and 16 at second instance (applications against a decision on granting or rejecting a connection approval). From the previous year, the Energy Agency decided on eight disputes. All of the disputes were related to electricity. In 11 cases, the parties were granted, 13 requests were rejected, six dismissed, two were assigned to the competent authority, and five procedures were suspended since the parties withdrew their requests. 37 applications were resolved, and 15 at the end of reporting period remained open.

In comparison with the last five years, when deciding on the appeals against the issued connection approval, in 2016 the settlements of disputes increased. Subject matter of the submitted requests in comparison to 2015 expanded; in dispute settlements apart to the prevailing requirements for decisions related to improper functioning of measuring or control devices, the number of alleged violation of the guaranteed supply standards and the requirement for the regulation of the advanced metering system implementation. Users complained to the given connection approvals in particular because of disputes between co-owners of property, incorrect classification into the consumer groups and in addition because of procedural reasons.

Against decisions taken by the Energy Agency seven administrative disputes were filed to the Administrative Court; all of them are still under consideration.

5.3 Monitoring the electricity and natural gas market

The Energy Agency supervises the implementation of the provisions of EU regulations and the provisions of the EA-1 concerning electricity and gas markets and regulations and general acts issued under EA-1, except in cases that under this Act fall under the jurisdiction of individual competent inspections. The Energy Agency also monitor the implementation of the provisions of the EU regulations concerning internal energy market. In monitoring procedures the provisions of Inspection Act are applicable. The Energy Agency controls and imposes the control measures by official duty, or in connection with the reporting of alleged violations.

The Energy Agency as the minor offence authority also decides on the violations of the Energy Act and regulations issued under EA-1 in accordance with Minor Offences Act.

The Energy Agency in 2016 supervised suppliers of electricity and natural gas, system operators, contractors of distribution system operators and other providers of energy-related activities.

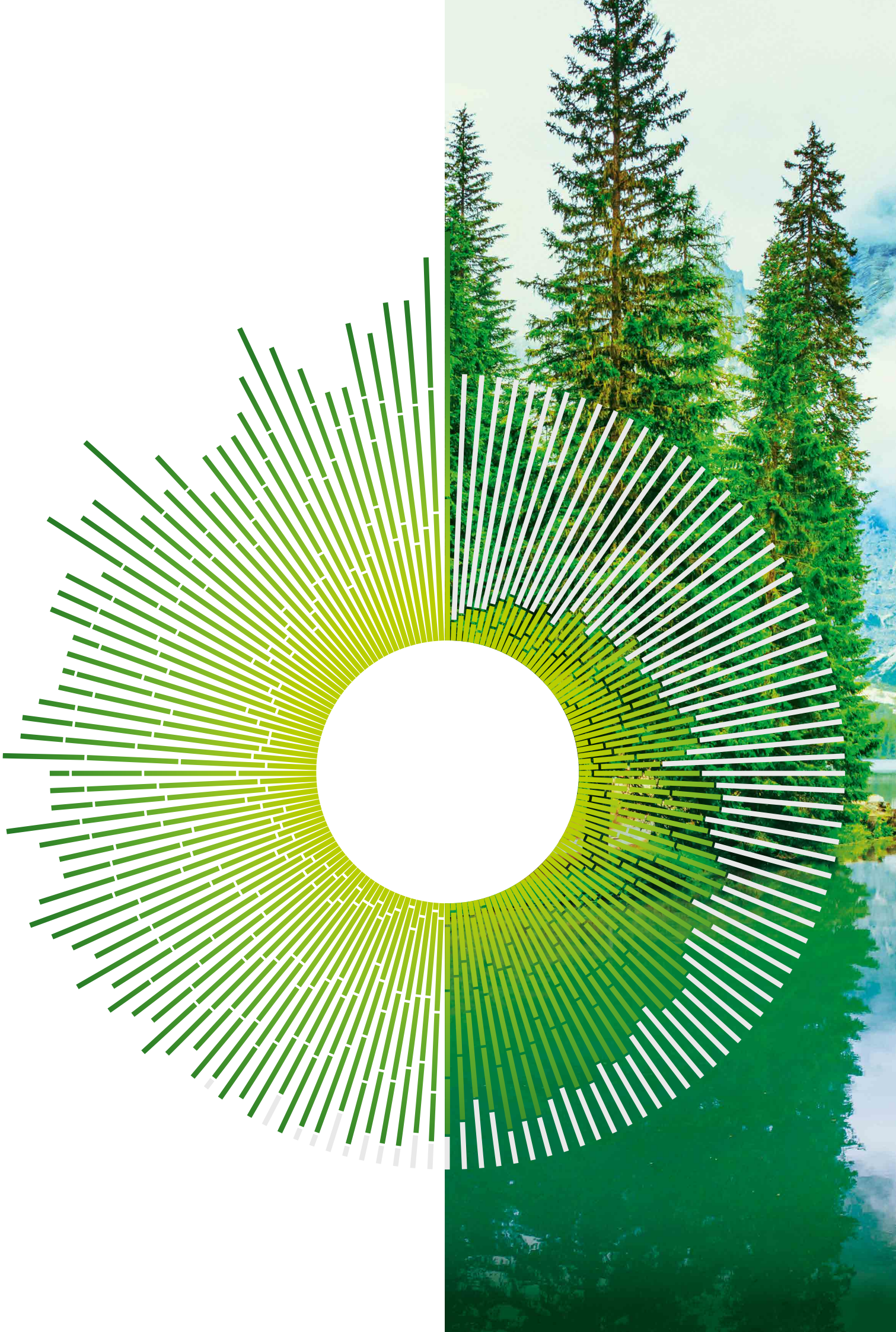
Among other things it supervised:

- charging flat-rate operating costs with regular pricelists;
- the legal status of the isolated distribution systems and regularity of the implementation of the electricity supply;
- indication of a measuring point and disclosure of units of account on a single bill;
- disclosure of production sources on bills, promotional materials and suppliers' websites;
- charging the network charge to final consumers;
- the compliance of approved rules and published rules;
- primary frequency regulation;
- the publication of price lists for network charge tariffs and other services;
- the key elements of the supply contract and the general contractual conditions of electricity suppliers and the complaints handling procedures at electricity suppliers for household consumers and publication of valid price list on the websites;
- the compliance of issued and published documents with applicable legislation.

In comparison to 2015, when 69 cases related to the monitoring were under the Energy Agency's supervision, in 2016 the number of procedures increased again. The Energy Agency opened 45 new cases, and 41 were transferred from the previous year. 61 cases were related to electricity, 14 to natural gas. Out of total 86 cases, 59 monitoring procedures were initiated ex officio, and 27 on the basis of received applications. In 39 cases the Energy Agency with its activities managed that violations were eliminated during the procedures and issued warnings to the regulated entities with a reference to follow the applicable law. The procedures, in which violations have not been established, were terminated with a decision to discontinue the proceedings. At the end of the year 24 remained unresolved. In addition to these procedures in 2017 were transferred also cases from the previous year, in particular with regard to the enabling direct access to data, primary regulation and legal status of the network.

39

warnings were issued in monitoring procedures



06

Renewable energy sources, cogeneration, and energy efficiency

The total rated capacity of production facilities included in the support scheme at the end of 2016 reached 412 MW; in these facilities was produced 1003.5 GWh of electricity. The actual costs of the support scheme in 2016 were around EUR 139 million, and the average support per MWh of electricity was EUR 138.5.

41

projects of wind power plants with a total rated capacity larger than 56 MW were submitted to the first public tender for entry to the support scheme, which was prepared by the Energy Agency.

15%

was the share of the contribution for the RES and CHP in the total costs for electricity of the typical household consumer.

Since joining the EU, the climate and energy policy of the EU has binding effects on the creation of this policy at the national level. The promotion of the use of renewable energy sources (hereinafter RES) has in the Slovenian energy policy an important place for many years. Improving energy efficiency and increasing the exploitation of energy sources from renewables bring positive effects on the environment – reduce greenhouse gas emissions, provide greater security of energy supply, boost technological development and innovation and have a favourable impact on employment and regional development. They are also an important factor contributing to the quality of air. Among key factors to improve the efficiency of energy use is also high-efficiency cogeneration of heat and power (hereinafter CHP).

Although the EU with its proposal in the context of so-called Winter Package creates even more ambitious objectives for the use of renewable sources, with which the EU is obliged to reach at least 27% share of energy from RES, for Slovenia are at the time of drafting this report binding the targets of RES set up for the period to 2020. Slovenia has a binding target for RES and a national renewable energy action plan for 2010-2020 (hereinafter NREAP) prepared, both as a consequence of the joint environmental energy policy of the EU. Member States are committed to reach common goal - 20% share of RES in gross final energy consumption at the EU level, as well imposed national targets in accordance with their economic conditions and energy potential. Slovenia has to by 2020 achieve 25% share of RES in gross final energy consumption and 10% of RES in transport; which is the same for all Member States. For CHP there are no specific goals but a contribution of this technology to achieve the energy efficiency national targets is important. In accordance with Article 3 of Directive 2012/27/EU, Slovenia has set a target to improve energy efficiency by 2020 in a way that the use of primary energy in 2020 will not exceed 7.125 Mtoe (82.86 MWh).

Slovenia has a goal set forth, namely by 2020 achieve 25% share of RES in gross final energy consumption. In 2015 the share of RES in gross final energy consumption in Slovenia was 22%, and by 6 percentage point higher than in 2005. By 2020 the share of RES should be increased by 3 percentage points. In electricity is Slovenia 6.6 percentage points behind the target.

The assessment for 2016, which is during the drafting of this report based on not-yet-final data of the Statistical Office of the Republic of Slovenia, does not show significant progress in coming closer to goals in 2020 in the area of electricity as well as in transport.

Table 38

THE ACHIEVED RES TARGETS

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Estimation 2016	2020
Share of RES [%]														Target share
Share of RES	16.1	16.0	15.6	15.6	15.0	20.1	20.4	20.3	20.8	22.4	21.5	22.0	21.2	25.0
Transport	0.9	0.8	1.1	1.5	1.8	2.3	3.1	2.5	3.3	3.8	2.9	2.2	1.7	10.5
Electricity	29.3	28.7	28.2	27.7	30.0	33.8	32.2	31.0	31.6	33.1	33.9	32.7	32.1	39.3
Heating and cooling	18.4	18.9	18.6	20.4	19.2	27.6	28.1	30.3	31.5	33.4	32.4	34.1	34.1	30.8
Difference between the achieved and planned share of RES in National Renevable Energy Action Plan [percentage point]														Difference from 2015 to targets
Total							**2.7**	**2.1**	**2.1**	**2.9**	**1.4**	**0.8**	**–0.6**	**–3.0**
Transport							0.5	–0.3	0.2	0.3	–1.1	–2.5	–3.9	–8.3
Electricity							–0.2	–1.3	–0.7	–0.6	0.4	–2.7	–3.9	–6.6
Heating and cooling							5.8	7.0	7.1	8.0	6.1	6.8	6.1	3.3

Source: Statistical Office of the Republic of Slovenia

6.1 The RES and CHP support scheme

An important part of the climate and energy policy in promoting the development of electricity production from RES and the CHP represents the so-called support scheme for RES and the CHP, under which the producers of electricity produced from RES and CHP may be granted state aid. Production from RES and CHP has been in Slovenia promoted since 2002; back then within the system of "qualified producers", which, however, did not yield target results. Mainly because of this and also due to the requirements of the European Commission the system in 2009 significantly altered. With the new support scheme, several changes were introduced to encourage in the past quite slow development of RES and CHP, and thereby to ensure the achievement of national targets. The supports had to be harmonized with the EU legislation on granting state aids; the support scheme was successfully notified to the Commission as a permitted form of state aid for 15 years. Integration of devices into the support scheme differed from the plans in the national documents (NREAP 2010–2020) since the most expensive technologies represented 79 or 85% of all new investments in 2010 and 2011, which resulted in an unplanned increase in costs of the support scheme and consequently high costs for final consumers that had to pay contributions for financing the support scheme. This was also the main reason for another amendment of the support scheme.

The amendment was introduced with the new Energy Act in 2014; this time with an aim to control the costs of the support scheme and competitive allocation of a proportional share of state aids. The funding should be encouraging for investors to invest in new RES and CHP projects. It should be noted that the rules for granting state aid are the exclusive competence of the European Union and all national legislation is adapted to these rules. This also applies to setting the rules and determination of conditions of the support scheme that have to be approved by the European Commission before the implementation of the scheme. This is also the main reason why the support scheme established by the Energy Act was implemented only at the end of 2016, after when was in October 2016 successfully completed the notification process at the European Commission; the Commission declared the amendments of the scheme compatible with the internal market.

