



2016

2016 ENERGY AGENCY
ANNUAL REPORT



2016 ENERGY AGENCY ANNUAL REPORT

Serbian Energy Sector Report

*

Annual and Financial Report

Belgrade, May 2017

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INTRODUCTORY REMARKS

In line with the provisions of the Energy Law ("Official Gazette of RS", no. 145/14), hereinafter: Law, the Council president and members are accountable for their work and the work of the Energy Agency of the Republic of Serbia to the National Assembly of the Republic of Serbia. They submit the report to the National Assembly once a year as it is done hereby. Apart from the annual report and financial report, this document also includes the report on the situation in the energy sector of the Republic of Serbia in areas under the Agency's jurisdiction.

The report on the Serbian energy sector includes the review on the situation and activities in electricity and natural gas markets and partly in oil and oil derivatives market, security of electricity and natural gas supply, activities of general interest and electricity and natural gas customer protection. In terms of its structure and its content, the Report is also in line with the recommendations of the Council of European Energy Regulators – CEER.

In line with the Law, all decisions within the scope of the Agency's work are adopted by the Council of the Agency. In 2016, the Council held 41 sessions during which decisions, approvals, certificates, conclusions and other acts in the field of price regulation, energy market establishment and monitoring, license issuance and withdrawal, internal organisation and work code of the Agency and other issues within the jurisdiction of the Council were adopted.

In 2016, the Agency was fulfilling its obligations arising from the Law which are relevant for the enforcement of the law, and Serbian energy market functioning. The Agency played an important role in the work of Energy Community (EnC) institutions and also offered its support to other national institutions in the activities on both national and international level.

The security of electricity, natural gas and oil derivatives supply in 2016 was on the satisfactory level. Reliable operations of energy capacities contributed to secure electricity supply, while the security of natural gas supply was also provided by the underground storage Banatski Dvor.

The total electricity consumption increased by almost 1%. Households consumption was reduced by 1%, while the consumption in industry increased. More reliable operations of thermal power plants and higher water flow in hydro power plants enabled electricity export of around net 1.4 TWh. Natural gas consumption increased by 9%. Consumption was significantly increased in industry and households. Further increase of consumption in households indicates that natural gas was a competitive energy source because based on lower price.

In the open market, at market prices, 43.3% of electricity (37% in 2015) and 86.4% of natural gas were purchased. Households did not exercise their right to select their supplier and purchase energy sources in the open market and all households were supplied at more favourable, regulated prices.

The Energy Sector Development Strategy until 2025 forecast electricity consumption of less than 1% annually. In that period, this consumption should be covered by the extension of the lifetime and increased capacities in existing power plants and by the construction of new ones. The third block in TPP Kostolac B is the most significant project and the conditions for its realisation have been created. In line with the target of 27% of production from renewable energy sources in gross final consumption until 2020, around 3,500 GWh should be provided from power plants fuelled by renewable energy sources.

The Preliminary National Plan of the Republic of Serbia for Emission Reduction envisaged the operation of some of the oldest thermal units by 2026 where, due to old-fashioned technology, the implementation of measures for the reduction of emission of sulphur and nitrogen oxides was not planned. These units will gradually stop operating and their production will be replaced by the above mentioned new capacities.

Long-term energy stability also requires prudential adjustment of the energy sector of Serbia to global and EU requirements related to the protection of the Planet in line with the results of the UN Climate Change Conference. In the future, this may have a significant impact on the costs of electricity production in thermal power plants and to its further development.

New gas interconnection is the most important condition for the provision of long-term more stable natural gas security of supply, market development and avoidance of risks which Serbia used to face, which are still likely to repeat and which may be even greater in the future. Niš – Sofia gas pipeline is the project which is most likely to be realized under the current conditions and the one with well-advanced preparation works. The low level of gasification of households (around 10% of the total number) indicates that there is a potential for a bigger growth in this sector which will depend on the parity of energy sources price to the greatest extent.

Adequate long-term policy of regulated prices, predictable both for customers and investors is very important for the sustainable development of energy systems. An increase in electricity prices in 2016, which was a decision made by the PE EPS and approved by the Agency Council, represents a step towards reaching the market level of wholesale price and the justified level of electricity distribution and transmission use-of-system charges. Such electricity prices and network service prices ensure necessary funds for investments in existing energy companies, stimulate investors and encourage an increase in energy efficiency.

An obligatory prerequisite for the change in electricity price for households is an increase in the number of protected socially vulnerable customers because the number of protected customers in 2016 was still several times lower than the number of customers who should be protected, in line with the register of authorised institutions. This requires special attention of authorised bodies, especially due to the low standard of living of the population.

From September 2013 till the end of 2016, natural gas public supply price covered all justified costs of gas procurement. This price was changed in line with market conditions. In 2016, transmission and distribution use-of-system charges were adjusted with some companies.

While approving regulated prices, the Council of the Agency insists on rationalisation in the operations of energy companies and on the acknowledgement of justified costs only. High electricity losses in the distribution network represent one of the highest costs and these are regularly acknowledged by the Agency on the level lower than the actual one, in line with the plan for loss reduction. In 2016, losses were reduced by less than one percentage point (from 14.1% to 13.0%), but they are still very high in comparison to the losses justified on the technical ground. It is still necessary to repress electricity theft more efficiently, among other things, by controlling metering points. It is also necessary to intensify investments in the electricity distribution network and to have more efficient replacement of metering devices.

In 2016, further *stEPS* were made in the reform of the sector and electricity and natural gas market opening, more in normative sphere, by harmonisation of existing regulations and adoption of new ones, in line with the provisions of the Law. However, it is still possible to notice some delays in the implementation if compared to the deadlines defined by the Law, especially in the gas sector, where legal and functional unbundling has not been fully completed. Although new legal entities were established – transmission and distribution system operators within PE *Srbijagas* in mid-2015, they have not started operating yet.

PE *EMS JSC* continued their activities aiming at system development and strengthening cross-border capacities and participation in coordinated cross-border capacity auctions in 2016. In February 2016, organised market *SEEPEX* – electricity exchange started operating.

Within the EnC, activities were taken so as to develop regional electricity market. The integration into the European Union market also requires the provision of adequate participation of the institutions of the Republic of Serbia (regulatory ones as well) in the relevant EU institutions so as the interests of the country would be protected adequately.

In 2016, in terms of trading activities, the electricity market concentration level in Serbia remained on the similar level as in the previous years.

In 2016, technical indicators of electricity delivery quality were upgraded further. The delivery continuity indicators are on the regional level, but they are still considerably worse than the European average.

It is very important to accelerate the procurement and installment of adequate metering equipment for further development of the gas market.

The trend of increase in the number of customers' i.e. system users' appeals against the operations and treatment of energy entities, almost all of them in the electricity sector, which are addressed to the Agency, slowed down slightly.

The activities of the Agency in terms of market monitoring regarding the treatment of customers and system users by energy entities and of protection of energy customers' rights and interests are gradually expanding.

Council of the Energy Agency of the Republic of Serbia

May 2017

SERBIAN ENERGY SECTOR REPORT

1. ENERGY DEMAND IN SERBIA

Primary energy consumption in Serbia without the Autonomous Province of Kosovo and Metohija (APKM¹) in 2015 amounted to around 14.8 million tons of oil equivalent (mtoe). It is characteristic of Serbia to have a high share of coal, primarily lignite with low calorific value in the total primary energy (around 50%) which is dominantly used for electricity generation. A great share of local lignite enables a relatively high energy independence of the country, in comparison to other countries and relatively lower and more stable costs of electricity production. On the other hand, the use of lignite in electricity production increases its negative impact to the environment. In the long run, this fact also increases the risk of growing costs of carbon dioxide emission, i.e. the greenhouse gases.

This chapter includes the latest available data on total consumption of primary and final energy as well as other important data linked with the energy sector and the comparisons with the European Union.

The energy net import dependence of Serbia recorded 27.7% in 2015, which is lower than in the vast majority of European countries (the European Union 54.0%). Import dependence in Serbia was reduced in comparison to the previous decade mainly thanks to the increased local production of oil and natural gas which used to increase until 2013. In 2016, the costs of net energy imports amounted to € 1.2 billion which is 56% lower than the maximum import costs in 2008. These costs present 30.4% of the net import and export trading balance of the Republic of Serbia in 2016.

Table 1-1: Energy sector of Serbia (without APKM) – some indicators for 2011 - 2015

	Measurement unit	Year				
		2011	2012	2013	2014	2015
Population number, in midyear	thousands	7,237	7,201	7,167	7,132	7,095
GDP per capita, per spending power parity	Fixed \$ from 2011	12,968	12,899	13,295	13,113	13,278
Primary energy consumption	Million toe	16.19	14.53	14.91	13.34	14.8
Final energy consumption	Million toe	9.25	8.51	8.19	7.67	8.08
Import dependence	%	30.3	27.7	24.1	27.9	27.7

Data: RZS, World Bank, MRE, AERS

Compared to the European Union (Figure 1-1), gross domestic product of Serbia per purchasing power parity (which reflects the level of development and standard in a more realistic manner) in 2014 was on the level of 36%, consumption of total primary energy per capita – 59% and final electricity consumption – 69%.

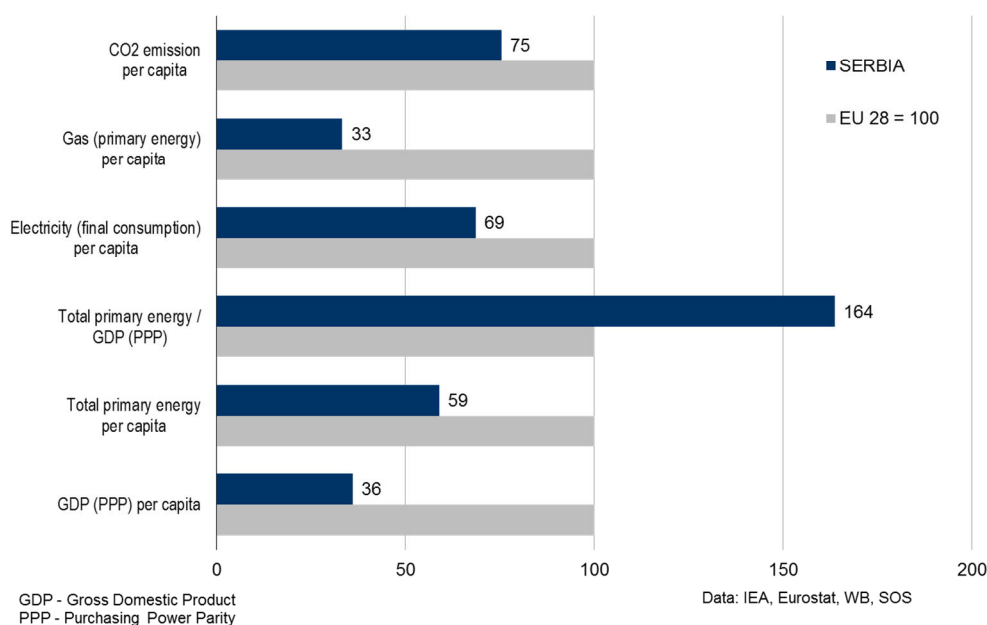


Figure 1-1: Comparative indicators of Serbia and the European Union in 2014 (CO₂ emission in 2013)

¹ Treatment of energy data for the territory of the Autonomous Province of Kosovo and Metohija (APKM) in this Report depends on their availability, reliability and necessity to indicate them if they relate to a unique function on the whole territory (unique regulation area), while bearing in mind the United Nations Security Council Resolution No. 1244 of 10/06/1999.

Energy intensity, i.e. total primary energy consumption per domestic product unit (per purchase power parity) was on the level of the countries in the region, but it was 1.64 times higher than the European average. Greater energy intensity is partly a consequence of inevitable technical losses in the process of transformation of lignite into electricity (two thirds of electricity is produced from lignite). However, it is primarily due to irrationality, i.e. low efficiency in consumption in households, industry, due to low rate of capacity use and old technology, as well as in other sectors. Primary gas consumption per capita amounts to around 33% of the EU and therefore, this sector has a high growth potential.

An important difference in the final energy consumption structure in comparison to the European Union lies in the high consumption share in households in Serbia and higher energy consumption share in transport in the EU (Figure 1-2). In addition, one should bear in mind that industrial consumption in Serbia is much lower than in the end of 80s.

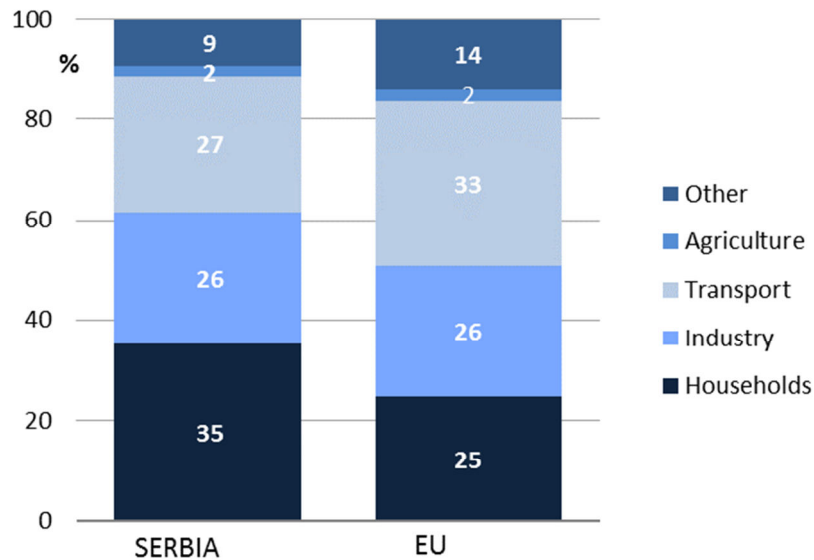


Figure 1-2: Final consumption structure (without non-energy-related consumption) in 2014

2. ELECTRICITY AND NATURAL GAS MARKET IN 2016

2.1 Legal and regulatory framework

The legal and regulatory framework for the development of electricity and natural gas market in Serbia was established by the Energy Law ("Official Gazette of RS", No. 145/14 of 29/12/2014, hereafter: the Law) and by-laws adopted in 2015 and 2016 which are harmonised with the 3rd EU Energy Package.