At the end of the year, a competitive way of granting support was enforced by the publication of a public invitation to enter projects into the support scheme

The operation, organizational structure of the support scheme and the responsibilities and tasks of the institutions responsible for the functioning of the scheme, i.e. the Energy Agency and Centre for Support, acting within the framework of Borzen, are governed by the Regulation on Support for Electricity Generated from Renewable Energy Sources and from High-Efficiency Cogeneration, which came into force at the end of November 2016.

Within the support scheme to the producers of electricity from RES and CHP the state aid is allocated; the difference between the production costs and the revenues, if the production costs, including normal market yields on investments, exceeds the price of this electricity that can be achieved in the market. The scheme supports the generation of electricity from the following RES: hydro energy, wind, solar energy, geothermal energy, biomass, biogas, energy from landfill gas and sewage treatment plants and energy from biodegradable waste. From 2010 until the implementation of the Energy Act generating plants on RES up to 125 MW and CHP plants up to 200 MW could participate in the scheme. Since the implementation of the Energy Act grants are limited to generating plants using RES up to 10 MW, except for plants using the wind where this limit is 50 MW, and high-efficiency cogeneration up to 20 MW.

The producers are only entitled to financial aid if their projects for production facilities using RES or CHP are selected in the process of competition selection of projects submitted to the first public call, which the Energy Agency has to issue in accordance with Article 373 of the Energy Act. Until the implementation of the Energy Act, the application and the fulfilment of the required conditions was enough to enter the scheme.

In the case of cogeneration of electricity and heat grants are intended only for high-efficiency cogeneration providing primary energy savings. A general criteria for operating hours is applied; according to this criteria plants are divided into two groups with different level of support – under 4,000 hours and more than 4,000 annual operating hours. The separation is mainly intended for the distinction between seasonal and annual operation.

The support for electricity from RES and CHP is carried out as a guaranteed purchase of electricity at a predetermined fixed price, or as operating premium where the producer sells its energy on the market; as state aid is paid the difference between the identified cost of production, which includes normal rate of return, and the reference market price of electricity. The future development of the support scheme is a slow phasing out of guaranteed prices, and the priority becomes a full integration of this electricity to the market. With the alteration of the support scheme the guaranteed purchase price of electricity is restricted only to the production facilities with a nominal power up to 0.5 MW. The support is limited to 15 years for plants using RES and 10 for cogeneration units.

In the support scheme are included the owners or operators of production facilities, for which the declaration for the operating facilities and the decision on granting support were obtained by the Energy Agency, and sign a contract with Centre for RES/CHP to provide a support. If the contract on guaranteed purchase is signed, Centre for RES/CHP takes over the electricity and pays the price determined in accordance with the decision on granting Support. The facility is included in the special balance group or subgroup established by the Centre for Support. Centre manages the settlement of differences between forecasted and actual generation and pays eligible producers for the electricity delivered to public network a guaranteed price. If an operating premium contract is signed, the Centre for Support does not pay for the electricity; on the basis of data on the net amount of electricity only pays a premium as a difference between operating costs and market price. In this case, the producers must provide for the settlement of the difference between forecasted and actual production and for the balance group; or the settlement is arranged by the supplier with whom they have signed an open contract for the sale of electricity. The support scheme funds are managed by the Centre of Support.

With the implementation of the support scheme in 2009, it has also changed its funding. Financing mechanisms set by the Regulation on the method of determining and calculating the contribution for ensuring support for the production of electricity from high-efficiency cogeneration and renewable energy sources is based on contributions paid by all final consumers of electricity, natural gas, and other energy gases from the network and district heating for an individual consumption point, and also final customers of solid and liquid fossil fuels, liquefied petroleum gas and liquefied natural gas. Until 1 June 2014 the contributions were paid only by final consumers of electricity, and after this date also final consumers of solid, liquefied and gaseous fossil fuels, and consumers connected to district heating.

6.1.1 Production facilities included in the RES/CHP support scheme and their total installed capacity

3,888
production facilities with a total installed capacity of 412 MW were included in the support scheme at the end of 2016

At the end of 2016, 2,400 producers with a total around 3,888 production facilities were included in the support scheme; most of them were solar power plants, as much as 85%. All production facilities involved in the support scheme fall under the terms which were in force before the enforcement of the Energy Act-1.

Table 39, which indicates the number of the production facilities included in the support scheme, can be seen a considerable increase in the number of solar power plants in 2010, 2011 and 2012 – in the period when values of support were extremely favourable in relation to the market value of elements of these plants. It should be clarified that the inclusion in the scheme can be carried out a few months after the actual implementation of the investment. Due to obvious reduction of support for solar plants in 2012, constructions of these plants after this period significantly declined. After 2012 more entries to the support scheme were recorded on behalf of high-efficiency cogeneration units using fossil fuels

in the period 2013–2015. This was mainly conditioned by the transitional provision of the Energy Act-1 that enabled producers to gain the support for all electricity generated in the facilities for which the producers concluded a contract on the use of the system within the months following the entry into force of the Energy Act-1, that is under the previous regulation.

Table 39

NUMBER OF PRODUCTION FACILITIES INCLUDED IN THE SUPPORT SCHEME, AND DYNAMICS OF THEIR INCLUSION (UNDER THE TERMS BEFORE THE ENACTMENT OF THE ENERGY ACT)

Source	Number of production facilities included in the support scheme						
	2010	2011	2012	2013	2014	2015	2016
Solar energy	381	975	2,406	3,218	3,319	3,339	3,323
Wind power	3	4	3	5	4	9	7
Hydro power	105	109	108	106	106	106	98
Biomass	0	3	5	10	19	43	44
Biogas	13	26	31	31	31	33	32
CHP, fossil fuels	26	46	89	184	270	390	384
Total	**528**	**1,163**	**2,642**	**3,554**	**3,749**	**3,920**	**3,888**

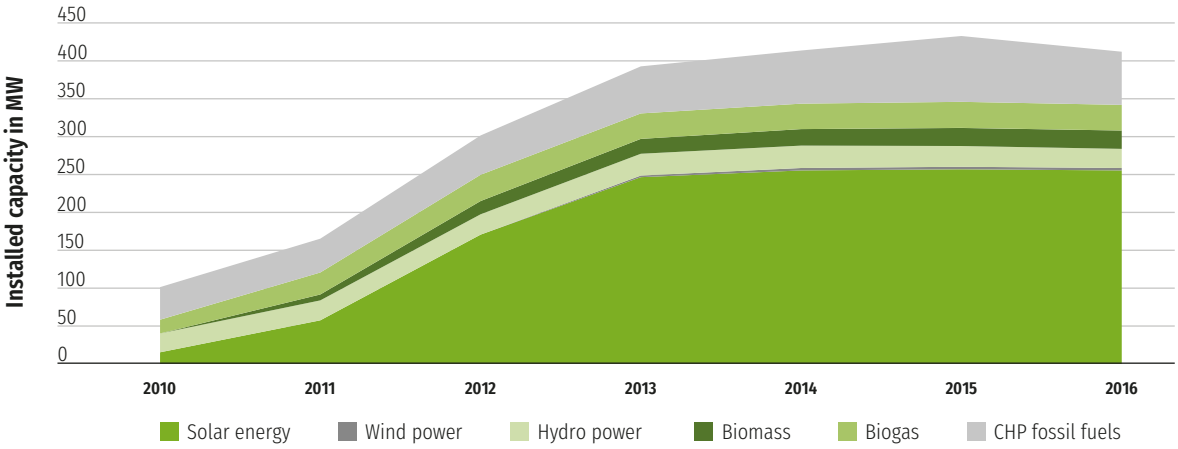
Sources: Energy Agency, Borzen

The total nominal capacity of the facilities included in the support scheme at the end of 2016 amounted to 412 MW, which is 5% less than in 2015 and four times more than in 2010. Reduction of the total nominal capacity was mainly the consequence of the expiration of the right to support due to the age limit of the production facilities, which should exceed 10 years for CHP units and 15 for RES. At the installed capacity, solar power plants prevailed with 3,323 production facilities with a total rated power output of 255 MW or 62% of the installed capacity included in the support scheme. The next group of production facilities are the high-efficiency cogeneration units using fossil fuels; at the end of 2016, 384 such devices were included in the support scheme, with a total installed capacity of 70 MW or 17% of the total installed capacity of all plants included in the support scheme.

Already described intensity of the integration of electricity producers or their facilities is evident in the Figure 120, which shows an obvious increase in installed capacity of solar power plants in 2010, 2011 and 2012, and more significant investment activities than expected, when a possible termination of entry in the support scheme under the conditions that applied before the introduction of Energy Act, was announced.

Figure 120

THE TOTAL INSTALLED CAPACITY OF PRODUCTION FACILITIES INCLUDED IN THE SUPPORT SCHEME FROM 2010–2016



Sources: Energy Agency, Borzen

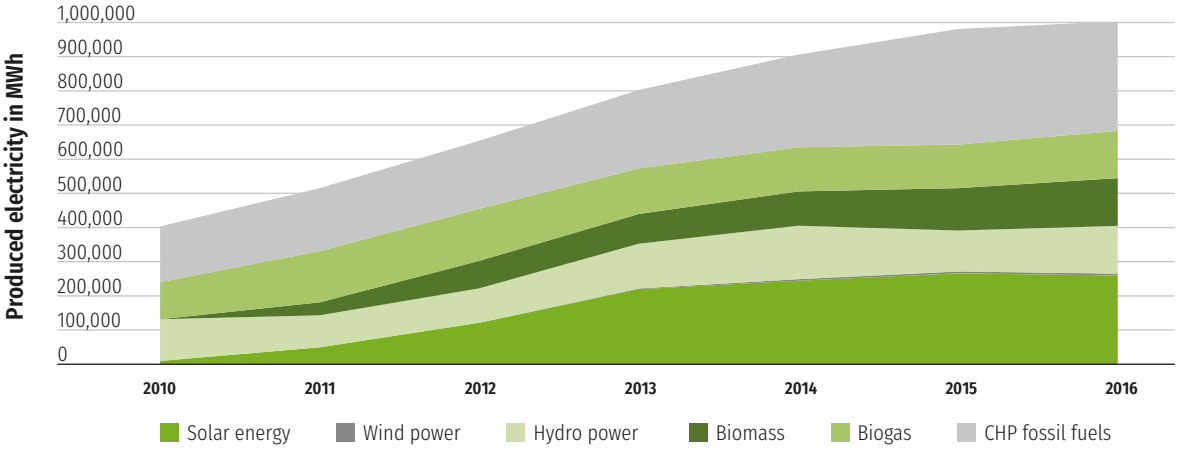
6.1.2 Electricity produced in the support scheme

Production facilities included in the support scheme in 2016 generated 1,003.5 GWh of electricity, for which the support was paid to the producers. Production in 2016 was by 2% higher than in 2015 and in comparison with 2010 more than doubled. Even though the installed capacity of the solar power plants still prevails in the support scheme, was in 2016 in the cogeneration units, using fossil fuels, whose total nominal capacity at the end of 2016 amounted to 70 MW, generated 321 GWh, and in solar power plants with the total installed nominal capacity of 255 MW was generated 260 GWh of electricity.

All together in 2016 production facilities included in the support scheme generated 683 GWh or 68% of all energy for which the support was paid, and 321 GWh of electricity or 32% of energy, for which the support was paid, was generated from fossil fuels in high-efficiency cogeneration.

Figure 121

PRODUCED ELECTRICITY FOR THE PERIOD 2010–2016, FOR WHICH ELECTRICITY PRODUCERS INCLUDED IN THE SUPPORT SCHEME RECEIVED SUPPORT



Sources: Energy Agency, Borzen

6.1.3 **Support payments**

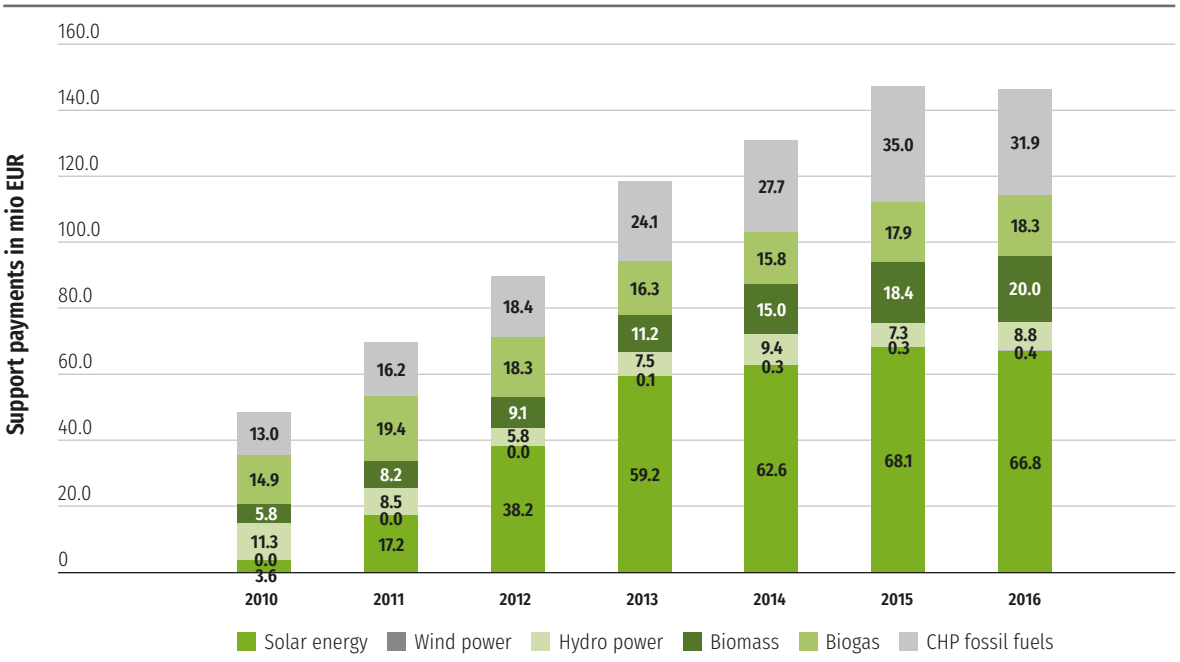
In 2016, the electricity producers included in the support scheme received EUR 146.2 million for 1,003.5 GWh of produced electricity; in comparison with 2015 that was EUR 0.9 million less; in the period 2010–2016 altogether EUR 750.3 million were paid for the support. It should be noted that in 2010 support payments also included production facilities of qualified producers in the total value of around EUR 11 million, which were eligible for the support by 2011, irrespective of the fact that they did not meet the criteria to enter the support scheme.

The actual amount of support payments is slightly lower than payments to the producers themselves. The amount is lower on behalf of the sold electricity, which Centre for Support takes over and buys from the producers included in the support scheme and then sells in the market. In that way, the actual costs of the support scheme in 2016 amounted to around EUR 139 million. The average support payment in 2016 was EUR 138.5 for megawatt hour.

EUR 146.2
million were paid for support of 1,003.5 GWh of produced electricity

Figure 122

SUPPORT PAYMENTS IN THE PERIOD 2010–2016

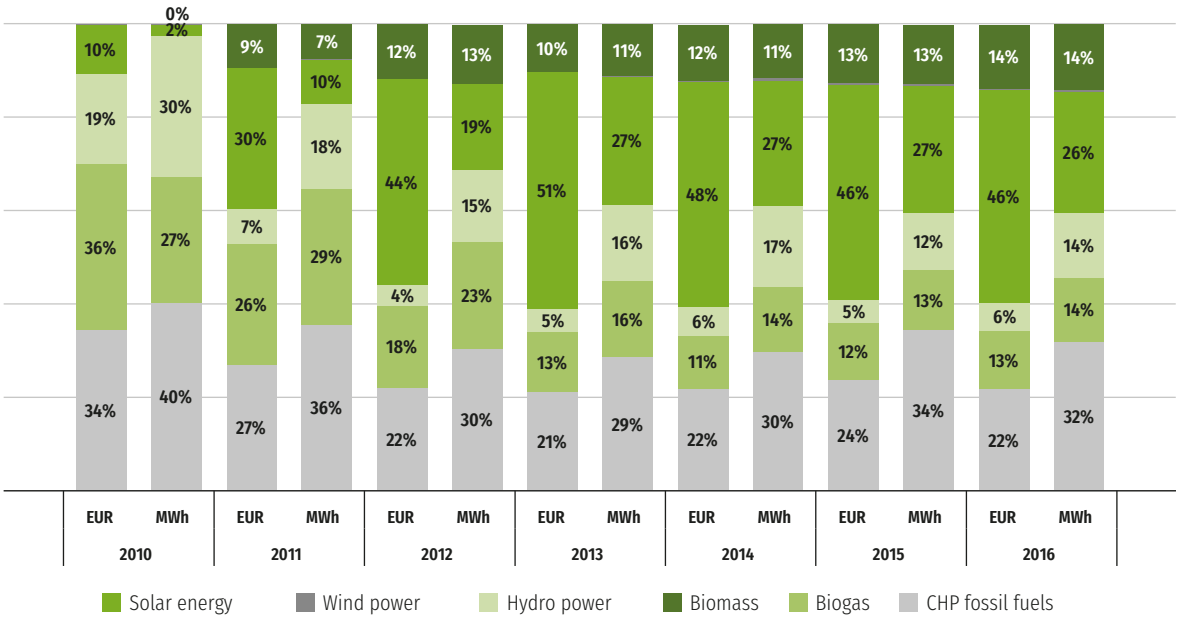


Source: Borzen

Figure 123 shows the ratio between the support payments by source and the volume of electricity production by source. The ratio between the paid support and the amount of power produced is in favour of production in hydro power plants, which means that for this production on average support payments are lower in comparison to other generation included in the support scheme. The similar correlation can be seen between the production in wind-powered plants, but so far the share of this production has been of negligible degree. The less favourable is the ratio between the support payment and produced electricity in solar power plants (in addition to smaller production units using biomass); the support payment for a unit of produced electricity is on average the highest.

Figure 123

THE RATIO BETWEEN THE SUPPORT PAYMENTS BY SOURCE AND THE VOLUME OF ELECTRICITY PRODUCTION BY SOURCE IN THE PERIOD 2010–2016



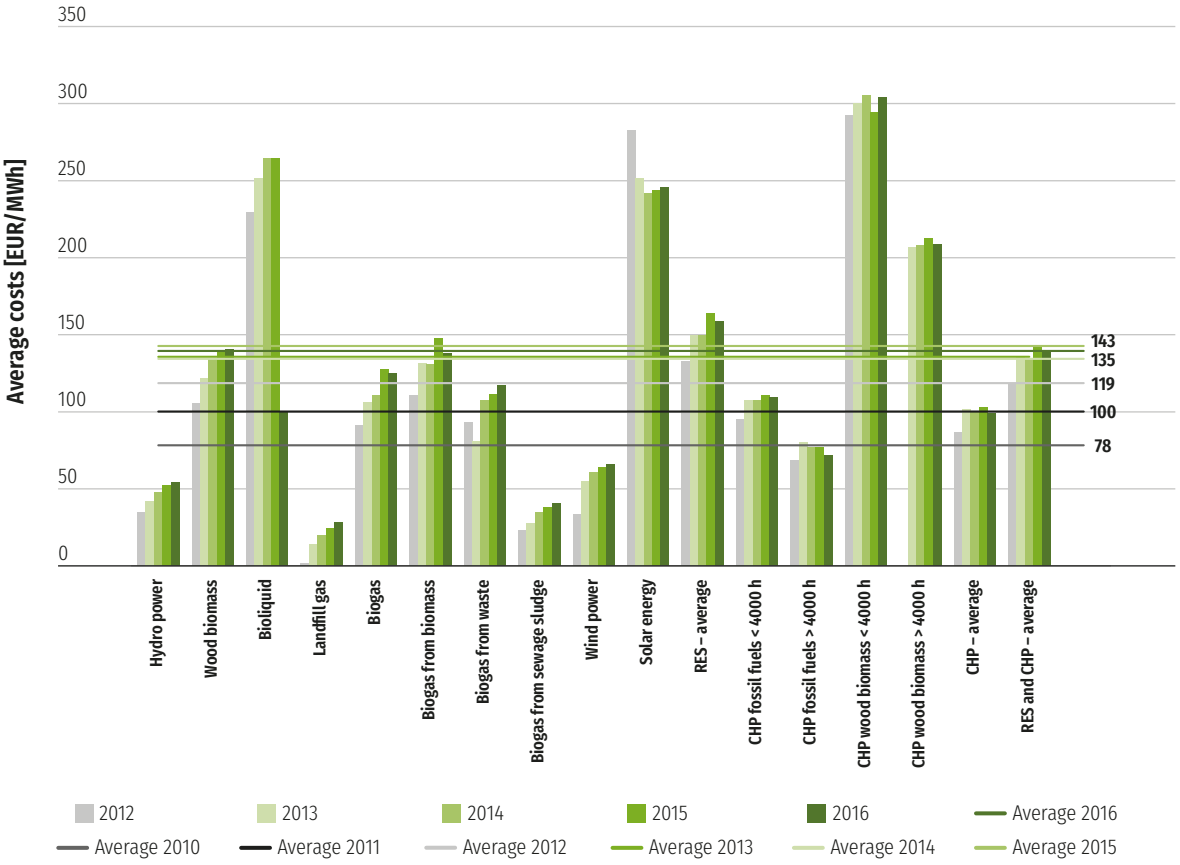
Sources: Energy Agency, Borzen

Figure 124 shows the average costs of the support payments for a unit of produced electricity by source. In 2010 the average support was 78 EUR/MWh, and these costs have been increasing: to 100 EUR/MWh in 2011, in 2012 to 119 EUR/MWh, in 2013 to 136 EUR/MWh and in 2015 it was 143 EUR/MWh. Higher costs for the production of electricity from cogeneration units are mainly due to changes in the structure of support recipients. Namely, in the support scheme entered more micro-generating plants, which are characterized by higher reference production costs, and consequently higher support payments. A significant impact on the growth of the average support payment per RES production unit during 2010–2013 was the higher number of installed solar power plants with high values of support by the end of 2012 and an increase in the number of CHP in 2014 at the time of the amendment of the support scheme. Changes in support values per unit were also caused by reference prices of electricity and other energy sources.

Solar plant technology is the only technology in the support scheme for which the reference costs and consequently the supports were decreasing from 2011. For other sources, average support payments were decreasing because of different support recipients (larger generating plants were entering the support scheme) and because of changes in reference prices of energy products and electricity.

Figure 124

AVERAGE COSTS OF SUPPORT PAYMENTS IN THE NEW SCHEME PER UNIT OF PRODUCTION BY ENERGY SOURCE



Sources: IJS-CEU, Energy Agency, Borzen

6.1.4 Public call for investors to submit projects for production facilities using RES or CHP

With the implementation of the Energy Act-1 an obligation of the Republic of Slovenia was established to grant the support for electricity produced from RES and in CHP through a competitive selection procedure. With that, the support scheme was modified and harmonized by in 2014 established Community Guidelines on State Aid for Environmental Protection for the period 2014–2020, with which European Commission set the new rules for the definition of the state aid – support for operating for electricity producers from RES and CHP. Guidelines require a competitive bidding process, open to all electricity producers on the basis of clear, transparent and non-discriminatory criteria.

The amendment of the support scheme had to be notified to the European Commission before its implementation; the Commission issued a decision on the compatibility of the amendments with the common market at the end of October 2016. The first public tender was, therefore, possible only at the end of the year.

276

projects for production facilities were registered at the first public call for entry into the support scheme

On 16 December 2016, the Energy Agency published the first public call to submit projects for generation units using RES or CHP for entry into the support scheme, which ended on 28 February 2017 and to which 276 projects have applied. Among them, there were 41 projects of wind power plants with a total nominal capacity of 56 MW.