Electricity and natural gas markets are largely regulated by separate by-laws which acknowledge the specificity of each market, such as general conditions of delivery and methodologies for setting use-of-system charges, price of regulated supply of households and small scale customers and connection costs. Some regulations which relate to the protection of final customers and their rights are common for electricity and natural gas, such as the legal acts regulating: switch of suppliers of final customers who have signed a contract on full supply; monitoring technical and commercial indicators and regulating quality of delivery and supply; exercising the right of a final customer to access the data on his/her consumption; proceedings and imposing measures and keeping records of imposed measures. The regulation on the method, procedure and deadlines for keeping accounting records, implementing unbundling of accounts for each activity and submission of data and documentation for regulation purposes.

In 2016, in line with indicated demand and based on the experience in market functioning, the Agency amended some regulations adopted by the Agency itself in order to have more efficient market functioning, better protection of final customers and other market participants and bigger transparency.

2.2 Electricity market development

Unbundling of the operator

The unbundling of the electricity transmission and distribution system operator, as natural monopolies, from energy entities performing production and supply as market activities is one of the most important tasks in the market reform of the sector. Equal right of access to network systems is thereby provided for all market participants.

The following entities are appointed to perform electricity transmission and distribution on the territory of Serbia:

- *Elektromreža Srbije* JSC, Belgrade (*EMS*), for electricity transmission and transmission system operation, 100% state-owned, corporatized in 2016 and operates as closed joint stock company and
- *PE EPS Distribucija* LLC, Belgrade, which was established as a subsidiary by *PE Elektroprivreda Srbije* (*PE EPS*) for electricity distribution and distribution system operation, 100% state-owned.

Even before the adoption of the 2014 Law, these companies performed these activities, but the Law introduced new conditions for the award of the right to perform these activities, especially in terms of independence. Once licensing is completed, *EMS* JSC will be the Transmission System Operator (TSO) while the *EPS Distribucija* will be the Distribution System Operator (DSO).

Before *EMS* JSC is licensed, it checked within the certification procedure which is implemented by the Agency if the company complies with the conditions, primarily in terms of independence and ownership unbundling. In October 2016, *EMS* JSC submitted an application for certification but the certification was not completed until the end of 2016. The biggest problem is the fact that the independence from market activities was not ensured since the Government of RS controls both *EMS* JSC and *PE EPS* which performs production and supply. Namely, separate state bodies which cannot be controlled by the same third party have to be in charge of control over natural monopolies and energy entities performing market activities. This problem cannot be solved either by the energy entity involved or by the Agency and the competent state bodies are informed on this.

PE EPS Distribucija submitted an application for licence in September 2016. By the end of the year, conditions were not met for licence issuance. *PE EPS Distribucija* has to prove, in line with the Law, that the company is independent in terms of legal form, organisation and decision-making process from production and supply within the same vertically-integrated company. There are ongoing activities on the harmonisation of legal acts which ensure independence. *PE EPS Distribucija* adopted the Compliance Programme for Non-Discriminatory Behaviour which was approved by the Agency, while the company is obliged to inform the Agency by a certain deadline on the ensured independence defined by the provisions of the Article 131 of the Law. In June 2016, the Agency also approved the conditions for the appointment and duration of the term of office of compliance officer as well as the prior decision on the appointment. The compliance officer will submit the first annual report on the implementation of the Compliance Programme to the Agency in mid-2017.

EMS JSC and *PE EPS Distribucija* became the owners of the system within which they perform their activities as it is prescribed by the Law, but they face difficulties in harmonizing documents in line with the Law and bylaws which prove the legal background for the use of facilities within which they perform their activities (permits of residence and registration of ownership rights). The settlement of this problem requires the engagement of several competent bodies which are informed on this.

Electricity consumption

Gross electricity demand in Serbia in 2016 amounted to 36.7 TWh. The consumption of final customers amounted to 28.8 TWh while the remaining quantities were used for the operation of power plants, recovery of electricity loss in electricity transmission and distribution network and for export purposes.

The annual production covers the demand and Serbia is also a net exporter. In 2016, 2.2 TWh were imported, while around 3.6 TWh were exported. However, electricity is imported during the coldest winter months when there is energy shortage in the whole region and when it is very expensive.

Maximum average hourly load of the system amounted to 5,800 MW and it was achieved on December 31, 2016 at 6 p.m.

Wholesale

In 2016, suppliers mainly traded between themselves in the wholesale electricity market because there are no big independent producers. The most intensive were within cross-border exchange, mainly for transit purposes through Serbia. The number of participants in the auctions for the allocation of cross-border capacity increases year after year and 60 of them were entitled to participate in the auctions for the allocation of cross-border capacity in 2016.

The highest energy exchange was in transit (14.2 TWh), the second best was for export from Serbia and for purchase/sale between suppliers on the territory of Serbia.

Serbia borders 8 countries and there is a big energy transfer from north-east to south-west. There are combustions on cross-border lines and new lines are planned to be constructed. EMS JSC started the construction of double-circuit overhead line 2x400 kV Pančevo 2 – Rešica. Hereby the project of planned connection of eastern and western Europe over the territory of Serbia by the connection of 400 kV lines which will increase additionally the security of electricity supply in Serbia.

Organised day-ahead market

In February 2016, SEEPEX JSC Belgrade (www.seepepex-spot.com) started operating. It is the first organised day-ahead electricity market/exchange in Serbia and Southeastern Europe countries – Contracting Parties of the Energy Community. SEEPEX (South-eastern European power exchange) was established on the basis of partnership between EMS JSC and EPEX SPOT – France as a joint stock company with the majority ownership of the Serbian side with the approval of competent state bodies. SEEPEX is a licensed Market Operator on an organised electricity market/exchange. It is planned to place standardized products with delivery on day ahead and intraday within the Republic of Serbia and in the region of the southeastern Europe, wherever possible. Integrated solution for the trade and clearing on spot market in the region of the southeastern Europe was implemented. Great experience of the French partner was used and the partner is included in the operations of the exchange which covers 8 countries of the western Europe and 50% of the European electricity consumption. Implemented solutions have been compatible with the Pan-European initiative for market coupling from the beginning. In 2016, the scale of trade and the number of members of SEEPEX grew constantly. Suppliers from 8 countries trade within this exchange. The operations of SEEPEX ensures a transparent and ever more reliable mechanism for the establishment of reference wholesale price in the region.

Retail

The Law enabled all final customers in Serbia to purchase electricity in the open market. Only households and small customers are entitled to guaranteed supply at regulated prices. Due to lower price of regulated supply, in comparison to the market price and to the economically grounded price, regulated supply is used by all customers entitled to it. The price is regulated for 56% of final customers consumption, for households and small customers.

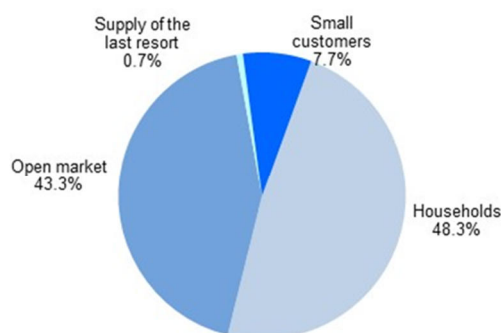


Figure 2-1: Electricity sales in the open and regulated markets in 2016

The share of 43.3% of the market is open. Only those customers who are not entitled to regulated supply purchase electricity in the open market. Some customers did not manage to find a supplier and, therefore, they exercised the right to the supply of the last resort prescribed by the Law. These customers mainly include institutions and enterprises which are budget beneficiaries, facing problems with public procurement procedures or problems with settling electricity bills. It is impossible to disconnect some of them from the network (hospitals, schools) and no supplier in the open market wants to supply them. A very small share of energy, only 0.7% was spent within the supply of the last resort.

In the end of 2016, there were 60 licenced energy entities for electricity supply in the open market. Only 14 of them were active. PE *EPS* is still the dominant supplier in the open market with the share of 95% of electricity sold to final customers in the open market and 97% of the total final consumption.

In 2016, a supplier was switched on around 12 thousand metering points (0.3% of the total number of metering points) with consumption of 1.0 TWh which amounts to 3.5% of the total consumption of final customers.

Security of supply

In 2016, the security of supply was on the satisfactory level. Investments within several years into revitalization and modernisation of production, transmission and partly distribution capacities increased reliability and efficiency of the power system operations.

The Strategy of the Energy Sector Development of the Republic of Serbia until 2025 with forecast until 2030 envisages average increase in electricity consumption of below 1% on the annual level. Considering the age and efficiency of existing production capacities and the fact that some of them will stop operating, it is necessary to construct new capacities. It is planned to construct thermal power plants as well as to construct considerable number of facilities fueled by renewable energy sources. National action plan for the use of renewable energy sources indicated the plan to achieve annual production from renewable sources of around 3.5 TWh until 2020. Incentives for the construction of capacities fueled by renewable energy sources, conditions for the award of feed-in tariff and the level of it depending on the implemented technology are regulated by relevant regulations of the Government.

2.3 Natural gas market development

Unbundling of the operator

Natural gas transmission is performed by two energy entities on the territory of Serbia: PE *Srbijagas*, Novi Sad and Yugorosgaz-Transport, LLC Niš. Following the adoption of the Law, both enterprises initiated activities on the unbundling of the transmission system operator from other activities of the vertically-integrated company.

By the end of 2016, no operator was certified.

In June 2015, PE *Srbijagas* adopted a decision on the establishment of *Transportgas Srbija* LLC as well as the decision on the establishment of *Distribucijagas Srbija* LLC. On the session held on June 27, 2015, the Government of the Republic of Serbia approved these decisions. These companies were established in August 2015 and registered in the registry of economic entities as active entities, but they did not start operating. By the Conclusion of December 23, 2016, the Government of the Republic of Serbia enabled PE *Srbijagas* to continue performing the activity of general interest – transmission and transmission system operation, either independently or through the company *Transportgas Srbija* LLC until the licence is obtained. The Government also recommended to *Transportgas Srbija* LLC to take all necessary activities meant to provide the licence as soon as possible.

Acting in line with the deadline prescribed by the Law, in August 2016, Yugorosgaz-Transport, LLC Niš submitted an application for certification to the Agency in line with an independent system operator model. In line with the Law, bearing in mind the ownership structure of this company and its parent company, the application was treated as an application for certification of the transmission system operator connected to third countries. By the end of 2016, Yugorosgaz-Transport, LLC Niš was not certified and licenced as a transmission system operator in a manner prescribed by the Law. This process is still ongoing.

By its Preliminary Decision of December 2016, the Agency certified Yugorosgaz-Transport, LLC Niš as an independent system operator with an obligation to harmonise its organisation and operator in a manner providing for the compliance with conditions in terms of the independence of the system operator in line with the given model within one year. This also implies harmonisation of ratified international treaties beforehand. In addition, the system operator was asked to submit the ten-year plan for the development of the transmission system, the program for non-discriminatory behaviour and a legal act signed with the owner of the transmission system which provides guarantees which will enable the financing of the transmission system development. These documents are supposed to be submitted within the same deadline. The final decision will be adopted following a prescribed procedure, with the participation of the competent body which issues its opinion, in line with the obligations arising from ratified international treaties. The adoption of the final decision is expected in 2017 and it will depend on the ability of the applicant to meet the defined conditions. The first condition is not within the jurisdiction of the Agency and it depends completely on competent state bodies.

Natural gas consumption

In 2016, gross natural gas consumption amounted to 2,251 million m³, by 9% more than in 2015. The consumption in industry increased by 14%, in households by 10%, while it decreased in district heating companies by 3%. Around 80% of necessary gas quantities were provided from import.

Wholesale

Wholesale was dealt with only by two companies PE *Srbijagas* and Elgas Energy Trading. The fact that PE *Srbijagas*, i.e. *Transportgas Srbija* still does not enforce Transmission Network Code, which regulates the access to cross-border capacities based on non-discrimination and transparency principles, represents a significant constraint for wholesale market since legal unbundling of the transmission system operator from PE *Srbijagas* has not been completed. The first annual allocation of capacities was postponed in the beginning of 2014 until 2015. Later on, it was postponed for 2016. By the end of the year, it was not realised.

The Law prescribes that the Government appoints the supplier of public suppliers until a competitive market is established. The supplier of public suppliers has to offer natural gas to all public suppliers (including the one within the same legal entity as the supplier itself) under the same conditions and at the same price. In 2016, PE *Srbijagas* was the supplier of public suppliers.

Retail

Total net consumption of final customers amounted to 2,226 million m³, but, out of the volume, *Naftna industrija Srbije* (Petroleum Industry of Serbia) JSC (hereafter: NIS) consumed 225 million m³ from their own production and this volume was not placed in the market. There were 30 suppliers in the open market (out of 65 licensed suppliers) who dealt with retail, i.e. with the supply of final customers in 2016 while there were 33 public suppliers who also acted as natural gas distributors. Trade in the open market was dominant in the retail sphere. The share indicated in Figure 2-2 does not include volumes produced by NIS to cover its own demand.

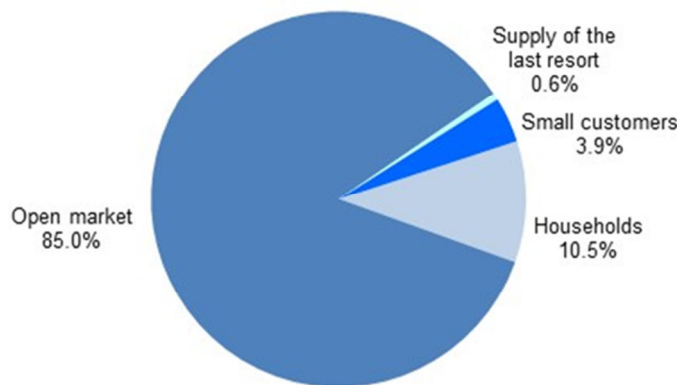


Figure 2-2: Sale of natural gas in the open and regulated markets in 2016

There were 85% of the market open, the quantities sold in the open market increased by 13% in comparison to the previous year. The Law prescribed that the final customer who is not entitled to regulated supply can be supplied temporarily by the supplier of the last resort, if a customer loses his supplier. The Government appoints the supplier of the last resort, in line with the Law. For 2016, the Government appointed PE *Srbijagas* as the supplier of the last resort of final customers who are entitled to it. Pursuant to the Law, the supply of the last resort can last 60 days at most. In 2016, the supply of the last resort was exercised by around ten customers with 12 million m³ delivered to them, i.e. only 0.6% of the total consumption in the market (without NIS consumption from its own production).