Table 40

AGGREGATED DATA ON THE NOMINAL CAPACITY AND NUMBER OF SUBMITTED PROJECTS ACCORDING TO ENERGY SOURCES

Energy source	Number of projects	Power in MW
Hydro power	52	10,95
Biogas from biomass	3	6,03
Landfill gas	4	0,61
Wood biomass	40	12,47
Solar energy	105	12,64
Wind power	41	56,19
Natural gas	31	28,89
Total	**276**	**127,78**

Source: Energy Agency

This is the only call, in which the funds are allocated according to the technology of production units and under which in the competitive process so many projects can be selected that will be achieved the permitted increase in the volume of assets for the support scheme at the annual level in the amount of EUR 10 million. The funds will be distributed to projects within target technologies that are the same as the range of available additional resources for granting support under competitive tender set down in the plan for the implementation of the support scheme, which is an integral part of the annual energy balance of the Republic of Slovenia.

1st round:

- 1st group: EUR 1 million for hydroelectric power plants of 1 MW or less;
- 2nd group: EUR 3 million for wood biomass plants of 1 MW or less;
- 3rd group: EUR 1 million for CHP installations using natural gas of 50 kW or less.

2nd round:

- 4th group: EUR 3 million for renovated CHP installations operating in district heating systems;
- 5th group: EUR 2 million for the projects:
  - of other installations that are not defined in the groups of the 1st round;
  - of production facilities RES and CHP that were less competitive in the 1st round.

The projects will be selected in the first half of 2017, the main criteria for the selection is the offered price. The selected projects will be published on the website of the Energy Agency. The projects rejected by the decision the potential investors can submit to the next tender, which is expected to be published in the second half of 2017 and which will be at the request of the European Commission run on a technology neutral basis.

6.1.5 The costs of the support scheme and financial contribution of end consumer for the provision of support

Financing of electricity production from RES and CHP is provided by collecting funds through the contributions for RES and CHP paid by all final consumers in Slovenia since 2009. From June 2014, this contribution is paid also by consumers of solid and liquid fuels, natural gas, LNG, and users of district heating.

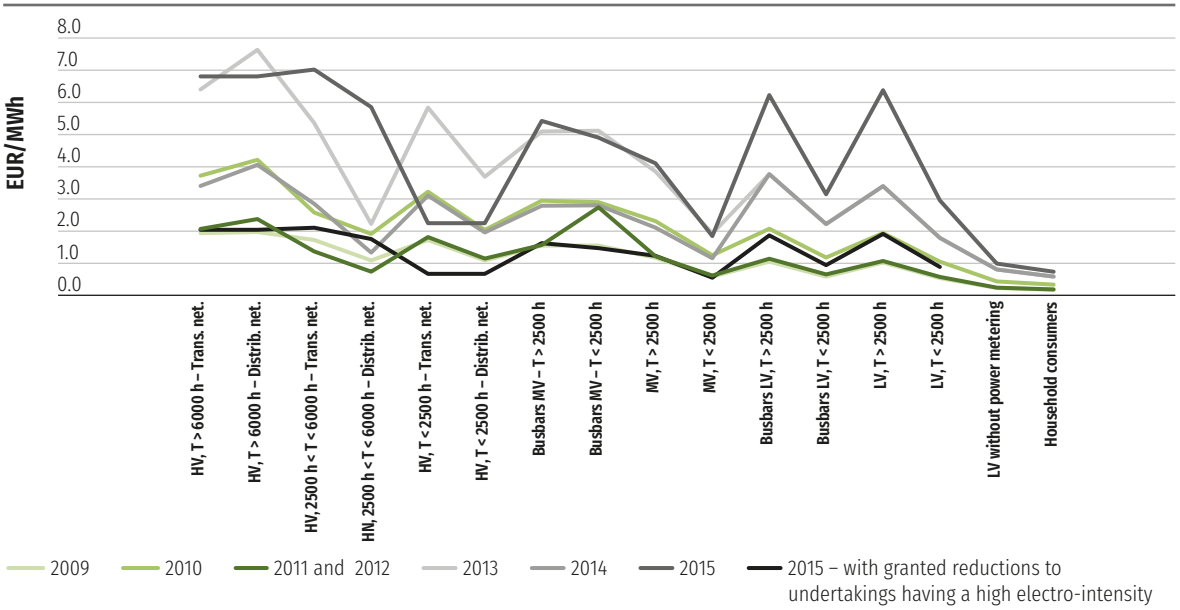
In August 2015, the contribution decreased for final energy-intensive industries, which meet the requirements under Article 6 of Regulation on the Method of Determining and Calculating the Contribution for Ensuring Support for the Production of Electricity from High-Efficiency Cogeneration and Renewable Energy Sources; consequently a higher contribution was determined for other end consumers

of electricity. The contribution for other energy products hasn't been changed since its implementation in 2014 until the end of 2016.

The contribution is constantly adapting in order to provide sufficient financial resources for funding the support scheme. Final electricity consumers pay much than final consumers or buyers of other energy products.

Figure 125

CHANGES OF CONTRIBUTIONS BY THE INDIVIDUAL CONSUMER GROUPS OF END-USERS OF ELECTRICITY IN THE PERIOD 2009–2016



Source: Energy Agency

Table 41

CHARGES ON FOSSIL FUELS, IMPLEMENTED IN 2014

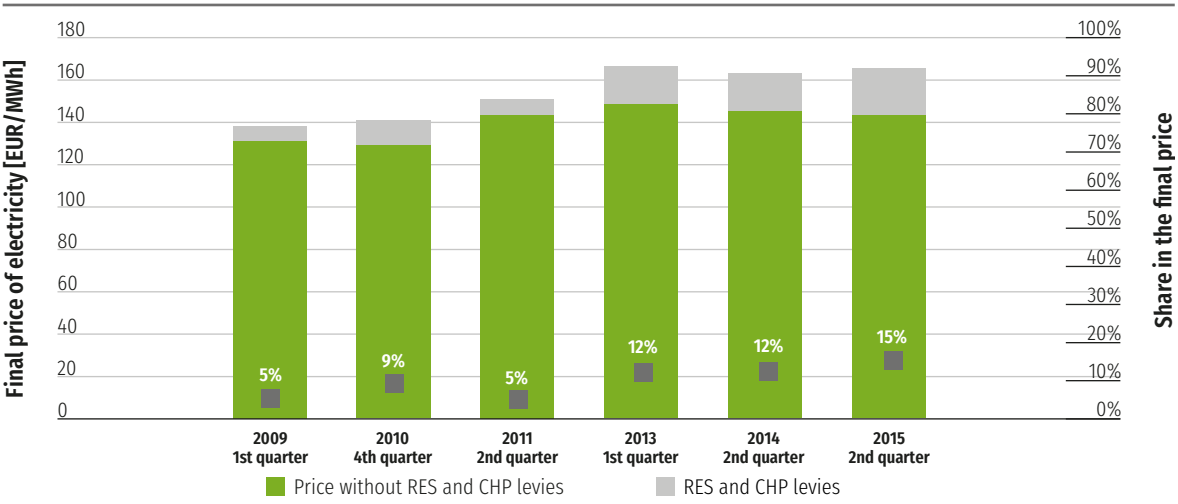
Energy source	Sales unit	Charge in euros per sales unit
Natural gas	MWh	0.99045
Extra light fuel oil	l	0.00990
Fuel oil	kg	0.01092
Petrol	l	0.00911
Diesel	l	0.00990
Aviation fuel	l	0.00911
Kerosene	l	0.00913
Autogas – LPG	kg	0.01267
LPG for households	kg	0.01267
District heating	MWh	0.99045
Coal, lignite, coke	kg	Calculated by suppliers

Source: Energy Agency

Financial burden imposed on final consumers of electricity mainly depends on the consumer group and capacity charge at delivery point. With the latest amendment to the contribution paid by final electricity consumers in 2015 the share of contribution in overall costs of electricity for typical electricity consumer increased by 15%.

Figure 126

FINANCIAL BURDEN IMPOSED ON TYPICAL HOUSEHOLD CONSUMER (ANNUAL CONSUMPTION 3,500 KWH, CAPACITY NETWORK CHARGE 8 KW) WITH CONTRIBUTIONS FOR PROVIDING SUPPORTS IN THE PERIOD 2009–2016 WITH A FOCUS ON CHANGES IN THE AMOUNT OF CONTRIBUTION



Source: Energy Agency

All changes in contributions for providing supports are published by the Energy Agency in a general act after obtaining the Government consent.

6.2 Final energy savings achieved with contributions from suppliers

6.2.1 Energy efficiency obligation scheme in Slovenia

The EU places the policy of energy efficiency at the core of the Union energy strategy and identifies it as a major element in ensuring sustainability of the use of energy resources. The overall objective of the energy efficiency target is increasing energy efficiency improvements of 20% by 2020. To that end, adopted Directive 2012/27/EC defines the methods of implementation of energy efficiency policy. From the Member States requires to set up their energy efficiency obligation scheme, to determine the participants obliged to achieve mandatory energy savings within the system, and under the directive's guidelines set the amount of energy savings by 2020.

The target saving on the annual level in the energy efficiency obligation scheme in the period from 1 January 2014 to 31 December 2020 has to be at least 1.5% of the annual energy sold to final consumers by obligated parties to achieve energy savings averaged over a three-year period before 1 January 2013. From this, the quantity of energy sold for transport can be exempted. The basis for the calculations of the target energy savings by the distributors on the Slovenian level is an average final consumption of energy over the period 2010–2012, which is, in accordance with the third paragraph of Article 7 of the Directive, reduced by 25%.

The target energy savings in Slovenia in 2020 will be 3319 GWh, and the cumulative savings during the period 2014–2020 will be 11,596 GWh (NREAP 2014–2020, 2015).

Slovenia will meet this target by using combined alternative policy measures, which means that half of the mandatory energy savings will be achieved by energy suppliers, and the other will be achieved by ECO-Fund through contributions for the efficient use of energy paid by the final consumer. Slovenia must achieve 1.5% on the annual level, where obligatory parties must gradually attain their half of the targeted savings, and another half, that is 0.75% on the annual level, must be achieved by with measures taken by Eco-Fund:

- in 2015, which was the transitional period, obligatory parties had to achieve 0.25% of sold energy in 2014;
- in years 2016 and 2017 0.50% of sold energy in the previous year;
- in the period 2018–2020 it is necessary to realize the overall energy savings in the amount of 0.75% in relation to the sold energy in the previous calendar year.

An additional tax relief applies to suppliers of liquid fuels; they must every year by 2020 achieve savings to the extent of 0.25% of sold petrol and diesel fuels to final consumers in the previous calendar year.

As an exemption, obligated parties may among energy savings take into account savings achieved in the energy transformation, distribution, and transmission, including efficient district heating and cooling infrastructure. These energy savings are not achieved directly among final consumers.

6.2.2 Obligated parties to achieve energy savings and the role of the Energy Agency

Obligated parties to achieve energy savings are suppliers of electricity, gas, heat, solid and liquid fuels to the final consumers, who purchase energy to final consumers. Obligated parties have to report to the Energy Agency annually on the achievement of energy savings.

Energy efficiency directive from 2012 provides that measuring and monitoring of achieved energy savings among final consumers in EU are performed by independent bodies. The Energy Agency is as an independent authority committed to monitor and control achieved energy savings within the energy efficiency obligation scheme and also report on achieved savings.

6.2.3 Final energy savings

The obligation is precisely determined in the regulation. In 2016, the obligated parties had to achieve the savings equal to 0.50% of sold energy in 2015, with the exception for parties selling petrol and diesel fuels, as their commitment in 2016 was to achieve savings to the extent of 0.25% of fuels sold in the previous year.

327.29

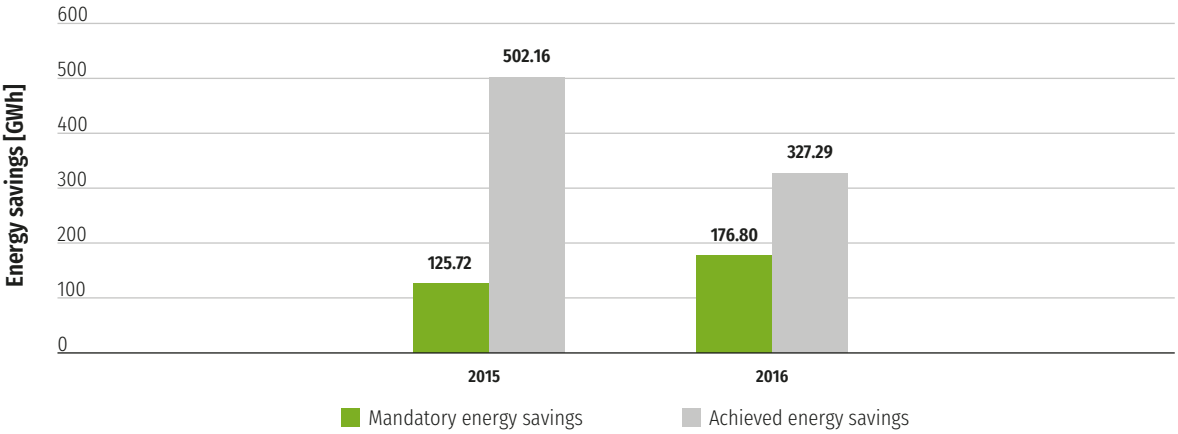
GWh of final energy savings were achieved by the obligated parties in 2016

According to the collected data from obligated parties, the sum of sold energy in 2015 was equal to 46,425.75 GWh and the target savings for 2016 amounted to 176.80 GWh. The reported sum of sold energy by obligated parties in 2014 that reported to the Energy Agency on achieved savings in 2015 was 50,286.97, and according to this the energy target saving in 2015 is 125.75 GWh.