In 2016, the switching of supplier occurred only in some distribution companies, on 22 metering points in total, with the consumption of 74 million m³, which amounts to 5.1% of natural gas quantities delivered on the distribution level or 3.7% of the total natural gas quantities delivered to final customers.

Households and small customers (with annual natural gas consumption of up to 100,000 m³ with all their facilities connected to the natural gas distribution system) are entitled to be supplied by the public supplier at regulated prices if they do not select a supplier in the open market. Taking their gas consumption into consideration, these final customers have a small share in the final consumption of only 13% of the total gas quantities procured in the market.

Security of supply

In 2016, the security of natural gas supply was on a satisfactory level. There were sufficient quantities of gas to cover the whole demand of customers with a high reliability of gas networks.

Efforts are made in Serbia in order to provide an alternative supply direction. The construction of an interconnector towards Bulgaria is under preparation and it will contribute to the increase in the security of supply. In addition, so as to increase the security of supply, it would be useful to connect with gas pipelines in other neighbouring countries, first of all, with Romania and Croatia since these countries have a developed gas infrastructure and additional options for gas procurement.

In order to provide a long-term security of natural gas supply, it is extremely important to plan the system development adequately. In line with the Law, energy entities performing natural gas transmission and transmission system operation are obliged to submit ten-year transmission system development plans for approval to the Agency. In 2016, *Transportgas Srbija* LLC did not submit the ten-year development plan, while *Yugorosgaz-Transport* LLC submitted their plan. In

December 2016, the Agency organised public consultations and presented proposals for the improvement of this plan. Therefore, the approval of the plan of Yugorosgaz-Transport LLC is expected in 2017.

3. ELECTRICITY

3.1 Sector structure and capacities

3.1.1 Organisational and ownership structure of the sector

Since the adoption of the first Energy Law which established bases for the development of electricity and natural gas markets ("Official Gazette of RS", No. 84/04), the organisational structure of the power sector has been constantly harmonized with the needs of the electricity market development in line with the principles of non-discrimination, efficient competition and transparency. The transformation was initiated in 2005 by unbundling a joint vertically-integrated PE *EPS* which included: electricity production, transmission, distribution and trade into a separate company PE *Elektromreža Srbije* (*EMS*) in charge of transmission and into a vertically-integrated PE *EPS* in charge of: electricity production, wholesale supply and retail supply (of final customers) and distribution.

The structure of the power sector in the end of 2016 is indicated in Figure 3-1.

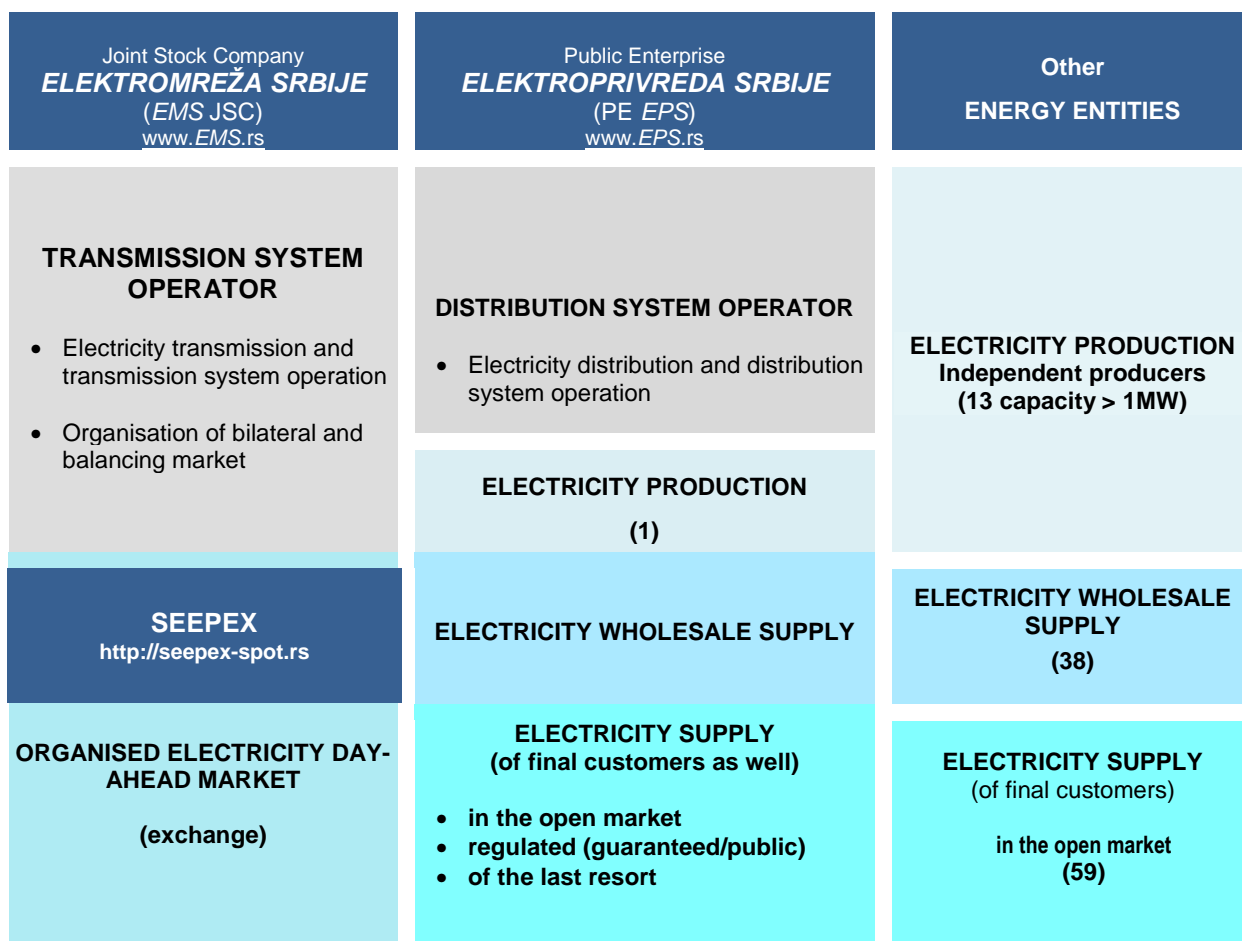


Figure 3-1: Organisational structure of the power sector

Public enterprise PE *EPS* and the joint stock company *EMS* JSC are 100% owned by the Republic of Serbia.

In partnership with EPEX SPOT, France, *EMS* JSC established an organised day-ahead electricity market (exchange) SEEPEX. Within the exchange, *EMS* JSC holds 75% of the shares while EPEX SPOT holds 25%.

PE *EPS* performs following activities: electricity production, electricity wholesale and retail supply and electricity distribution. PE *EPS* is the biggest producer (98.4% of the total installed capacity in Serbia) and it is the dominant electricity market player. Apart from selling and purchasing in the open market, PE *EPS* is also appointed as the guaranteed/public supplier of households and small customers at regulated price. Out of total 28.8 TWh of final consumption, PE *EPS* sells more than 97% (all under regulated supply and over 95% in the open market).

In order to perform distribution and distribution system operation on the whole territory of Serbia, PE *EPS* established a subsidiary – Distribution System Operator "*EPS Distribucija*" (DSO). PE *EPS* ensures the independence of DSO operation and development in line with the Law. The independence of DSO is extremely important because DSO has to provide

service to all market participants using the distribution system in a transparent manner and under the same conditions and it must not favour production and supply of PE EPS. By the end of 2016, DSO did not fully start operating in line with the Law.

There are 216 small power plants (independent electricity producers) with total capacity of 129 MW connected to the distribution system. Out of the number, 13 energy entities with production capacities exceeding 1 MW hold a licence for either electricity production or for combined electricity and heat production.

Since 1999, a part of the power system of Serbia which is located on the territory of the Autonomous Province of Kosovo and Metohija (APKM) is under the administration of UNMIK in line with the United Nations Security Council Regulation 1244.

A great number of electricity suppliers is licensed in Serbia. In the end of 2016, 60 licensed suppliers who are entitled to perform the wholesale and retail supply and 39 suppliers entitled to wholesale only. Out of the number, 52 were active. Most of them dealt with cross-border exchange (39) and minority of them dealt with supply of final customers in the open market (14).

3.1.2 Production, transmission and distribution capacities

3.1.2.1 Production

The total net installed capacity of power plants in Serbia amounts to 7,826, without power plants on the territory of APKM, including small power plants of independent producers (Table 3-1). Within PE EPS, which is the dominant electricity producer, 4,386 MW are installed in hydro power plants, 2,936 in hydro power plants, 347 MW in combined heat and power plants fuelled by natural gas or mazoute and 27.7 MW in 13 small hydro power plants connected to the distribution system. Lignite for all thermal power plants is produced in open pit mines within PE EPS.

Apart from the production capacities of PE EPS, 216 small power plants with total installed capacity of 129.5 MW which are owned by other legal and natural persons are connected to the power distribution companies' network.

Table 3-1: Electricity production capacities in 2016 (without APKM)

Technology	Installed capacity MW
Hydro power plants	2,936
Thermal power plants (coal)	4,386
Combined heat and power plants (gas, fuel oil)	347
Gas fired power plants	-
Nuclear power plants	-
Other sources (renewable sources) – small PE EPS power plants	28
Small power plants – independent producers	129
TOTAL INSTALLED CAPACITY	7,826

The structure of production capacities, without power plants on the territory of APKM is given in Figure 3-2. The share of the capacities within thermal power plants (TPP) and combined heat and power plants (CHPs) amounts to 60.4%, while the hydro power plants (HPPs) connected to the transmission system cover 37.5%. One of them is a pumped-storage HPP with 2x307 MW capacity, which is very important for system operation, apart from covering an important energy share. Around 2% of installed capacities are covered by small power plants connected to the distribution system.

Until the change of status within PE EPS which occurred on July 1, 2015, production capacities were organised within five production companies within PE EPS: HPP *Đerdap*, LLC, *Drinsko-Limske* HPP, LLC, *Panonske TPP-DHC*, LLC, TPP *Nikola Tesla*, LLC and TPP *and mines Kostolac*, LLC.

After the change of status in PE EPS, as of the second half of 2015, as well as during 2016, production capacities are organised within PE EPS *Proizvodnja* (Production). In addition, after having small distribution HPP EPS during the first half of the 2015 within electricity distribution companies *Elektrosrbija*, LLC and *Jugoistok*, LLC, as of July 1, 2015, production in these facilities was performed by PE EPS, on the grounds of a contract on the lease of facilities. Within the PE EPS reorganization follow-up, by the change of status as of January 4, 2016, production facilities in small distribution HPPs were transferred to PE EPS as the mother company.

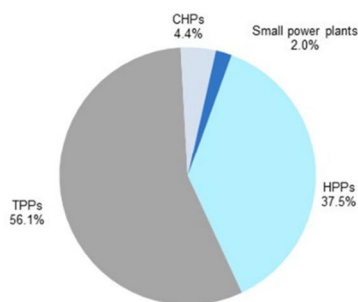


Figure 3-2: Production capacity structure in 2016 (without APKM)

Apart from PE *EPS* which is the biggest and the dominant electricity producer, the licence for the production of electricity or for combined electricity and heat production is also held by 13 energy entities (independent electricity producers) which own small production facilities connected to the distribution network. Out of 13 independent producers, the biggest ones include “*Naftna industrija Srbije*” JSC, Novi Sad with 11.94 MW with 9 facilities, *Vetropark Kula* (Windfarm Kula) with 9.9 MW and *Novosadska toplana* (Novi Sad District Heating Company) with combined production of 9.98 MW.

3.1.2.2 Transmission

The transmission system, without a part of it on APKM, includes 35 transformer stations (TS) 400/x and 220/x kV/kV with installed capacity of 16,769 MVA (30 of them with installed capacity of 16,281 MVA owned by *EMS JSC*), 17 switching stations (9 of them owned by *EMS JSC*) and lines of voltage 400, 220 and 110 kV with total length of 9,745 km (9,504 km of overhead line owned by *EMS JSC*). In comparison to 2015, capacities within the transmission system of *EMS JSC* were not increased considerably. There are also 6 transformer stations of 110/x kV/kV with total installed capacity of 808 MVA owned by *EMS JSC*.

The process of transfer of overhead lines and cables of 110 kV between *EMS JSC* and PE *EPS* in line with the Law, which was initiated in 2013 is still ongoing. The procedure of taking over remaining overhead lines and cables of 110 kV which are still owned by DSO is continued and it is expected to be completed in 2017. The transfer of 52 of 53 transformer stations of 110/x kV/kV was completed in the previous year and the procedure for the remaining TS is ongoing due to unsettled ownership issues.

The transmission system of *EMS JSC* is connected with neighbouring power systems via 24 interconnectors of 400, 220 and 110 kV and 22 of them are active.

Table 3-2: Data on the transmission system of EMS JSC in the end of 2016 (without APKM)

Transmission system elements	Unit	
Network length per voltage levels, total	km	9,504
400 kV	km	1,629
220 kV	km	1,845
110 kV	km	6,030
Number of transformers (including TS 110/x kV/kV owned by <i>EMS JSC</i>)		85
Number of transformer stations and switchgear plants (including 110 kV voltage level - owned by <i>EMS JSC</i>)		45
Number of (active) interconnections		22

3.1.2.3 Distribution

In 2016, electricity distribution and distribution system operation on the territory of the Republic of Serbia without APKM was performed by DSO *EPS Distribucija* which was established on July 1, 2015 as a PE *EPS* subsidiary. The distribution system, without the territory of APKM, includes 36,318 transformer stations with total installed capacity of 31,469 MVA and around 166,800 km of distribution lines of voltage level of 110, 35, 20, 10 and 0.4 kV, via which electricity is distributed to final customers.

There are 34,877 transformer stations owned by DSO with total installed capacity of 29,874 MVA and 160,887 km of distribution lines of all voltage levels. Their structure is indicated in Table 3-3. In line with the legal obligation, transformer stations of 110/x kV/kV were taken over from *EMS JSC*. Therefore, in the end of 2016, there is only one transformer station which was not taken over. As far as the lines of 110 kV, there is only the remaining overhead line and cables to be transferred to *EMS JSC*.

Table 3-3: Length of lines owned by DSO in the end of 2016 (without APKM)

km

Voltage level	DSO in areas of former distribution companies					Total DSO
	Elektrovojvodina	EDB	Elektrosrbija	Jugoistok	Centar	
110 kV	0	36	0	0	2	38
35 kV	1,259	935	2,161	1,716	720	6,791
20 kV	7,988	0	1,600	0	0	9,588
10 kV	498	6,758	12,210	9,427	4,037	32,930
0.4 kV	13,901	17,416	46,878	21,048	12,297	111,540
Total	23,646	25,145	62,849	32,191	17,056	160,887

3.2 Consumption and generation

Final consumers' electricity consumption (without power plants' demand for production purposes) amounted to 28.8 TWh which is 1% higher than in 2015. Detailed consumption survey is given in item 3.5.1.2.

In the last ten years, PE EPS increased production from existing capacities and, in 2013, maximum production of almost 37.5 TWh was reached. In 2016, 36.7 TWh of electricity were produced, while the production in coal-fired thermal power plants was on the 2015 level and the production in hydro power plants increased by 0.7 TWh. As a rule, CHPs operated in line with the heating demand in winter period and they produced twice as high electricity quantities than in 2015.

The production of small power plants connected to the distribution network is relatively low. However, since new capacities are connected, despite the fluctuation of hydrological conditions, their production increases year after year. Production in these power plants amounted to 448 GWh in 2016 which is around 40% higher than in 2015.

Market opening lead to more active participation of a greater number of suppliers in the electricity market. For this reason, the scale of electricity cross-border trade increases. On the basis of available data from suppliers, slightly less than 2.2 TWh were imported into Serbia while around 3.6 TWh of electricity were exported. Export was intensive from February till May and, owing to favourable hydrological conditions, even during August and September. On the other hand, import was intensive in the last quarter of 2016.

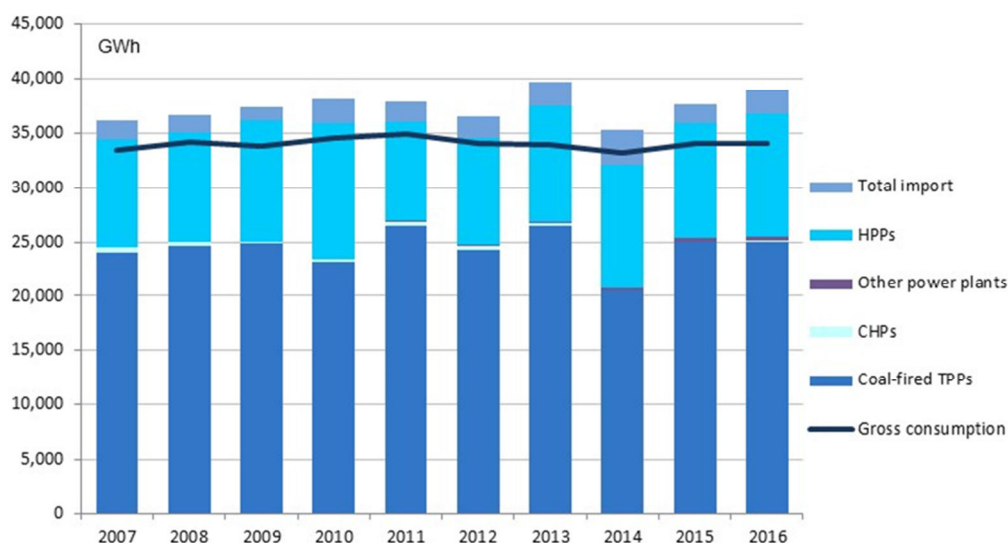


Figure 3-3: Production, import and gross consumption in Serbia in 2016 (without APKM)

In 2016, 36,781 GWh were produced in total in power plants in Serbia. Out of that number, coal-fired thermal power plants produced 68.1%, hydro power plants 30.5%, combined heat and power plants 0.2% and other small power plants connected to the distribution system 1.2% of the total electricity production.

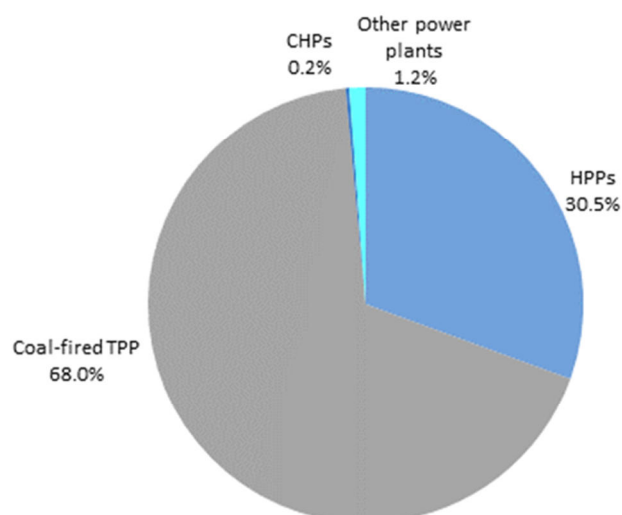


Figure 3-4: Generation structure in 2016 (without APKM)

Table 3-4: Electricity production and consumption in 2007 – 2016 (without APKM)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
GWh										
GENERATION										
Hydro power plants	9,930	10,011	11,045	12,420	9,145	9,808	10,729	11,366	10,529	11,227
Coal fired thermal power plants	24,016	24,661	24,880	23,162	26,462	24,275	26,537	20,455	25,017	25,016
Combined heat and power plants	483	367	139	222	408	390	167	63	45	90
Other power plants	40	40	48	61	46	73	104	267	321	448
Total generation	34,469	35,079	36,112	35,865	36,061	34,546	37,537	32,151	35,912	36,781
Other (UNMIK)	88	0	44	93	184	144	0	0	15	69
IMPORT										
Import by <i>EPS</i> and suppliers' import meant to cover customers' demand in Serbia	792	616	122	756	1,106	1,177	636	2,869	1,677	2,170
Long-term contract with EP Montenegro	647	797	1,116	1,463	630	737	1,294	0	0	0
Annual contracts	249	121	85	86	64	125	218	311	55	55
Import – total import of <i>EPS</i> and for supply purposes	1,688	1,534	1,323	2,305	1,800	2,039	2,148	3,180	1,732	2,225
TOTAL AVAILABLE QUANTITY	36,245	36,613	37,479	38,263	38,045	36,729	39,685	35,331	37,659	39,075
<i>EPS</i> – export and sales to suppliers for export	249	173	1,442	1,286	764	251	3,140	936	2,086	3,523
Long-term contract with EP Montenegro	1,235	1,220	1,184	1,204	1,210	1,214	1,235	0	0	0
Annual contracts	246	115	94	69	90	127	100	85	56	55
Total – <i>EPS</i> export and sales to suppliers for export	1,730	1,508	2,720	2,559	2,064	1,592	4,475	1,021	2,142	3,578
Pumping	864	878	903	1,049	860	875	1,007	902	1,102	1,034
Other (UNMIK)	133	59	71	145	199	196	207	180	300	445
Gross consumption	33,518	34,168	33,784	34,509	34,928	34,059	34,000	33,228	34,115	34,018
Transmission network losses	1,286	1,224	1,106	1,065	1,096	1,022	1,013	948	932	892
Distribution network losses	4,583	4,671	4,865	4,958	4,747	4,586	4,482	4,215	4,236	3,917
Total losses	5,869	5,895	5,970	6,022	5,843	5,602	5,499	5,163	5,168	4,808
Losses to gross consumption ratio	17.5%	17.3%	17.7%	17.5%	16.7%	16.4%	16.2%	15.5%	15.4	14.1%
Final consumption *	27,649	28,273	27,814	28,487	29,085	28,457	28,501	28,065	28,947	29,210

* In comparison to final consumption given in the balance sheet of the Statistical Office of the Republic of Serbia, final consumption in this Report also includes electricity consumption in all energy sectors, including energy purchased by power plants for production purposes.

3.3 Regulation of the transmission system operator

The joint stock company *EMS JSC* is the transmission system operator (TSO) in Serbia. It is responsible for electricity transmission and transmission system operation as well as for organisation and administration of electricity bilateral and balancing market. The following responsibilities of the TSO are regulated by the Law in detail. Namely, the TSO is obliged to provide: safe, reliable and secure operation of the transmission system; transmission system development, adequate transmission capacity for the purpose of security of supply; quality of electricity delivery; non-discriminatory and transparent access to the transmission system; system balancing; accuracy and reliability of electricity metering on points of delivery into and from the transmission system, etc.

The most important activities of the transmission system operator in 2016 included the following:

- drafting ten-year transmission system development plan;
- amendments to the Transmission Network Code in order to harmonise it with the Law;
- amendments to the Electricity Market Rules in order to harmonise it with the Law;
- drafting Rules on Publication of Key Market Data;
- adoption of the electricity market rules;
- adoption of the rules for the cross-border transmission capacities allocation in 2016, general and bilateral ones with the transmission system operators of Hungary, Romania, Bulgaria, Bosnia and Herzegovina and Croatia;
- procurement of energy for the recovery of transmission network losses in the tender procedure;
- system services contracting;
- monitoring security of supply and submission of the data which are to be incorporated into the report on security of energy supply to the ministry in charge of energy;
- setting electricity prices for the purpose of system balancing, in line with the Electricity Market Rules and regular publication of the data on active balancing energy and the settlement price;
- collecting and publishing the data and information related to electricity market transparency and monitoring;
- exchanging information necessary for safe and secure operations of the system with other system operators;
- activities related to the transfer of remaining transformer station 110/x kV/kV to the distribution system operator *EPS Distribucija* and takeover of remaining 110 kV overhead lines and cable lines;
- submission of the data and documentation necessary for monitoring transmission system operator's operations and price regulation to the Agency and
- other activities which improve the security, efficiency and transparency in the operations of the transmission system and market functioning.

Transmission Network Code

Transmission Network Code regulates technical aspects of transmission network operations and relations between *EMS JSC* as the transmission system operator and system users. The Code is available on websites of both *EMS JSC* and the Agency. The enforcement of the Network Code began in May 2008, upon the approval of the Council of the Agency of the first draft of the code. Upon an amendment in December 2011, Code was adopted in July 2014. Following the adoption of the new Energy Law in December 2014, on the session held on 03/11/2015, the Agency Council adopted a decision on the approval of the Transmission Network Code harmonised with this Law. This Code was valid in 2016, too. In 2016, *EMS JSC* announced a draft of a new Code in order to harmonise it with the European network codes, guidelines and instructions and it will be submitted to the Agency for approval in 2017.

3.3.1 Unbundling of TSO

A very important element of market reforms was achieved by unbundling network activity – electricity transmission as natural monopoly from production and supply which are market activities.

In 2016, PE *Elektromreža Srbije* was corporativised and it functions as a closed joint stock company.

In line with the EU regulations, the 2014 Law established the model of ownership unbundling of the transmission system operator and the deadlines for its implementation. In line with the prescribed model, the independence of TSO is realised by not having the same person or persons authorised to exercise direct or indirect control over energy entities performing production or supply and over the transmissions system operator at the same time. In addition, this person is not simultaneously authorised to be a member or to appoint the members of the management body within the transmission system operator and energy entities dealing in electricity production or supply. In case when this person is actually the Republic of Serbia or a state body, the control over the transmission system operator and over energy entities in charge of production and supply, the control over the transmission system operator and over entities in charge of production and supply cannot be exercised by the same state body. When separate state bodies exercise the control, these bodies cannot be controlled by the same third party.

The compliance with the conditions for the implementation of the ownership model of unbundling of the transmission system operator which is prescribed by the law is examined within the certification procedure which is implemented by the Agency.

Only after a legal person is certified as a transmission system operator, the person may submit an application for the issuance of a licence for transmission and transmission system operation. Pursuant to the Law, this legal person is appointed as an electricity transmission system operator by the issuance of the licence.

Acting within the deadline prescribed by the Law, in October 2016, EMS JSC submitted a certification application to the Agency. However, this procedure can be completed by the final decision on certification only after ruling regulations of the Republic of Serbia on the work of ministries and the Government of RS are harmonised. Thereby, conditions in terms of the independence of the transmission system operator would be met. This is neither within the jurisdiction of the energy entity nor the Agency and it depends on the competent state bodies. Apart from the above given reasons, a problem with the registration of ownership rights on parts of network where EMS JSC should be registered as the system operator in line with the ownership model of unbundling was also noticed within the certification procedure. This is also beyond the jurisdiction of the Agency.

3.3.2 Price regulation

3.3.2.1 Costs of connection to the system

The costs of connection to the system are set by the TSO on the basis of elements given in the connection application and the Methodology for Setting Costs of Connection to the Electricity Transmission and Distribution Systems ("Official Gazette of RS", No. 109/15; valid as of 01/03/2016) which is adopted by the Agency. The Methodology defines types of costs: collection of documentation, procurement and installment of equipment and material, works, the manner of calculation of all costs. In addition, the operator is obliged to adopt certain standards and to use market prices, i.e. prices of work and services when setting costs of connection in their decision on connection.