In 2016, the obligated parties in total reached 327.29 GWh of energy savings, and 502.16 GWh in 2015 as shown in Figure 127; in both years the mandatory energy savings were exceeded. Actual energy savings were in 2016 for 174.87 GWh or 35% lower than in 2015. This is mainly due to the implementation of different measures, which create different amounts of savings, as well as the possibility using a surplus of savings of the previous year. The extent of savings that exceeds the target value can obligated parties enforce as a target saving over the next three years of its origin. It should be noted that the extent of energy savings is not a measured category; amounts of energy savings achieved by an individual measure are determined mathematically, by using methodologically defined calculations for individual types of measures set in Rules on the methods for determining energy savings. Some obligated parties surplus of savings from 2015 enforced in 2016; however also in 2016 the obligated parties exceeded target savings and in two years generated a total energy savings of 829.45 GWh, and create a surplus of 526.93 GWh.

Figure 127

COMPARISON BETWEEN THE MANDATORY ENERGY SAVINGS AND ACHIEVED ENERGY SAVINGS OF OBLIGATED PARTIES IN 2015 AND 2016



Source: Energy Agency

6.2.3.1 **Activities of obligated parties in reaching energy savings**

128

obligated parties achieved energy savings entirely, that is in total of 99% of all realized savings in 2016

For 2016, the report on energy savings was sent by 167 obligated parties, while a before the report was sent by 161 suppliers.

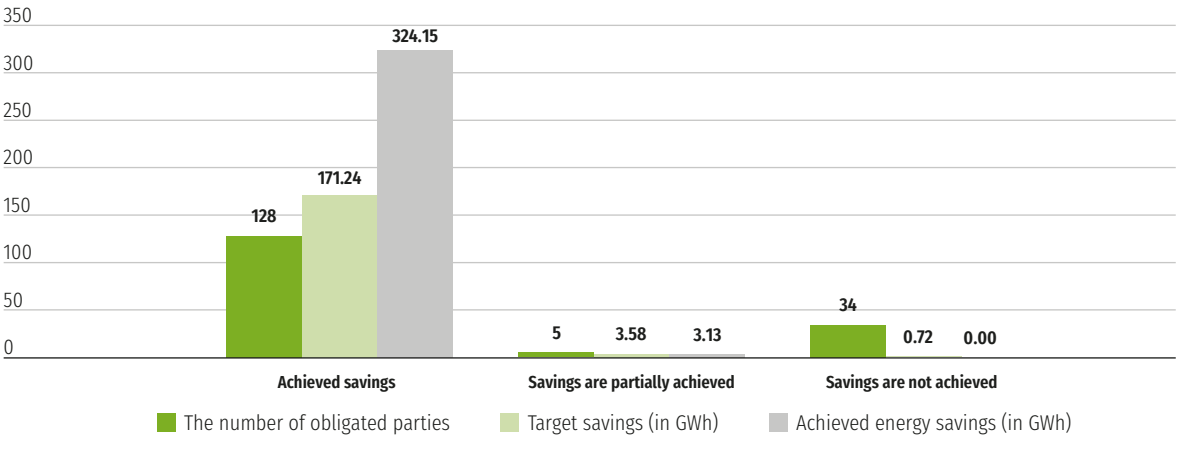
In 2016, 128 obligated parties achieved energy savings entirely, that is in a total of 99% of all realized savings this year. 34 obligated parties did not achieve savings by implementing measures, and five by implementing measures achieved savings only partially.

Among the energy suppliers that did not achieve energy savings target also in 2016 dominate the suppliers of solid fuels. The target savings which should be reached by these suppliers is less than 0.5% if the target savings.

For obligated parties who fail to reach target savings, the legislation provides the alternative option, with which mandatory savings can be achieved by contributing financial compensation to Eco-Fund; its amount depends on the amount of saving that would be achieved by an obligated party and the specific cost in EUR/MWh determined by Eco-Fund.

Figure 128

ACTIVITIES OF THE OBLIGATED PARTIES IN ACHIEVING THE MANDATORY ENERGY SAVINGS



Source: Energy Agency

It is difficult to identify all obligated parties, especially suppliers of solid fuels since at the national level there is no uniform evidence of all energy suppliers. Consequently, in 2016 the Energy Agency had in the context of reporting on energy savings difficulties to identify obligated parties, especially suppliers of solid fuels.

6.2.3.2 **The achieved energy savings by implementing measures**

Obligated parties achieved their target savings with the implementation of the measures set in Articles 5 and 6 of the Regulation. Participation in the implementation of listed measures brings energy savings to the obligated parties in measures are performed at final consumers in public, service and industrial sectors. Obligated parties can also use additional measures in achieved in the transformation, distribution, and transmission of energy. Savings can be also achieved with measures not listed in the Regulation, but in this case, an energy audit must be carried out, and only after that energy savings can be enforced.

139.27

GWh or 42.55% of all energy savings were achieved by introducing energy management systems

As shown in Table 42, in 2016 the most of the energy savings were achieved by introducing energy management systems, and similarly as in 2015 by adding fuel additives.

Table 42

ENERGY SAVINGS BY MEASURES IN 2016

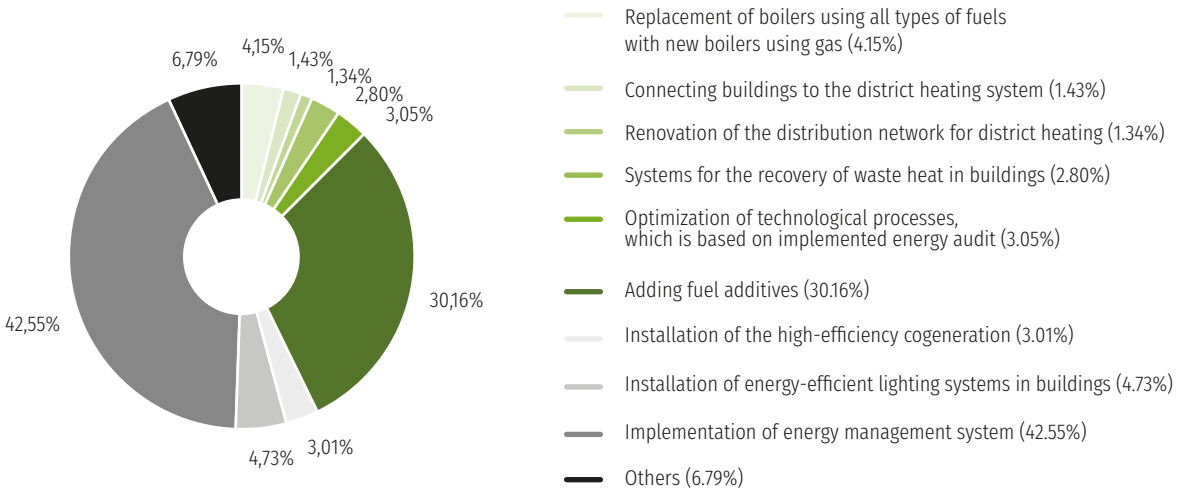
Measure	Energy savings in GWh
Comprehensive renovation of buildings	0.60
Partial renovation of buildings	0.49
Replacement of boilers using all types of fuels with new high-efficiency boilers using gas	13.57
Replacement of boilers using all types of fuels with new high-efficiency boilers using wood biomass	2.39
Replacement of electric heating with central heating using new high-efficiency gas boilers	0.02
Replacement of electric heating with central heating using new high-efficiency boilers on wood biomass	0.00
Installation of heat pumps for heating	0.34
Comprehensive renovation of heat station	3.08
Connecting buildings to the district heating system	4.68
Renovation of the distribution network for district heating	4.37
Installation of solar collectors	0.10
Optimization of the heating system in multi-apartment buildings	0.00
Systems for the recovery of waste heat in buildings	9.16
Optimization of technological processes, which is based on implemented energy audit	9.98
New electric vehicles	0.00
Use of energy-efficient tires for heavy goods vehicle	0.21
Use of energy-efficient tires for light goods vehicle	0.01
Use of energy-efficient tires for passenger cars with internal combustion engine	0.03
Use of the optimum tire pressure for passenger cars with internal combustion engine	0.03
Adding fuel additives	98.70
Installation of the high-efficiency cogeneration	9.84
Installation of energy-efficient lighting systems in buildings	15.49

Measure	Energy savings in GWh
Renovation of outdoor lighting systems	0.00
Energy-efficient household appliances	0.06
Energy-efficient electric motors	0.06
Use of frequency converters	0.37
Installation of advanced metering systems and introduction of advanced metering and billing for households and service sector	0.55
Implementation of energy management system	139.27
Other	13.88

Source: Energy Agency

Figure 129

SHARES OF ENERGY SAVINGS BY INDIVIDUAL MEASURES IN 2016



Source: Energy Agency

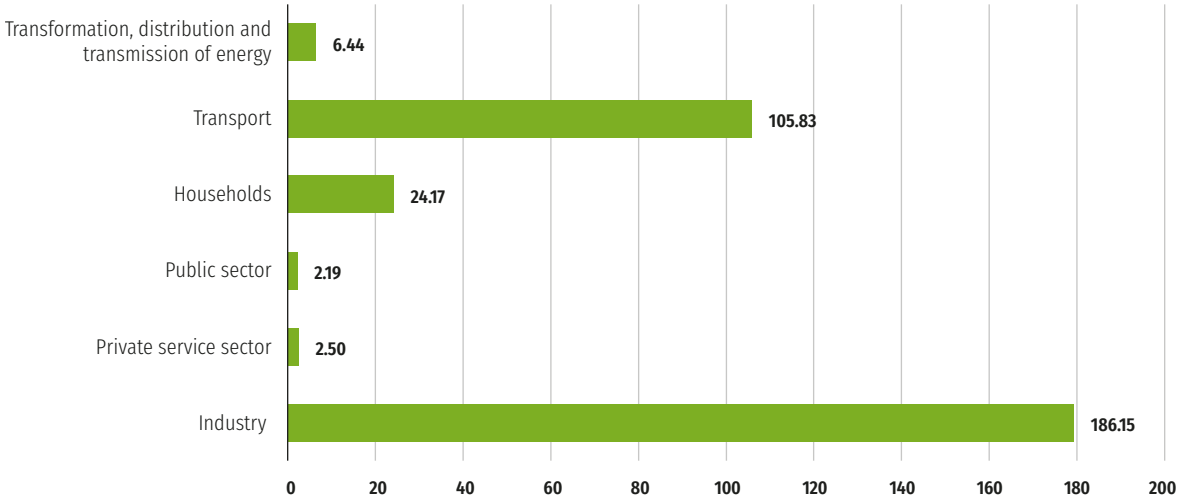
More than two thirds of the final energy savings were achieved through only two measures, that is 42.55% was achieved with the introduction of energy management systems (139.27 GWh), and 30.16% with adding fuels additives (98.70 GWh). The remaining one third was achieved with all other measures.