Since connections to the transmission system cannot be standardized and since each of them is a project of its own, TSO is obliged to comply with principles of transparency and non-discrimination and to inform the applicant, upon his/her request, on the documents which serve as the basis for setting the level of connection costs and the method for setting these costs.

Except for paying for the construction of the connection, the applicant is obliged to pay defined set of costs arising from the connection of the applicant's facility to the system.

As a rule, TSO is the investor, i.e. the owner of the constructed facility (of the connection line, metering equipment and other equipment, up to the metering point within the customer's facility).

In line with the Law, EMS JSC also adopted the Procedure for Connection of Facilities to Transmission System which was approved by the Agency. This procedure regulates the schedule of TSO's activities and the connection applicant in more detail and the deadlines in the procedure of facility connection to the transmission system.

3.3.2.2 Use-of-system charge

Upon the positive assessment of the Council of the Agency and the approval of the Government of the Republic of Serbia, regulated electricity transmission use-of-system charges were applied on January 1, 2008 for the first time. Since then, they have been modified four times. In 2016, there were no changes and the charges approved in March 2013 were applicable.

The trend of the annual level of approved electricity transmission use-of-system charges (VAT and duties free) are given in the table below:

Table 3-5: Trend of annual level of average approved transmission use-of-system charges²

	RSD/kWh				
	Annual level of approved charge				
	as of 01/01/2008	as of 01/08/2008	as of 01/03/2010	as of 01/04/2011	as of 01/03/2013
Total electricity transmission use-of-system charge	0.23	0.25	0.28	0.34	0.44
Net electricity transmission use-of-system charge *	0.10	0.10	0.11	0.17	0.18

* Net electricity transmission use-of-system charge is calculated by reducing the total maximum allowed revenue by system services costs and loss recoveries in the transmission grid and dividing it with the total annual delivered quantities.

The charges applicable in 2016, which have been valid since March 1, 2013 are listed in Table 3-6.

The current transmission use-of-system charge is available on the Agency website (www.aers.rs).

² Terms related to prices used in the Report include the annual price level and average price. The annual price level represents the quotient of the revenue arising by the application of ruling tariffs on a certain date to annual quantities and other tariff elements used in the process of tariff approval. The average price represents the quotient of the realized revenue and realized quantities over a period of one year. If there were no changes in prices over a one-year period, these two prices should be similar, i.e. there should be only small difference between realized quantities and tariff elements compared to the planned ones which are used in the process of price approval.

In 2016, the Council of the Agency adopted a decision on the amendment of the Methodology for Setting Transmission Use-of-System Charge.

Table 3-6: Transmission use-of-system charges valid as of 01/03/2013

Tariff element	Calculation element	Unit	RSD
			Charge as of 01/03/2013
Power	Accounting power	kW	37.5638
	Extra power	kW	150.2554
Active energy	Higher day-time	kWh	0.3303
	Lower day-time	kWh	0.1651
Reactive energy	Reactive energy	kvarh	0.1399
	Extra reactive energy	kvarh	0.2798

In 2016, by the application of ruling charges to actual quantities, average transmission use-of-system charge (VAT and duties free) was realised. It amounted to 0.427 RSD/kWh.

Table 3-7: Average transmission use-of-system charges

	RSD /kWh								
	2008	2009	2010	2011	2012	2013	2014	2015	2016
Realised transmission use-of-system charges	0.25	0.26	0.28	0.33	0.35	0.42	0.43	0.43	0.43

Transmission use-of-system charges (VAT and duties free) and their structure are given in line with 2016 ENTSO-E data in the Figure 3-5.

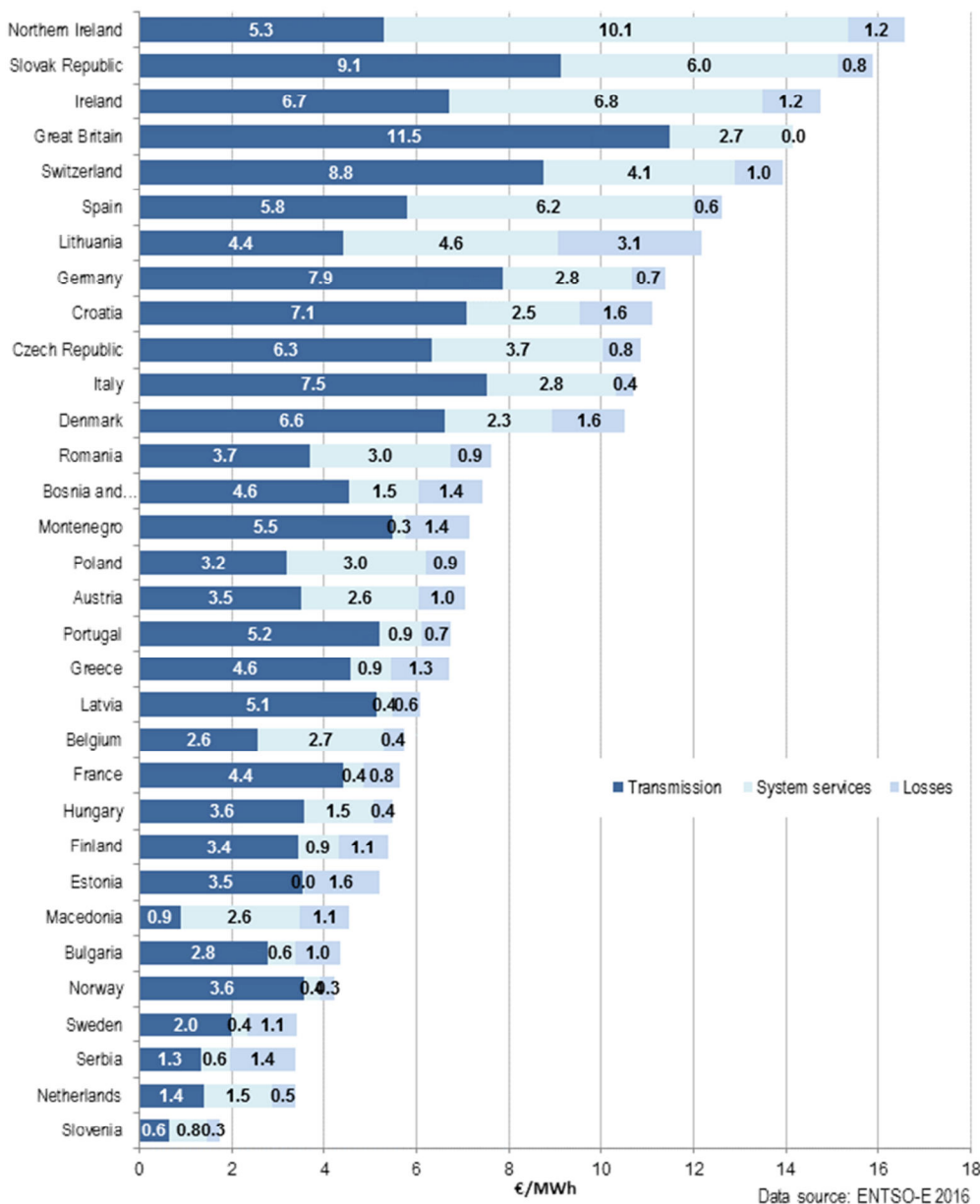


Figure 3-5: Transmission use-of-system charge (€/MWh) in 2016

3.3.2.3 Prices of secondary and tertiary control reserve

The Electricity Transmission Network Code defines the level of capacity which has to be reserved for the purpose of system service - primary control (36 MW), secondary control (minimum range amounts to 160 MW) and tertiary control (300 MW for positive and 150 MW for negative reserve). It also defines that the whole reserved capacity has to be provided from production units connected to the local transmission system.

The Electricity Transmission Network Code defines the manner how production units connected to the local transmission system provide these services as well as the ability of the system operator to engage the missing capacity or procure energy for system services purposes from other electricity market participants (suppliers and wholesale suppliers) or from the operator of another transmission system.

The Agency adopts Decision on Prices of Capacity Reserve for System Services of Secondary and Tertiary Control in the end of each calendar year. The price of these system services are set in line with the mechanism of compensation of the value of the undelivered electricity in the electricity market due to capacity reserve for these purposes. The energy which producers cannot place in the market freely due to capacity reserve for the purpose of secondary and tertiary control is set on the basis of the data from the energy balance sheet and the data on the engagement of these capacities in the previous period.

The price which is used as the basis for the calculation of the revenue lost due to capacity reservation for the purpose of secondary and tertiary control is set on the basis of realised average market prices of annual futures³ for continuous production, i.e. consumption (baseload) on relevant electricity exchanges.

In 2016, the prices of capacity reserve for the purpose of secondary control were set on the level of 1,115 RSD/MW and of tertiary control of 354 RSD/MW in case capacity was supposed to be increased. The service of tertiary control in case capacity is supposed to be reduced is free of charge.

Primary control is not charged.

3.3.2.4 Prices of ancillary services

Beside setting prices of system services, the Agency also sets the prices of ancillary services (voltage regulation and reactive power control and black start) which are provided to the transmission system operator by producers whose facilities are connected to the power system. These prices are set on the annual level as the lump sum based on the value of the investment equipment in power plants used for these purposes. In 2016, the prices of ancillary services for the voltage regulation and reactive power amounting to RSD 124,629,671 and for the service of black start amounting to RSD 8,037,784 were set. They are billed in equal monthly installments set as one twelfth of the given amount.

Total allowed annual levels for the provision of system and ancillary services in the period from 2012 are indicated in Table 3-8.

Table 3-8: Total annual level for the provision of system and ancillary services

Year	000 RSD				
	2012	2013	2014	2015	2016
Total annual value	1,796,813	2,010,634	2,163,889	2,547,037	2,625,261

3.3.3 Access to cross-border capacities

3.3.3.1 Cross-border capacity allocation and combustion management

The Republic of Serbia borders with eight countries and there are eleven interconnection overhead lines (400kV and 220kV) where EMS JSC allocates the rights to use transmission capacities. On the Serbian-Hungarian border since 2011, Serbian-Romanian border since 2013, Serbian-Bulgarian and Serbian-Croatian since 2014 and on Serbian-Bosnian and Herzegovinian border since 2014, joint explicit auctions have been organised for the allocation of 100% of available capacity. On the borders with Albania, Macedonia and Montenegro, EMS JSC and neighbouring transmission system operators allocate 50% of cross-border transmission capacities each.

Rules for the cross-border transmission capacity allocation

Being the TSO, EMS JSC is responsible for the allocation of rights to use available cross-border transmission capacities on interconnection lines of the Serbian power system. The mechanism for the allocation of rights to use available cross-border transmission capacities is defined by the Transmission Network Code, the agreements between the transmission system operator of the Republic of Serbia (EMS JSC) and the transmission system operators of Hungary, Romania, Bulgaria, Bosnia and Herzegovina and Croatia on the procedure and method of allocation of cross-border capacities and access to cross-border transmission capacities and general Rules for Available Cross-Border Transfer Capacities Allocation on Borders of Control Area of Republic of Serbia. The rules and agreements which were applicable in 2016 were approved by the Agency Council in the end of 2015.

Cross-border capacity allocation

Being the TSO, EMS JSC is responsible for the calculation, allocation and use of cross-border transmission capacities on all borders of the control area of the Republic of Serbia. More details on the cross-border capacity allocation are available on the website of the Transmission System Operator (www.EMS.rs).

Tables 3-9 and 3-10 indicate average monthly amounts of net cross-border transmission capacities (NTC) on all borders in both directions.

³ futures – purchase and sale in organized electricity market (exchange) for a future period/date.

Table 3-9: Average monthly level of NTS for entry into Serbia in 2016

Border/months	MW											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Hun---> Ser	700	700	700	700	700	700	700	700	647	700	700	700
Rom---> Ser	500	491	500	525	452	512	419	558	470	547	560	602
Bul ---> Ser	150	150	200	300	300	300	300	300	300	252	300	300
Mac---> Ser	300	300	300	300	300	300	300	300	300	300	300	300
Alb---> Ser	250	250	250	225	210	210	210	210	196	210	210	250
Mon---> Ser	700	600	600	600	600	583	397	552	500	490	400	400
BosHer--- Ser	600	600	500	550	600	583	600	400	560	600	600	600
Cro---> Ser	600	600	500	550	600	583	600	400	460	600	600	600

Table 3-10: Average monthly level of NTS for exit from Serbia in 2016

Border/months	MW											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Ser --->Hun	800	800	800	800	597	800	800	800	733	800	800	800
Ser --->Rom	400	434	550	487	477	450	247	460	657	648	710	555
Ser --->Bul	150	150	200	200	150	150	150	150	150	126	150	150
Ser --->Mac	700	700	700	573	453	500	545	513	590	687	700	700
Ser --->Alb	250	250	250	210	169	210	210	210	196	244	250	250
Ser --->Mon	700	600	600	493	373	490	348	465	577	684	700	700
Ser --->BosHer	600	450	500	413	323	543	423	439	450	400	500	500
Ser --->Cro	600	600	565	413	329	543	423	439	425	400	500	500

In 2016, EMS JSC organised explicit auctions on cross-border transmission capacities on all borders and in all directions of the control area of the Republic of Serbia.

In 2016, in line with the Rules for the Cross-Border Transmission Capacity Allocation, EMS JSC allocated 50% of the available capacity on the annual (only on the border with Macedonia) and monthly level, by organizing explicit auctions on the following borders: Serbia-Albania, Serbia-Montenegro and Serbia-Macedonia. In case of congestion, reservation was charged at marginal price. The allocation of the other half of transmission capacity quantities was organised by the transmission system operators of neighbouring countries. EMS JSC also organised intraday allocation of cross-border transmission capacity on these borders by the method „first come – first served“ (in line with the application time).

In 2016, the right to participate in the auctions on 50% of available capacity was on disposal of 48 market players. 31 of them actively participated in the auctions. Annual auctions were held on November 24, 2015 only on the border with Macedonia while the auctions on the borders with Montenegro and Albania were not organised since it was not possible to guarantee annual capacity in case KOSTT area is established in 2016. There were 12 energy entities participating in the direction Macedonia – Serbia and the price was 0.12 EUR/MWh and 17 energy entities in the direction Serbia – Macedonia with the price of 1.25 EUR/MWh. Monthly allocations were organized for each month of 2016 on all the three abovementioned borders. A greater number of monthly auctions were realised for the allocation of 50% of available cross-border transmission capacities within the allocation process. The data on the given annual auctions are given in Table 3-11.

Table 3-11: Data on realised monthly auctions for the allocation of 50% of available cross-border transmission capacity in 2016

Border – direction	No. of days with “0” capacity	Number of congestions/total number of auctions	Number of participants in auctions (min.-max.)	Range of prices of the last successful bid in case of congestion EUR/MWh
Alb-Srb	5	14 / 16	5 - 15	0.02 – 0.57
Mon- Srb	0	18 / 18	11 - 15	0.02 – 0.40
Mac- Srb	0	12 / 12	8 - 16	0.05 – 1.37
Srb -Alb	5	19 / 21	9 - 14	0.11 – 3.23
Srb -Mon	0	32 / 32	11 - 16	0.07 – 0.75
Srb -Mac	0	28 / 28	15 - 20	0.42 – 3.51

In 2016, EMS JSC organised daily explicit auctions for the allocation of 100% available capacity on the Serbian-Hungarian border charging in line with the last successful price (“marginal price”) as well as intraday auctions by the application of the method „first come-first served“. The Hungarian transmission system operator MAVIR ZRt. realised the allocation of available capacity on annual and monthly level, charging in line with the last successful price (“marginal price”). There were 41 participants on all auctions organised by EMS JSC while there were 57 of them entitled to participate.

For the allocation of 100% of available capacity on Serbian-Romanian border, EMS JSC organised annual and monthly explicit auctions charging in line with the last successful price (“marginal price”), while the Romanian transmission system operator CNTEE Transelectrica S.A. realised the allocation of the available capacity on daily level charging in line with the last successful price (“marginal price”), as well as on the intraday level, by organizing explicit auctions (6 4-hour sessions). There were 35 participants on all auctions organised by EMS JSC, while there were 61 of them entitled to participate.

In 2016, the Croatian transmission system operator HOPS, organised annual and monthly auctions for the allocation of 100% of available capacity on the Serbian-Croatian border charging in line with the last successful price (“marginal price”), while EMS JSC allocated available capacity on daily level using the last successful price (“marginal price”) collection method and on intraday level using the „first come-first served“ method. There were 14 participants on all auctions organised by EMS JSC, while there were 38 of them entitled to participate.

On the Serbian-Bulgarian border, the Bulgarian transmission system operator Elektroenergien Sistem Operator EAD organised both annual and monthly auctions for the allocation of 100% of available capacity, while EMS JSC allocated the available capacity on daily level. Both operators use the charging method - the last successful price (“marginal price”). There were 26 participants on the auctions organised by EMS JSC, while there were 48 of them entitled to participate. Intraday auctions were not organised due to technical problems of the Bulgarian transmission system operator.

In 2016, EMS JSC organised annual and monthly explicit auctions for the allocation of 100% of available capacity on Serbian-Bosnian and Herzegovinian border charging in line with the last successful price (“marginal price”), and the same method was used by the Bosnia and Herzegovina transmission system operator (NOSBIH) which organised daily auctions. NOSBIH also organised intraday auctions by using the method „first come-first served“. There were 23 participants in the auctions organised by EMS JSC while there were 44 of them entitled to participate.

The data on the joint annual auctions for 2016 are given in Table 3-12.

Table 3-12: Data on joint annual auctions for the allocation of 50% of available cross-border transmission capacities in 2016

Border – direction	Number of auction participants	Marginal price (EUR/MWh)
Hungary - Serbia	17	0.13
Serbia – Hungary	17	0.24
Romania - Serbia	21	4.11
Serbia – Romania	12	0.03
Bulgaria – Serbia*	6	1.46
Serbia – Bulgaria*	4	0.83
Croatia – Serbia**	10	0.06**
Serbia – Croatia**	11	0.12**
BiH - Serbia	16	0.13
Serbia - BiH	12	0.04

* Data gathered from the neighbouring transmission system operator

** Average prices given in EUR/MWh because the price is set in Croatian currency “kuna”.

The data on joint monthly auctions in 2016 are given in Table 3-13.

Table 3-13: Data on joint monthly auctions for the allocation of cross-border transmission capacities in 2016

Border – direction	No. of days with “0” capacity	Number of congestions/total number of auctions	Number of participants in auctions (min.-max.)	Range of marginal prices EUR/MWh
Hungary - Serbia	0	12 / 12	11 - 20	0.11 – 0.35
Serbia – Hungary	0	12 / 12	13 - 22	0.03 – 0.78
Romania - Serbia	5	53 / 54	17 - 24	0.15 – 4.75
Serbia – Romania	5	34 / 68	4 - 17	0.01 – 1.35
Bulgaria – Serbia*	5	12 / 12	5 – 10**	0.05 – 4.75
Serbia – Bulgaria*	5	12 / 12	3 – 7**	0.31 – 2.69
Croatia – Serbia**	5	16 / 18	4 – 10	0.01***
Serbia – Croatia**	5	27 / 27	5 – 11	0.11***
BiH - Serbia	0	17 / 17	12 – 16	0.01 – 0.13
Serbia - BiH	0	26 / 29	8 - 15	0.01 – 0.18

* Data gathered from the neighbouring transmission system operator

** Number of participants entitled to capacity

*** Average prices given in EUR/MWh because the price is set in Croatian currency “kuna”.

In addition to concluding agreements on the organisation of joint allocation/auctions for 2017 with those neighbouring system operators which had their auctions organized in 2016, in the end of 2016, EMS JSC concluded an agreement on the organization of joint allocation/auctions for 2017 with the transmission system operator of Macedonia (MEPSO JSC). The Council of the Agency approved all these agreements until the end of the year.

3.3.3.2 Annual exchange within and across the borders of control areas

The total scale of cross-border transactions in 2016 (with APKM) amounted to 15,527 GWh – entrance, i.e. 17,845 GWh – exit from the market area of Serbia. The scale of internal transactions⁴ amounted to 15,633 GWh. Table 3-14 indicates the scale of nominated and confirmed internal and cross-border transactions in the period 2009-2016.

Table 3-14: Cross-border and internal transactions in the market area of Serbia 2009 - 2016

Year	GWh		
	Cross-border transactions – entry	Cross-border transactions – exit	Internal transactions
2009	6,883	8,681	3,679
2010	10,551	11,581	5,835
2011	11,171	11,481	10,004
2012	10,781	10,769	7,815
2013	10,094	13,939	11,711
2014	16,637	14,416	11,574
2015	16,165	16,910	9,835
2016	15,526	17,844	15,633

In 2016, cross-border exchange in the exit direction was increased which indicates that the sale of electricity produced in Serbia in foreign market was higher. However, the largest increase was recorded in the field the internal transactions of almost 60% which indicates that there has been a large increase in the electricity trade in the internal market in Serbia.

Apart from the transactions indicated in Table 3-15, a segment of cross-border exchange was realised via island operations of distribution system of Serbia and Bosnia and Herzegovina, amounting to 51.4 GWh in direction from Serbia towards Bosnia and Herzegovina and 1.9 GWh in the opposite direction.

Table 3-16 indicates the scale of cross-border transactions for each border for 2016.

⁴ Bilateral trade between two balancing responsible parties in Serbia

Table 3-15: Entry and exit nominated cross-border transactions for each border for 2016

Border with	GWh	
	Entry into Serbia	Exit from Serbia
Romania	3,704	1,286
Bulgaria	1,343	1,078
Macedonia	417	3,579
Montenegro	531	937
Albania	936	1,777
BiH	1,913	1,656
Croatia	1,475	2,368
Hungary	5,207	5,163
On all borders	15,526	17,844

3.3.3.3 Use of revenue arising from the cross-border capacity allocation

In 2016, EMS JSC generated revenue from capacity allocation amounting to €14.8 thousand in line with the following structure:

Table 3-16: Revenue from cross-border capacity allocation in 2016

Allocation	Revenue (€)
Annual	5,555,425
Monthly	7,924,679
Daily	1,335,241
Total	14,815,345

In line with the Regulation (EU) 714/2009, revenues of TSO arising from the cross-border capacity allocation, as a part of the total revenue, are included when setting transmission use-of-system charge. Therefore, they were used for financing investments in the transmission system as one of sources of funds in order to maintain and increase cross-border transmission capacities.

3.3.4 Transmitted electricity quantities

Table 3-8 indicates the transmitted electricity quantities in 2016 in comparison to the quantities planned for 2016 in the balance sheet and transmitted electricity quantities in 2015. In comparison to 2015, there was 1.17% less electricity (490 GWh) entered the transmission system while the exit from the transmission system in 2016 is lower than 2015 exit by 1.10% (450 GWh). One may notice that the balance sheet for 2016 envisaged considerably higher level of energy for recovery of losses in the system in comparison to losses in 2015 and 2016. When analysing justified TSO costs and approving electricity transmission use-of-system charges, the Agency does not find such loss planning acceptable.

Table 3-17: Basic indicators of transmission plan realisation without APKM

	2015		2016	
	Realised	Balance	Realised	Real./Bal.
Entry (GWh)	41,891	40,049	41,401	103.4
Losses (GWh)	932	988	892	90.3
Losses (%)	2.22%	2.47%	2.15%	87.0
Exit (GWh)	40,959	39,061	40,509	103.7

Realised physical electricity transit in 2016, calculated as a lower value of average hourly electricity which was withdrew into or out of the transmission system via interconnection overhead lines amounted to 4,598 GWh. The physical transit per month is indicated in table 3-18.

Table 3-18: Electricity transit by months of 2016 (physical flows)

Month	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Transit (GWh)	604	213	189	218	259	454	604	355	334	476	484	408

Taking into account a part of the system without APKM, 41,401 GWh were transmitted in total. 36,333 GWh were produced in the power plants connected to the transmission system, 4,522 GWh were withdrawn from the neighbouring systems, 545 GWh were withdrawn from the territory of APKM. Since the production of power plants connected to the

distribution system exceeded the demand in these parts of the distribution system, around 1 GWh of electricity was withdrawn from the distribution system. The greatest share of energy was delivered to electricity distribution systems, final customers, neighbouring system and pumped-storage plants for pumping purposes respectively.

Table 3-19: Transmitted energy, maximum load and losses (without APKM)

	Unit	2015	2016	2016/2015
Transmitted electricity	GWh	41,891	41,401	98.8
Maximum daily gross consumption	GWh	119.5	126.2	105.6
Maximum hourly load	MW	5,777	5,800	100.4
Transmission system losses	GWh	932	892	95.7
Transmission system losses (as % of transmitted electricity)	%	2.22	2.15	96.9

In 2016, without APKM, electricity losses in the transmission system of Serbia amounted to 892 GWh, which represents 2.15% of electricity withdrawn into the transmission system. The loss reduction trend continued, i.e. the losses were reduced both on percentage level and as the numerical value in comparison to 2015.

Electricity consumption in Serbia, but in the region as well, depends on the season. Therefore, maximum consumption is seen in wintertime at lowest temperatures or on days prior to holidays. During the 2016 winter period (during 5 winter months), in Serbia, without APKM, average daily consumption which greatly depends on the average daily temperature amounted to 106,650 MWh. The highest daily gross consumption amounted to 126,177 MWh on December 23, 2016. The maximum 2016 hourly load was reached – 5,800 MW on December 31, 2016 at 6 p.m.

3.4 Regulation of the distribution system operator

On July 1, 2015, by the reorganization of PE *EPS*, a specific daughter company Distribution System Operator “*EPS Distribucija*” (DSO) was established and it continued performing the activity of electricity distribution and distribution system operation on the territory of Serbia without APKM. The Law regulated in detail the DSO responsibility to provide: safe and reliable distribution system operations and the quality of electricity delivery; distribution system development; non-discriminatory and transparent access to the distribution system; support to efficient market functioning; accuracy and reliability of electricity measurements on delivery points from and into the distribution system and quality of electricity delivery.

The most important activities of the distribution system operator in 2016 which provided the compliance of its work with the commitments arising from the Law and electricity market functioning were as follows:

- organisational changes in order to provide for efficient operation of a single distribution system operator;
- implementation of measures for energy system loss reduction, which are above the technically justified level;
- drafting the five years’ distribution system development plan and harmonisation with the transmission system development plan and applications for the connection of facilities of producers and customers which are not completed and not submitted to the Agency for approval;
- drafting a plan for connections transfer;
- drafting single Electricity Distribution Network Code;
- cooperation with *EMS JSC* and suppliers on the provision of data related to market functioning and balancing responsibility;
- submission of the data and documents necessary for monitoring operator’s work and for the analysis of the data necessary for price regulation to the Agency;
- submission of the data which are to be incorporated into the report on security of energy supply to the Ministry in charge of energy;
- takeover of transformer stations 110/x kV/kV from *EMS JSC* and transferring the lines 110kV to *EMS JSC*;
- procurement of energy meant for distribution grid loss recovery and
- other activities which improve the security, efficiency and transparency of the distribution system operations as well as market functioning.

By mid-2021, the DSO is obliged by the Law to take over metering devices, switchboards, connection lines, installation and equipment in the switchboard and other devices within the connection in the facilities of existing customers or producers since these devices and equipment are part of the distribution system. The plan is supposed to be drafted upon making an analysis of the situation with metering devices, switchboards, connection lines, installation and equipment in the switchboard and upon determining the necessity to replace them or adjust them to the requirements stipulated by

technical regulations and distribution system code. The plan for their transfer was submitted in mid-December to the Agency for approval and its adoption is expected in the first half of 2017.

Distribution Network Code

Upon the approval of the Agency's Council, the Distribution Network Code has been enforced in all the five companies for electricity distribution since early 2010. The Code regulates technical conditions for connection of customers to the system, technical and other conditions for safe operation of the distribution system and for the provision of reliable and continuous delivery of electricity to customers, procedures in case of crisis, rules on third party access to the distribution system, functional requirements and the category of measuring devices, electricity measuring method and other conditions.