6.2.3.3 **Energy savings by sector**

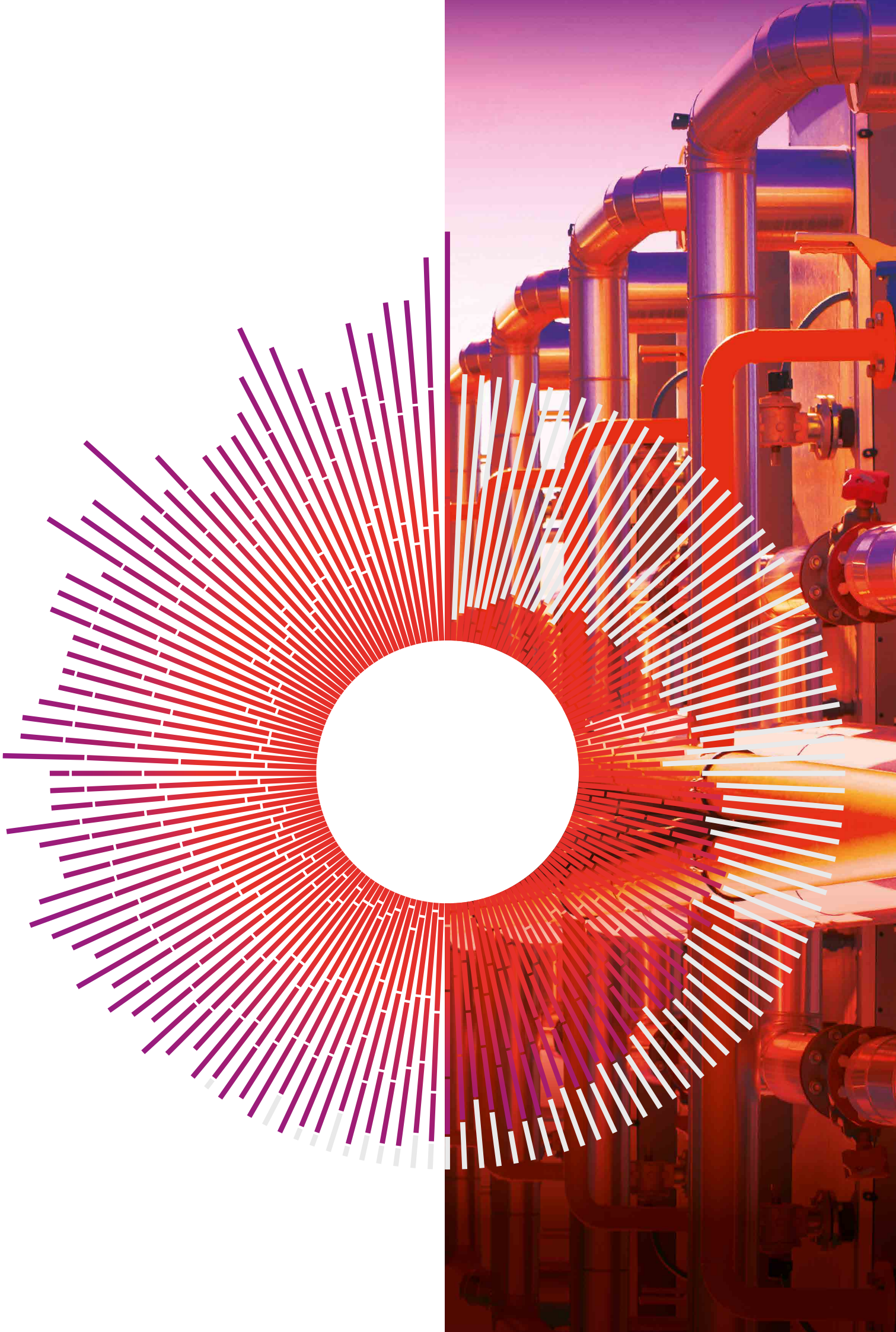
The analysis of the data from the reports of obligated parties shows that with the measures carried out the highest energy savings in 2016 were achieved in industry and transports, a total of 291.99 GWh, which is 89.21% of all the final energy savings in 2016. The lowest savings were achieved in the public sector, only 2.19 GWh. High energy savings in transport are the consequence of adding fuel additives; the measure was used mainly by traders of liquid fuels. In industry, savings were achieved with different measures; the largest savings were achieved with the implementation of energy management systems.

Figure 130

ACHIEVED ENERGY SAVINGS BY SECTOR IN 2016 IN GWH



Source: Energy Agency



07

Heat supply

Heat distribution was carried by 51 distributors in 59 municipalities; the number of consumers decreased by around 3%. The Energy Agency received 64 requests for approval of the starting price of heat sent by persons subject to regulation; decision was taken in 59 cases and 51 consents were issued. The Energy Agency also received 111 notifications of regulated distributers about amended starting price of heat.

56.9%
is the share of coal in the structure of primary energy sources for heat production.

878
kilometres was the total length of distribution systems for heat distribution in Slovenia.

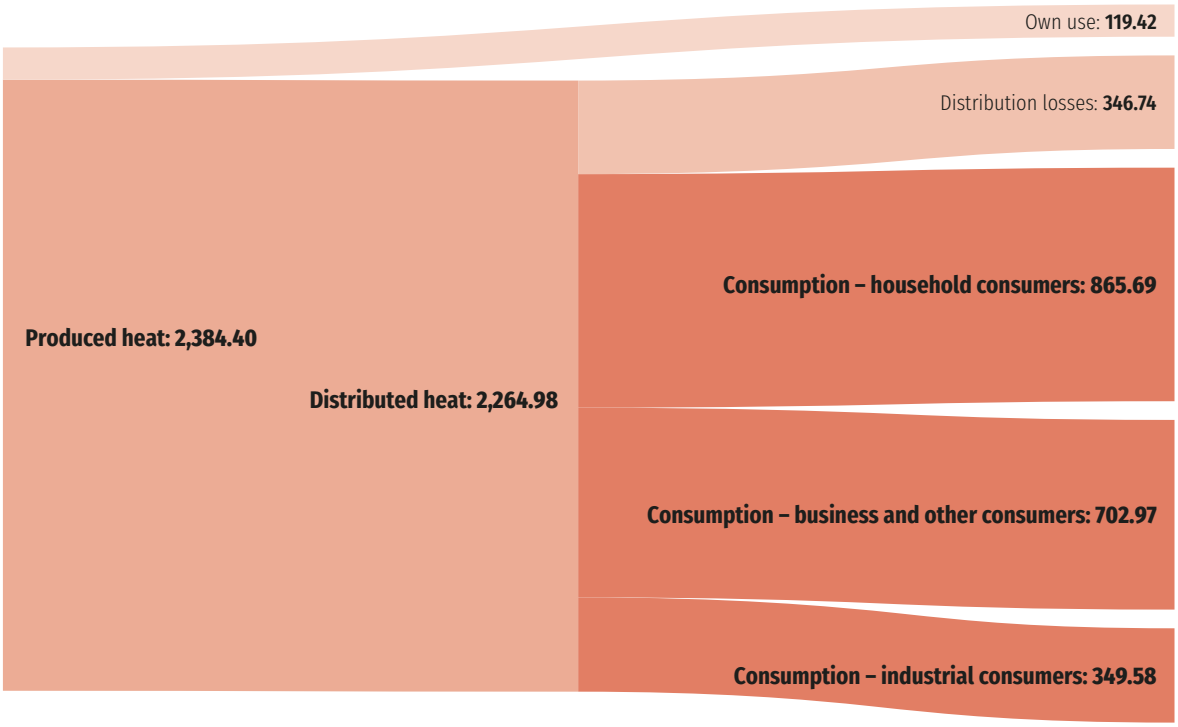
Supply of heat and other energy gases is provided within isolated distribution systems as an optional local service of general economic interest or market distribution. Heat supply means the distribution and supply of heat or cold used for heating or cooling, industrial processes, and sanitary hot water. The supply of heat covers the activity of distribution and supply of heat; the distribution of heat is carried out as an optional local service of general economic interest or commercial activity.

The supply of heat is also carried out by private distribution systems, which are fully owned by the consumers of heat.

The report on heat supply from distribution systems includes aggregated data so far recorded distribution systems and the data of a recorded heat producers that supply heat to these systems.

Figure 131

BASIC DATA ON PRODUCED AND DISTRIBUTED HEAT FOR CONSUMERS OF HEAT CONNECTED TO THE DISTRIBUTION SYSTEMS FOR DISTRICT HEATING IN 2016 IN GWh



Source: Energy Agency

7.1 Heat distribution

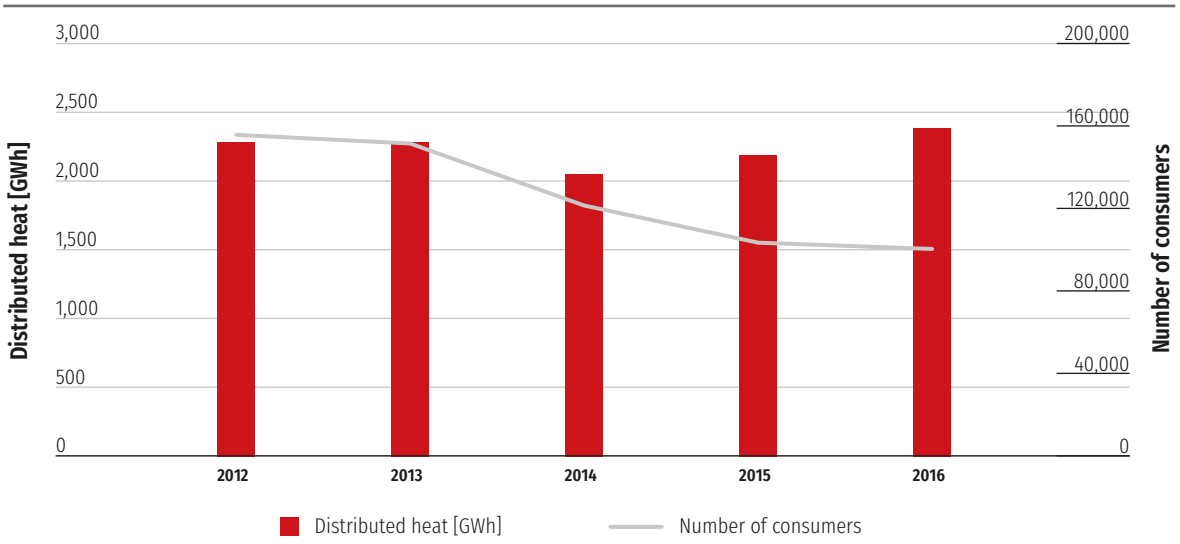
In 2016, in Slovenia heat distribution was carried out in 59 municipalities by 51 DSOs from 89 distribution systems.

100,830
consumers were supplied with 1,918.2 GWh of heat

Heat distributors supplied 100,830 consumers and delivered 1,918.2 GWh of heat. Heat consumption from all distribution systems was higher by 5.77% than the year before. The number of heat consumers connected to the distribution systems for district heating is still falling. In comparison with 2015, the number of consumers decreased by 2,87%. The reason is mainly the transition of household consumers to the other cheaper sources of supply with heat.

Figure 132

DISTRIBUTED HEAT AND THE NUMBER OF HEAT CONSUMERS IN THE PERIOD 2012–2016



Source: Energy Agency

According to the Energy Agency's records in Slovenia, only two large distribution systems exist, with a total installed capacity of 3.88 MW of cooling units, which are mainly serving business and industrial consumers. The cooling distribution system with a total installed capacity of 0.965 MW, which uses heat from district heating, operates in the Municipality of Velenje, and the cooling distribution system with the installed capacity of electrical generators 2 X 1.45 MW in a former industrial complex of the company Iskra Labor in the Municipality of Kranj.

For heat supply, producers of heat with their own production and heat producers that supply heat to distribution systems generated 2,384.4 GWh of heat; at the same time and 945.9 GWh of electricity, or 885.6 GWh at the busbars of the cogeneration processes for heat supply were produced. The share of heat generated to supply distribution systems from cogeneration accounted to 83.9% of all generated heat.

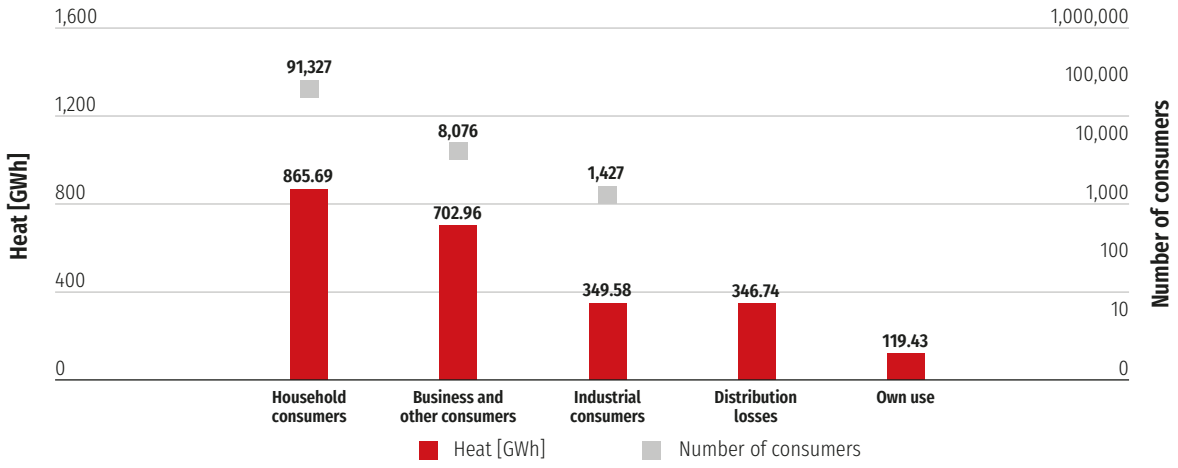
83.9%
was the share of heat produced in cogeneration units

The largest share of useful heat, 36.3% was used for 91.327 household consumers; 29.5% for the supply of 8,076 business consumers, and 14.7% of heat for 1,427 industrial consumers.

Losses in the district heating networks are at the annual level around 15.3% of heat and are by 0.6% lower compared to 2015. The difference between the produced and supplied heat and heat losses presents the share of heat, which was used in industrial processes of producers or suppliers.

Figure 133

HEAT CONSUMPTION BY THE TYPE OF CONSUMERS AND NUMBERS OF CONSUMERS

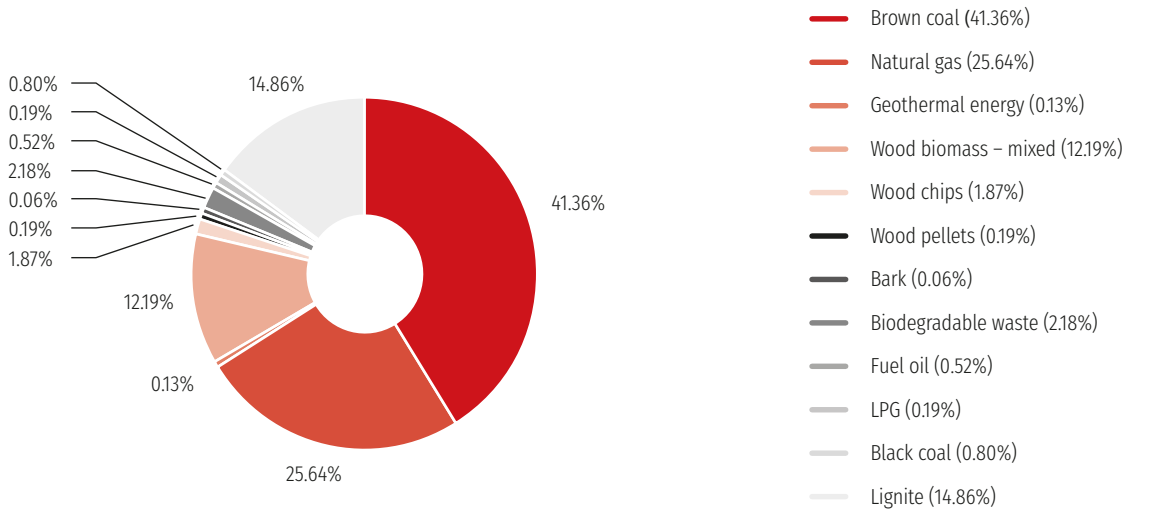


Source: Energy Agency

Primary energy source for the production of heat was still coal, covering 56.9%, followed by natural gas with 25.7%. Renewable sources covered 14.4%, and 2.2% heat generated in the municipal waste-incineration plant (Celje Heating Plant); oil and oil products had 0.7 percent share.

Figure 134

STRUCTURE OF THE PRIMARY ENERGY SOURCES FOR HEAT GENERATION

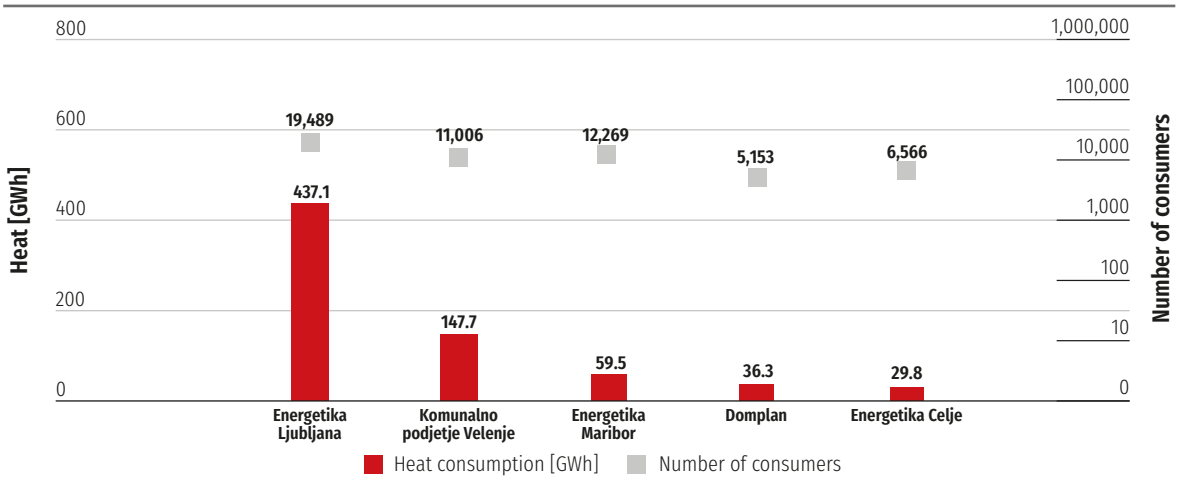


Source: Energy Agency

The five largest heat distributors in 2016 supplied 59.7% of all household consumers, which are supplied from the distribution systems of district heating, and delivered them 82.1% of all heat. Figure 135 shows distributed heat to household consumers and number of consumers supplied by the five largest suppliers.

Figure 135

THE LARGEST DISTRIBUTORS OF HEAT BY THE AMOUNT DISTRIBUTED TO HOUSEHOLD CONSUMERS IN 2016

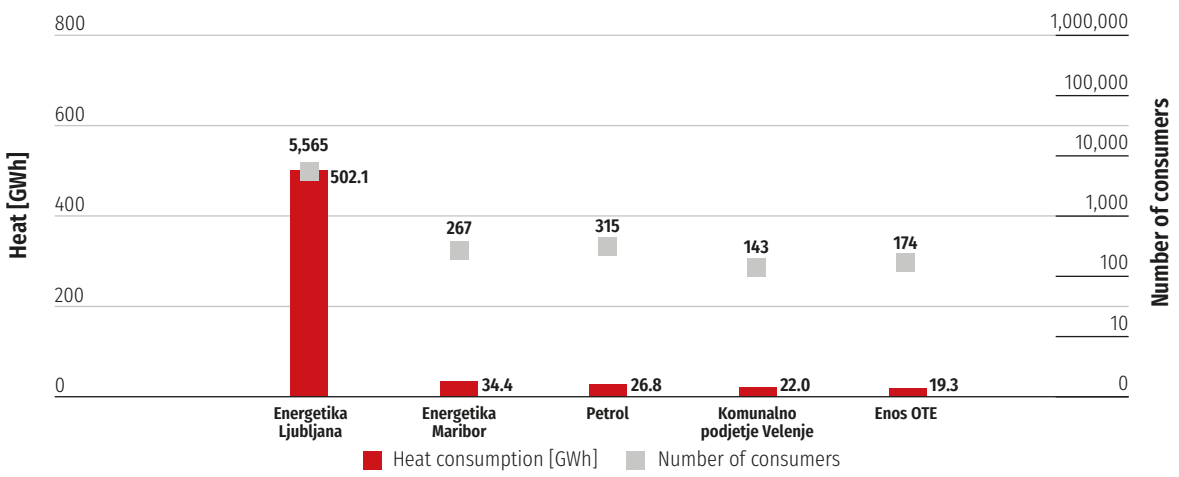


Source: Energy Agency

80% of all business and other consumers were supplied by the five largest distribution companies, and received 86% of heat intended for this group of customers (Figure 136).

Figure 136

THE LARGEST DISTRIBUTORS OF HEAT TO BUSINESS AND OTHER CONSUMERS IN 2016

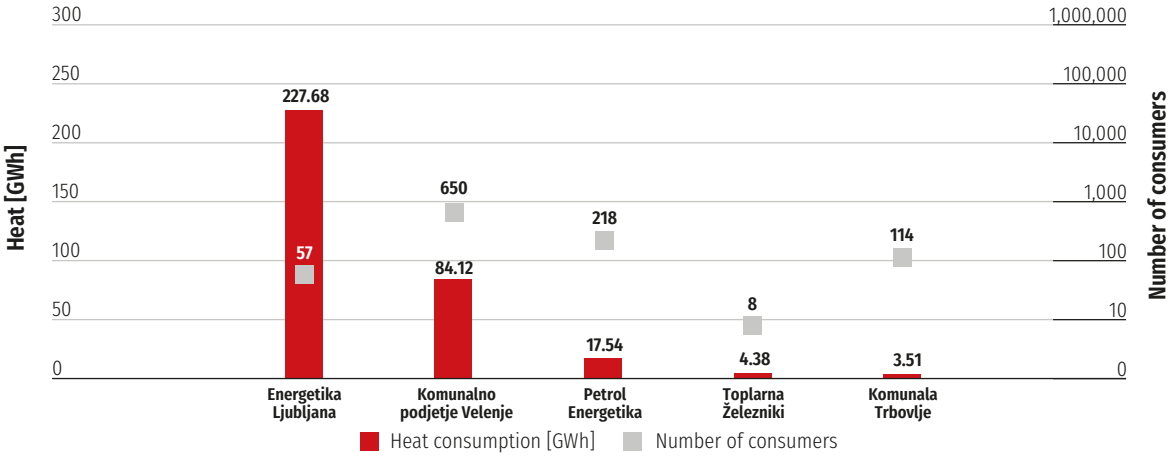


Source: Energy Agency

The five largest distributors of heat supplied 73.4% of all industrial consumers, and delivered them 96.5% of the required heat (Figure 137).

Figure 137

THE LARGEST DISTRIBUTORS OF HEAT TO INDUSTRIAL CONSUMERS IN 2016



Source: Energy Agency

7.2 Heat distribution systems

The service of heat distribution was carried out by 89 distribution systems, set in 59 out of 212 Slovenian municipalities; their total length was 878.6 kilometres. The activity of heat distribution was in 35 cases carried out as an optional local service of general economic interest in 47 Slovenian municipalities; in nine the activity was carried out as commercial distribution, and in six as the supply from a private distribution system. Private distribution systems in the municipalities of Kranj and Žalec are among large distribution systems for heat supply, since they supplied 6,251 consumers, out which 6,136 were households. The distribution systems, where the activity was carried out as an optional local service of general economic interest, supplied 92.5% of all consumers of heat. The share of delivered heat by these systems was 94,7% of all distributed heat.

Two largest systems of district cooling are in Velenje and Kranj in the total length of 1.46 km.