The Code was amended in the field of power plants connection to the distribution system and the definition of consumption profile, i.e. the method for setting hourly load for customers whose electricity consumption is metered on monthly level.

The Distribution Network Code was supposed to be harmonised with the 2014 Energy Law. The DSO initiated the work on harmonisation of the Code after the DSO was established in the second half of 2015, and submitted the Code draft to the Agency in July 2016 in order to let the Agency have insight into the draft. By the end of 2016, working teams of DSO and the Agency have not worked on the harmonisation of the draft. Therefore, the Code is expected to be submitted to the Agency for approval in the first half of 2017.

3.4.1 Unbundling of DSO

By unbundling of network activity – electricity distribution as a natural monopoly from production and supply which are market activities, a very important element of market reforms was reached.

A DSO which is a part of a vertically-integrated company has to be independent in terms of legal form, organisation and decision-making from other activities which are not connected with electricity distribution. In line with the Energy Law, the independence of the distribution system operator is provided by having persons responsible for the management of the distribution system operator restricted from participation in management bodies of the vertically-integrated company which are directly or indirectly responsible for electricity production, transmission or supply, as well as by taking measures which ensure that the persons responsible for the management of the distribution system operator act in a professional manner in order to provide for their independence during work. In addition, the distribution system operator is supposed to adopt decisions independently from the vertically-integrated company if these relate to funds necessary for the network operation, maintenance and development, as well as to current operation, i.e. decisions on the construction or upgrade within the distribution network if they comply with the approved financial plan (Article 131).

Pursuant to the Law (Article 132), a DSO which is a part of a vertically-integrated company is obliged to adopt the Compliance Programme for Non-Discriminatory Treatment which includes measures for the prevention of discriminatory behaviour, the method of monitoring the implementation of these measures and obligations of employees to achieve set goals. The Agency approves the DSO Compliance Programme in June 2016.

The approval is given with the distribution system operator's obligation to inform the Energy Agency of the Republic of Serbia on the achieved independence of the distribution system operator prescribed by the provisions of Article 131 of the Energy Law in this legal act. The distribution system operator is obliged to inform the Agency until the expiration of the legal deadline for the harmonisation of the stature of DSO "EPS Distribucija" LLC Beograd with the provisions of the law regulating the legal position of public enterprises and other organisational forms which perform activities of general interest.

Since the DSO has not harmonised its statute with the law regulating the legal position of public enterprises in 2016, within its jurisdiction, the Agency took adequate measures in order to accelerate the harmonisation process in order to comply with this condition for the issuance of the energy licence for distribution and distribution system operation.

The DSO is also obliged to appoint a person responsible for compliance monitoring. In June 2016, the Agency gave approval of conditions for the appointment and duration of term of a compliance monitoring officer, as well as the approval of the appointment decision. The compliance monitoring officer drafts the annual report on the realisation of the Compliance Programme and submits it to the Agency for approval. The first such report is expected in mid-2017.

3.4.2 Price regulation

3.4.2.1 System connection costs

The DSO establishes distribution system connection costs on the basis of connection application and the Methodology for setting costs of connection to electricity transmission and distribution system which is adopted by the Agency ("Official Gazette of RS", No. 109/15; valid as of 01/03/2016). The Methodology sets the types of costs: provision of documentation, procurement and installment of equipment and material, works as well as the method of calculation of all costs. In addition, the operator is obliged to adopt adequate standards and to use market prices, i.e. prices of work and services when setting connection costs in the connection decision. The DSO is obliged to comply with the principles of transparency and non-discrimination and, upon an applicant's request, to give the applicant an insight into acts which serve as the basis for the establishment of connection costs and the manner of setting these costs. In the Methodology, connections are grouped into kinds and types and therefore, depending on the distance between a facility and the system, on technical conditions and methods of connection, we recognize standard and individual connections.

With standard connections, depending on the number of metering devices, we recognize individual and group standard connections. A DSO's legal act on the level of connection costs for standard connections also includes the level of:

- cost of construction of standard connection for each subkind and subtype of standard connections depending on the location where metering switchboards are installed;
- unit variable cost and
- cost of a part of the system which is set by the operator in line with the Methodology.

If, based on submitted data as well as on the data which may be demanded in line with the Law, the Agency concludes that the DSO has not adopted legal acts on the level of connection costs in line with the Methodology, the Agency will ask the DSO to submit a new legal act, fully harmonised with the Methodology within 30 days since the day the Agency's written request is submitted.

The DSO provides the data on the number of new metering points connected to the distribution system, collected revenue and money flow based on issued decisions on connection to the distribution system for each connection type as well as on the connection costs which arose. The DSO provides these data regularly to the Agency in line with the Info-Code established by the Agency.

The Agency is not fully satisfied with the quality of data on the level of connection costs which is a consequence of different method of booking costs in different organisational segments within the DSO.

3.4.2.2 Use-of-system charges

Distribution companies started applying regulated distribution use-of-system charges on March 1, 2010 for the first time upon a favourable opinion of the Agency on price proposals given by 5 distribution companies and the approval of the Government. Afterwards, distribution use-of-system charges were changed on April 1, 2011, August 1, 2013 and these were valid in January and February 2016 for customers entitled to guaranteed supply. As of March 1, 2016, new uniform distribution use-of-system charges are applied. Distribution use-of-system charges are available on the Agency website (www.aers.rs).

In the end of 2013, the Government of the Republic of Serbia adopted a Decree on Method and Conditions of Setting Balanced Distribution Use-of-System Charges. This Decree entered into force on January 1, 2014 and it was applicable for customers who were not entitled to regulated supply. Balancing the distribution use-of-system charges, customers belonging to the same customer category and group were allowed to purchase electricity from suppliers in the open market under the same conditions on the whole territory of the Republic of Serbia. There was a change of status of July 1, 2015 and one DSO was established for the whole territory of the Republic of Serbia. Therefore, on March 1, 2016, the DSO adopted a uniform distribution use-of-system charge which was applied until the end of 2016 for all customers, regardless of the fact if they were entitled to guaranteed supply.

Table 3-20: Trend of annual level of average approved distribution use-of-system charges – total Serbia (without APKM)

Consumption category	Annual level of approved charge			
	As of 01/03/2010	As of 01/04/2011	As of 01/08/2013	As of 01/03/2016
Medium voltage - total	1.17	1.385	1.56	1.32
Low voltage (0.4 kV I grade)	2.71	3.19	3.53	3.58
Mass consumption - total	2.11	2.43	3.27	3.46
- 0.4 kV II grade	2.38	2.72	3.75	3.87
- households	2.08	2.39	3.20	3.40
Public lighting	1.61	1.90	3.06	2.82
Total low voltage	2.20	2.54	3.30	3.46
AVERAGE	1.82	2.30	2.93	2.93

Figure 3-6 indicates average realized electricity distribution use-of-system charges (VAT and duties free) for Serbia (without APKM) by customers' categories in 2016.

The average distribution use-of-system charge (VAT and duties free) in 2016 for all customers amounted to 2.98 RSD/kWh (Table 3-21).

Table 3-21: Applied average distribution use-of-system charges

Consumption category	RSD/kWh						
	2010	2011	2012	2013	2014	2015	2016
35 kV	1.24	1.35	1.35	1.46	1.32	1.28	1.25
10 kV	1.20	1.36	1.39	1.53	1.59	1.50	1.46
Low voltage (0.4 kV I grade)	2.89	3.22	3.19	3.68	4.22	4.12	3.95
- 0.4 kV II grade	2.41	2.63	2.72	3.16	3.75	3.71	3.81
- households	2.14	2.31	2.39	2.86	3.29	3.27	3.38
Public lighting	1.63	1.83	1.89	2.48	3.10	3.08	2.86
AVERAGE	2.03	2.23	2.14	2.66	3.01	2.96	2.98

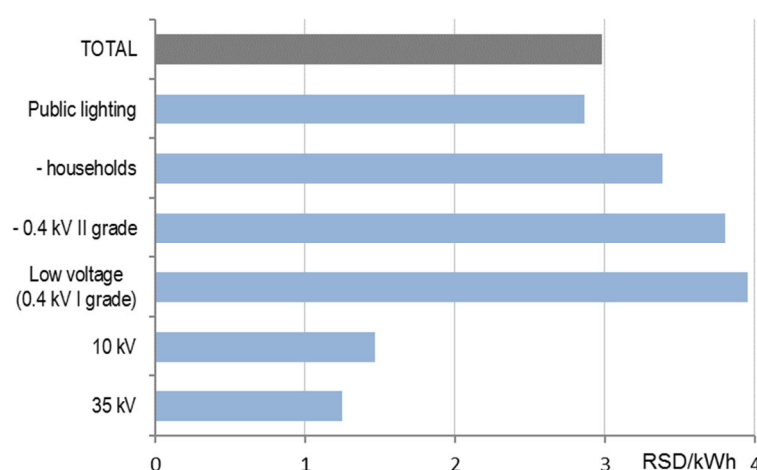


Figure 3-6: Average applied annual distribution use-of-system charge in 2016

In 2016, the Agency Council adopted a decision on amendment to the Methodology for Setting Electricity Distribution Use-of-System Charges.

3.4.3 Distributed electricity quantities

The electricity delivered to customers through the distribution system is almost fully withdrawn from the electricity transmission system. A smaller portion of energy is provided from the power plants connected to the distribution system but this portion is increasing year by year. In 2016, the energy taken from the power plants connected to the distribution system was 39.6% higher than in 2015.

Table 3-22: Electricity quantities distributed in 2005 – 2016

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	GWh, %
Distributed - Total electricity withdrawn by the distribution system	29,355	29,942	29,970	30,453	30,607	30,258	30,068	29,351	30,131	30,162	
Withdrawn from the transmission network (excluding customers connected to 110 kV)	29,315	29,902	30,392	30,558	29,922	30,183	29,965	29,078	29,778	29,528	
Withdrawn from neighbouring distribution systems	-	-	0.2	0.5	3.1	3.6	0.1	6.4	32.2	185.8	
Generation from power plants connected to the DS	40	40	61	46	48	73	104	267	321	448	
Total delivered electricity quantities from the distribution system	24,772	25,271	25,106	25,497	25,859	25,673	25,584	25,136	25,894	26,246	
Delivered to final customers (excluding customers connected to 110 kV)	24,772	25,271	25,106	25,496	25,857	25,677	25,586	25,130	25,863	26,147	
Delivered to neighbouring distribution systems	-	-	0.3	0.5	2.1	0.6	0.5	27.4	32.3	98.6	

Losses in the distribution system	4,583	4,671	4,865	4,958	4,747	4,586	4,482	4,215	4,236	3,917
Losses in the distribution system (as % of total withdrawn energy)	15.6	15.6	16.2	16.3	15.5	15.1	14.9	14.4	14.1	13.0

Electricity losses within the distribution system are significantly reduced in 2016, but they still exceed the technically justified ones. In comparison to the EU countries, such level of losses can only partially be justified by inevitable technical losses due to a high share of low voltage consumption. High losses are primarily due to unauthorised connections to the distribution network and unauthorised withdrawal (theft) of electricity. In addition, losses are increased due to long-term low investments into the distribution network. Another problem includes a big delay in terms of replacement of meters and transfer of metering points and connection lines. In line with the plan for loss reduction, in 2016, the distribution system operator continued with the activities on losses reduction, mainly by greater control of metering points so as electricity theft could be identified. These activities, as well as higher electricity on medium voltage by around 4.7% with almost the same consumption on low voltage in comparison to 2015 led to the reduction of losses by 319 GWh, i.e. from 14.1% in 2015 to 13.0% of the total withdrawn energy in 2016. It may be concluded that the realized reduction of losses is the highest recorded in the past ten years. Therefore, the activities on the reduction of losses have to be continued with the same intensity, especially in terms of electricity theft findings and the takeover of connection lines and metering equipment and bringing them in technically proper condition. When prices are being approved, percentages envisaged by loss reduction plans are used as a legitimate level of network losses.

3.5 Electricity market

Electricity market in Serbia includes:

- bilateral electricity market;
- balanced electricity market and
- organised electricity market.

Electricity market players are the following:

- electricity producer;
- electricity supplier;
- wholesale electricity supplier;
- final customer;
- transmission system operator in case of provision of system services, system balancing, provision of the safe system operations and electricity purchase for loss recovery within the transmission system;
- distribution system operator in case of electricity purchase for loss recovery within the distribution system;
- electricity closed distribution system operator and
- market operator.

The scheme of electricity market in the end of 2016 is given in figure 3-7.

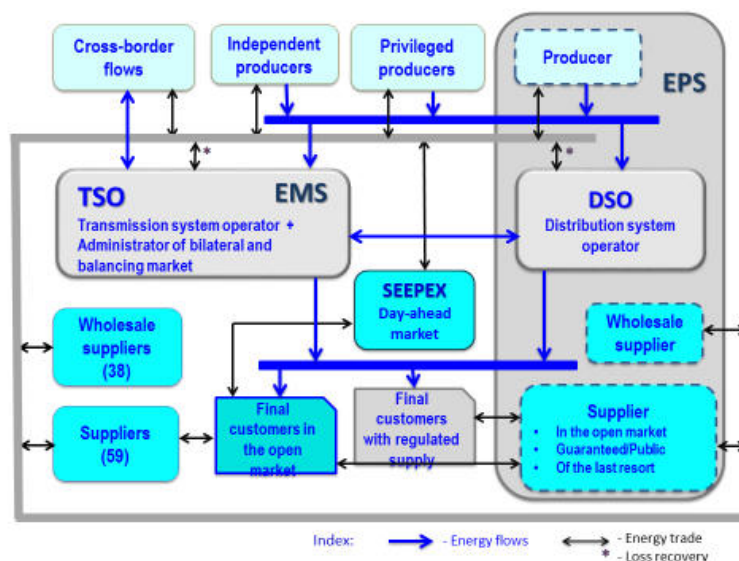


Figure 3-7: Electricity market scheme in 2016

A more detailed description of the PE EPS organization and allocation of jurisdiction are given in subchapter 3.1.1.