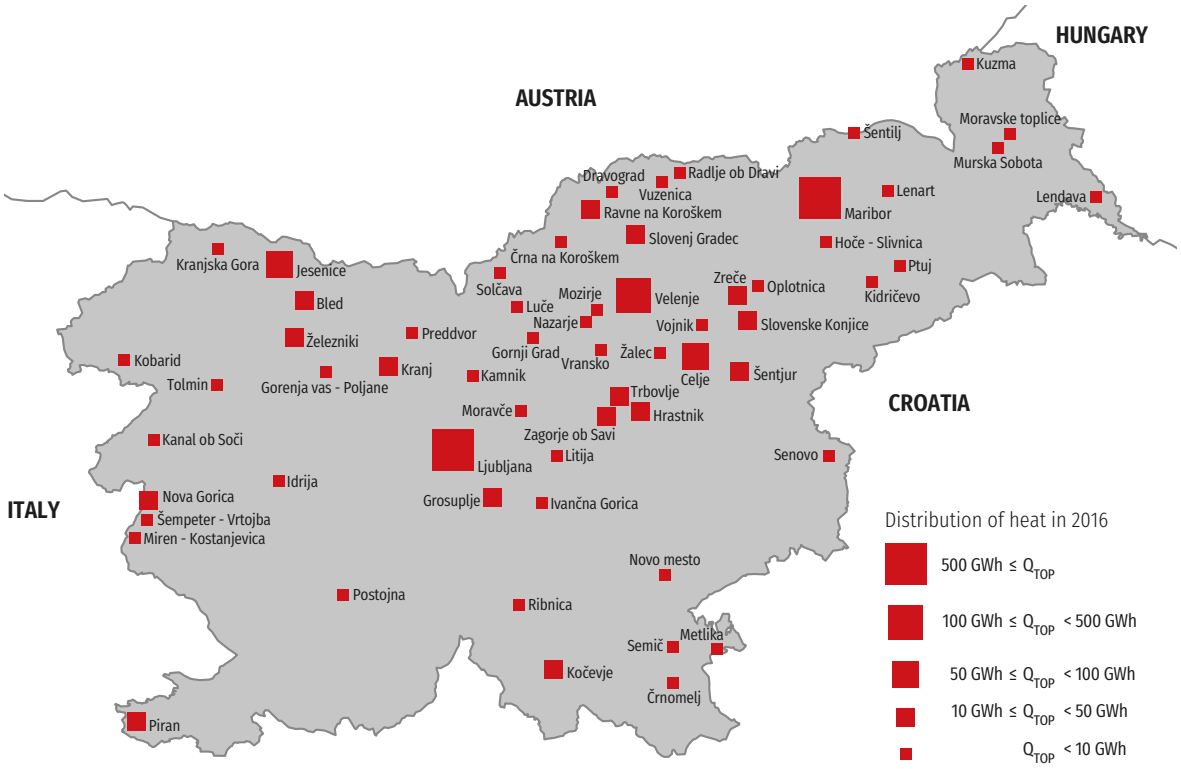
Figure 138 shows the dispersion of distribution systems and the amount of distributed heat by individual municipalities.

With respect to the temperature regime of the operations of the individual system, the systems are the warm-water systems, hot-water systems, and steam distribution systems. Warm-water networks and hot-water networks cover 98.8%, steam networks 1.05% and cooling networks 0.15% of the total distribution systems.

Two longest systems are in Ljubljana (262.8 kilometres of a hot-water system), and in Velenje, together with Šoštanj, (175.4 kilometres of a warm-water system).

Figure 138

HEAT DISTRIBUTION SYSTEMS IN 2016

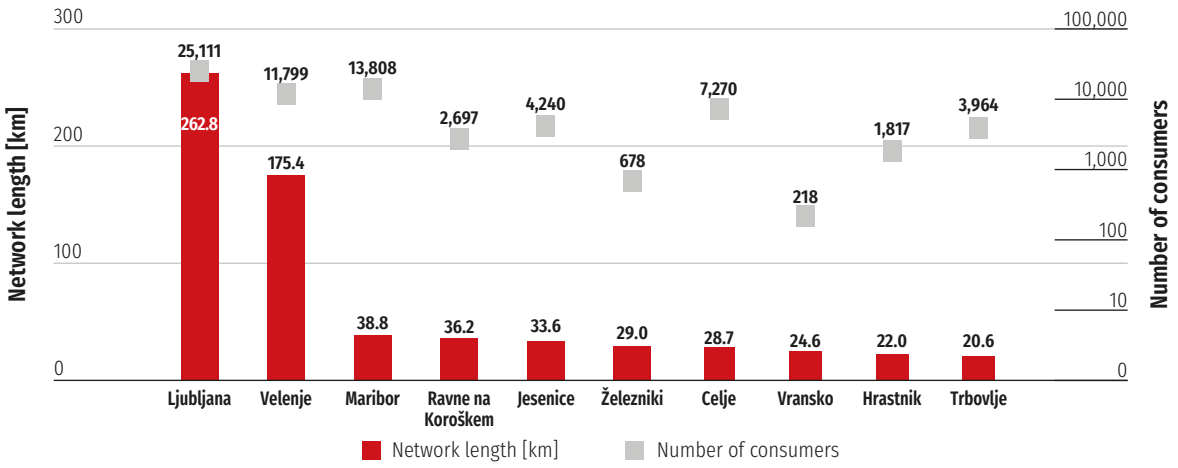


Source: Energy Agency

Figure 139 shows the lengths of the ten largest heat distribution systems and the numbers of connected users.

Figure 139

LENGTH OF HEAT DISTRIBUTION SYSTEMS BY MUNICIPALITY, AND NUMBERS OF CONNECTED USERS IN 2016



Source: Energy Agency

7.3 Price of heat

From the price lists of the selected business entities for heat production and supply the data on average retail prices of heat from distribution networks are summarized; the data are valid for standard customer group - households – D3b in selected Slovenian municipalities, in which the distributed heat in 2016 represented 36.3% of the total distributed heat from the distribution systems.

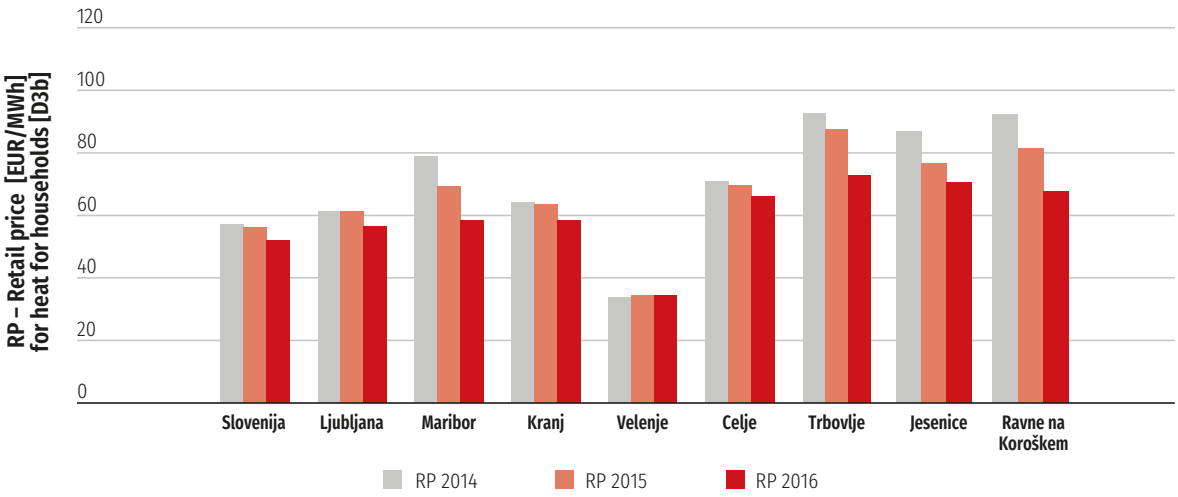
The standard customer group is a group with a connected load of 10 kW and an annual consumption of 34.9 MWh, and heat is being used for the preparation of sanitary hot water and central heating.

7.2%
decrease in price of heat for household consumers on average

The average retail prices for heat from the distribution systems relating to selected Slovenian municipalities are shown in Figure 140. Prices displayed are calculated as the weighted average retail prices in comparison with the number of consumers; at the same time, the average retail price of heat from the distribution systems for the entire territory of Slovenia is presented. The prices of heat for household consumers compared to 2015 on average lowered by 7.2%; retail prices increased only for consumers in Velenje and Šoštanj by 0.5%.

Figure 140

TRENDS IN THE AVERAGE RETAIL PRICES OF HEAT FOR HOUSEHOLD CONSUMERS IN INDIVIDUAL SLOVENIAN MUNICIPALITIES FOR THE PERIOD 2014–2016



Source: Statistical Office of the Republic of Slovenia

7.4 Regulation of the price of heat for district heating

The Energy Agency has to regulate the price of heat for district heating since the new Energy Act came into force; so far the price regulation was regulated by the Ministry of Economic Development and Technology in accordance with the Price Control Act. With the implementation of the general act on the methodology for district heating pricing in 2015, the Energy Agency established a new legal framework for the formation of starting price of heat for district heating by the distributors performing an optional local service of economic interest, and price of heat charged by regulated heat distributor. Under the adopted legislation persons liable for regulation with starting prices confirmed by the Ministry of Economic Development and Technology by the end of 2015 sent to the Energy Agency a request for consent to the new starting price.

The Energy Agency in 2016 received 64 such requests and decided on 59 requirements. It has issued 51 approvals; three requests were rejected due to non-compliance with the regulation methodology; five requests were rejected because deficiencies in applications were not corrected in due time. At the end of the year, there were five requests still in consent procedure for reasons attributable to persons liable for regulation. The Energy Agency also received four requests for reopening a case; the requests were resolved by the end of the year.

On the monthly level, the Energy Agency monitors adjustments of starting price of heat to the changes of eligible costs. In the mentioned period, the Energy Agency received 111 notifications from persons liable for regulation about modified starting price of heat. Most of the amendments were related to changes in prices of energy sources for the generation of heat.

7.5 Unbundling

Distributors that provide services of general economic interest and, in addition of performing the activity of distribution, also carry out other activities, must keep separate accounting records in accordance with accounting standards; their accounting records shall show separate accounts for heat distribution, heat production and other activities as required if the activities in question are carried out by separate undertakings. The heat distributors must in their internal acts set the criteria for the allocation of assets and liabilities, costs, expenditure and revenue to be observed in keeping separate accounting records and preparation of separate accounting records and fully disclose them in explanatory notes to the financial statements. The suitability of the criteria and their proper use must be audited annually by an auditor, who must draw up a special report.

List of figures

List of tables

List of abbreviations and acronyms

ACER	European Agency for the Cooperation of Energy Regulators
AREDOP	Active regulation of energy activities and networks of the future
BG	Balance Group
B2B	Business to Business
B2C	Business to Consumer
Borzen	Borzen, d.o.o. – Power market operator
BSP	BSP Regional Energy Exchange
C+ in C-	Basic Imbalance Prices
CBTC	Cross-Border Transmission Capacity
CCPP	Combined-Cycle Power plant
CEE	Central-East Europe (electricity region)
CEGH	Central European Gas Hub AG Vienna; index CEGH
CEER	Council of European Energy Regulators
CEREMP	Centralised European Registry for Energy Market Participants
CHP	Combined Heat and Power
CIM	Common Information Model (IEC 61970-3XX)
CNG	Compressed Natural Gas
CPI	Consumer Price Index
CSE	Central-South Europe (electricity region)
CWE	Central-West Europe (electricity region)
CSLOeX	Hourly Index
DSM	Demand Side Management
DSO	Distribution System Operator
DTS	Distribution-Transformer Station
EA-1	Energy Act-1- the Official Gazette of the RS, No 17/14
ebIX	European Forum for Energy Business Information eXchange
EEX	European Energy Exchange AG, Leipzig
EIC	Energy Identification Code
ENTSO-E	European Network of Transmission System Operators for Electricity
ENTSO-G	European Network of Transmission System Operators for Gas
EU	European Union
EXAA	Energy Exchange Austria
GDP	Gross Domestic Product
GME	Italian Power Exchange - Gestore Mercati Energetici
GO	Guarantee of Origin Certificate
GPP	Gas Power Plant
GS1	Global language of Business (http://www.gs1.org)
HHP	Hydroelectric Power Plant
HHI	Herfindahl-Hirschman index
HS	High Season
HV	High Voltage
HT	Higher Tariff price
HUPX	Hungarian Power Exchange
IPET	Energy Market Data Exchange Section (IPET Section)
IDS	Isolated Distribution Systems
JAO	Joint Allocation Office
LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas
LS	Lower Season
LV	Low Voltage
LT	Lower Tariff price
MAIFI	Momentary Average Interruption Frequency Index
MRS	Metering-Regulation Station
MV	Medium Voltage
NREAP	National Renewable Energy Action Plan
P	Power
PSH	Pumped-storage Hydroelectric power plants
PT	Peak Tariff
NPP	Nuclear Power Plant (Krško Nuclear Power Plant)
RECS	Renewable Energy Certificate
REMIT	Regulation 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 (electricity region)
SIPX	Slovenian Price Index
SODO	Slovenian Distribution System Operator
TOE	Tonne of Oil Equivalent
TPP	Thermoelectric Power Plant
TS	Transformer Station
TSO	Transmission System Operator
VAT	Value Added Tax

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