3.5.1 Bilateral electricity market

Both electricity purchase and sales are organised on the bilateral market directly between market players, while on the wholesale bilateral market, the players traded in electricity at open market prices, while on the retail bilateral market, supply was organised at open market prices and regulated prices due to the fact that since 2015, all customers except for households and small customers have been obliged to purchase electricity in the open market. Households and small customers have an option to select a supplier in the open market, but they could always switch back to the supplier of the last resort/public supplier.

3.5.1.1 Wholesale market

In 2016, wholesale electricity market was based on trade between suppliers since there are almost no big independent electricity producers at all. The activities of the suppliers in the open market are mostly concerned with the field of cross-border exchange, mostly for transit through Serbia which is dominant due to the central geographic position of the power system of Serbia in the region with 8 existing borders, as well as for the purpose of export and import meant for final customers. In 2016, electricity export was higher than the import meant to cover the demand of customers in Serbia, due to favourable meteorological and hydrological situation and continual operations of thermal power plants during most of the year. However, in contrast to the beginning of the year, in the end of the year, in November, and especially in December, electricity import of over 740 GWh was 3.5 times higher than the export, while the production in thermal power plants was around 700 GWh lower than in the first two months of 2016.

The number of market players participating in the auctions is rising, year by year. One of the most important reasons for this increase is the fact that by organizing joint auctions with neighbouring system operators on some of the borders even entities which are not licenced in Serbia have access to cross-border capacities via these joint auctions.

Table 3-23: Number of market players entitled for nomination 2008 - 2016

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016
Number of market players	30	31	35	35	45	37	47	51	60

There were 60 electricity market players entitled to nominate operational plans based on a relevant contract signed with EMS JSC in 2016, which is 9 more of them in comparison to 2015. There were 52 active market players, which is 11 more of them than in 2015. There were 39 participants dealing with cross-border exchanges, 14 of them dealing with the supply of final customers in the open market, while three participants, one on the transmission system (this participant is the balance responsible party) and two participants on the distribution system (they transferred their balancing responsibility to other market players) were purchasing electricity in the open market to meet their own demand.

Figure 3-8 indicates electricity quantities for each of suppliers' activities in 2015 and 2016.

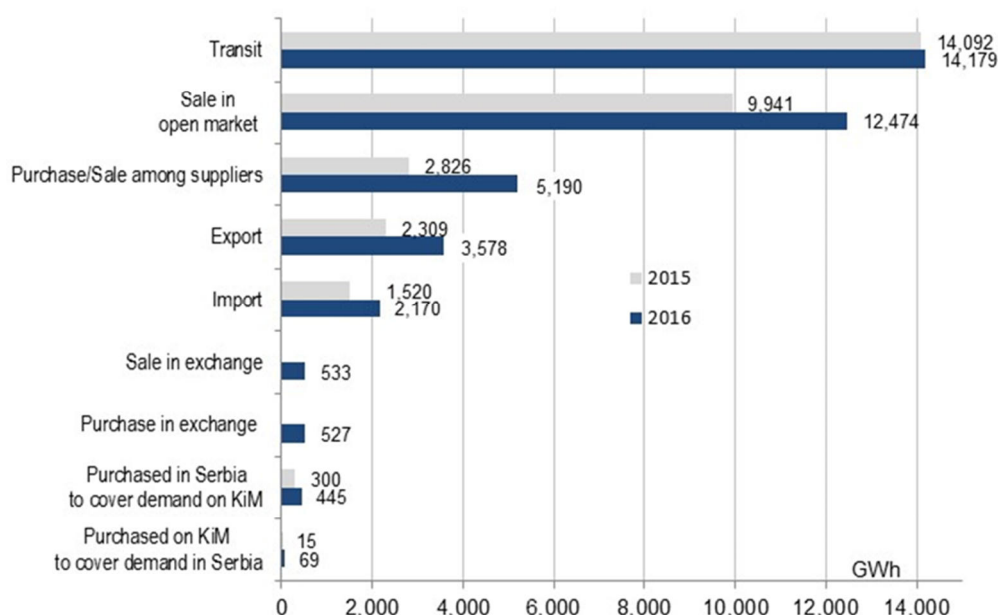


Figure 3-8: Electricity quantities for each supplier activity in 2015 and 2016

The highest energy quantities were traded by the suppliers listed below. The data are given per most intensive activities:

- **Transit:** GEN-I LLC Belgrade, Danske commodities Serbia d.o.o. Belgrade, EFT TRADE LLC Belgrade, PLC INTERENERGO LLC, Belgrade and "NETWORK FOR TRADING", LLC, Belgrade;
- **Export:** Public Enterprise "Elektroprivreda Srbije" Belgrade, ALPIQ ENERGIJA RS, LLC, Belgrade, PLC INTERENERGO LLC, Belgrade, GEN-I LLC Belgrade, "ENERGIA GAS AND POWER" LLC Belgrade and EFT TRADE LLC Belgrade;
- **Purchase/sales between suppliers:** Public Enterprise "Elektroprivreda Srbije" Belgrade, GEN-I LLC Belgrade, "NETWORK FOR TRADING", LLC, Belgrade, "HSE BALKAN ENERGY", LLC, Company for engineering and trade, "ENERGIA GAS AND POWER" LLC Belgrade, ALPIQ ENERGIJA RS, LLC, Belgrade and PLC INTERENERGO LLC, Belgrade.

In 2016, transit was on the same level as the one in 2015 (commercial data). In 2016, import was by 55% higher than last year, while the export grew by around 40% in comparison to the one in 2015. Export was particularly intensive in the first half of the year, in November and in December when around 37% of the total imported electricity quantities in 2016 were imported.

The scale of import, export and transit realised by suppliers for each month of 2016 is indicated in Figure 3-9.

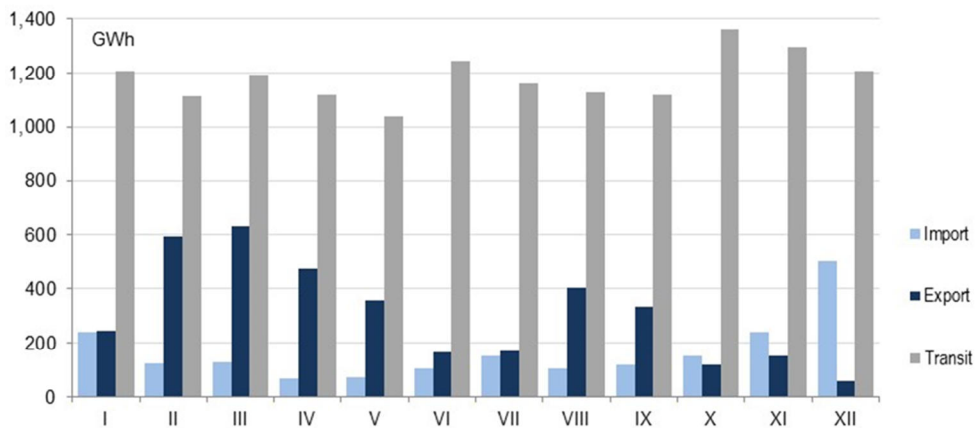


Figure 3-9: Import, export and transit of suppliers in 2016

Figure 3-10 indicates electricity purchase/sale between suppliers, purchase of *EPS* from other suppliers and sales of *EPS* to other suppliers. The purchase of suppliers from *EPS* was intensive during the first five months, in August, September, while *EPS* purchased electricity from other suppliers during winter months, mostly in January and December. The trade between other suppliers was on a high level during the whole year and it was intensive in February and March.

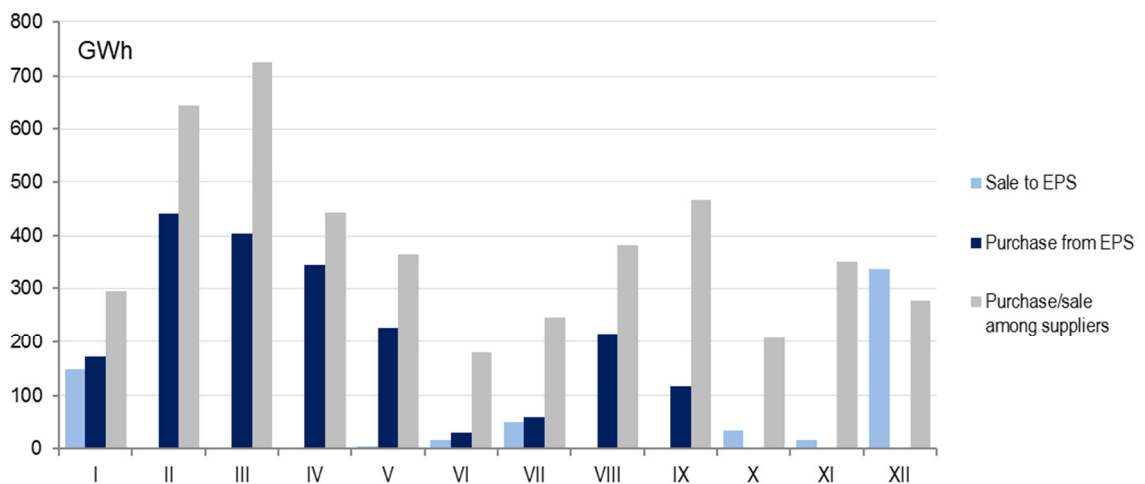


Figure 3-10: Purchase/sales between suppliers, i.e. between suppliers and EPS in 2016

Relevant indicators of development level and electricity market concentration in Serbia (without APKM) in 2015 are given in Table 3-24. In addition, the change in values of these indicators is given in percentages in comparison to their values in 2014. The following data are given for each of indicated supplier's activities:

- total electricity quantity;
- electricity share traded by three suppliers with the biggest scale of trade activities in total electricity quantity per each activity;
- value of Herfindahl-Hirschman Index (HHI), indicating realised level of market concentration⁵ and
- evaluation of market concentration level per individual activities⁶.

Table 3-24: Electricity market concentration level in Serbia in 2016

Supplier's activity	Electricity quantity (GWh)	Share of three suppliers with the greatest trading scale [%]		Herfindahl-Hirschman Index - HHI	Market concentration level
	2016 (GWh)	2016 (%)	2016(GWh)	2016	2016
Trade in organised market (exchange)					
Sale	533	80	426	3,389	High
Purchase	533	72	423	1,985	Moderately high
Trade between suppliers in bilateral market					
Sale	5,279	57	2,836	1,883	Moderately high
Purchase	5,279	35	1,481	702	Low
Sale of electricity to final customers in open market					
Sale	11,603	98	12,474	9,130	High

Out of 52 active suppliers, 5 suppliers are among three dominant ones in each activity. The market concentration level remained the same as last year. Trade in organized market which was launched in February 2016 was on the level between moderately high and high concentration, which is a result of the launch of the power exchange and a relatively low number of participants. The trade in bilateral market was on the level of trade last year with a trend of market concentration reduction. There is still remarkable high concentration of bilateral market in the field of trade since PE EPS was still the dominant electricity trader in the bilateral market in 2016. Retail market concentration is very high but there is a slight trend of reduction of the concentration level in comparison to 2015.

3.5.1.2 Retail market

3.5.1.2.1 Electricity quantities delivered to final customers

In 2016, 28,819 GWh were sold and delivered to final customers (without the power plants consumption meant for production), which is 6% more than ten years ago, in 2007. This level is by 209 GWh, i.e. 0.7% higher than in 2011 when the final customers consumption was on the highest level in the past ten-year period until 2015 which is a consequence of the consumption increase of 18% (around 1,000GWh) with customers withdrawing electricity on medium voltage, regardless of consumption reduction with other customer categories. Table 25 indicates electricity consumption in Serbia (without APKM) in the period 2007-2016, including electricity producers withdrawn from the transmission system in order to meet their own demand.

Table 3-25: Electricity consumption structure in the period 2007-2016

Consumption category	GWh										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2016/2015

⁵ Herfindahl-Hirschman Index is defined as the sum of squares of share of a single company in the market. The lower the value, the more developed is market competition.

⁶ Market concentration limits are the following:

HHI < 1000 – not concentrated

1001 < HHI < 2000 - moderately concentrated

HHI >2001 - highly concentrated market

Households	14,145	14,313	14,412	14,645	14,666	14,517	14,147	13,802	14,062	13,931	99.1
Other customers connected to low	5,379	5,614	5,567	5,534	5,640	5,585	5,580	5,322	5,546	5,665	102.1
Customers connected to low voltage in total	19,524	19,927	19,979	20,179	20,305	20,102	19,727	19,124	19,608	19,596	99.9
Customers connected to medium voltage (10,	5,247	5,345	5,127	5,317	5,553	5,570	5,856	5,985	6,254	6,550	104.7
Customers connected to high voltage (110 kV)	2,430	2,570	2,216	2,555	2,751	2,312	2,415	2,555	2,669	2,673	100.1
Electricity delivered to final customers	27,201	27,842	27,322	28,051	28,609	27,984	27,998	27,664	28,531	28,819	101.0
TPP and HPP consumption to cover	447	431	492	436	476	473	503	401	416	391	94.0
Total consumption	27,648	28,273	27,814	28,487	29,085	28,457	28,501	28,065	28,947	29,210	100.9

In comparison to 2015, final customers consumption (without the consumption of power plants for production purposes) in 2016 was higher by 1% which is primarily due to the increase in the consumption of customers connected to the medium voltage by 4.7% (around 300 GWh) since the customers connected to the high voltage consumed almost the same electricity quantity as last year. As far as low voltage is concerned, households consumed by 131 GWh less, while other customers connected to low voltage consumed 120 GWh more electricity than last year. Therefore, the total consumption on low voltage is slightly lower. The reduction of consumption in households on the annual level of 0.9% is a result of lower consumption in the first nine months of 2016. However, in the last three months, when temperatures are lower, households consumed 3.5% more electricity than in the same period in 2015. Therefore, the Agency will continue monitoring the consumption of households during winter in the future and analyze the necessity of introduction of additional measures so as irrational consumption of electricity for heating purposes could be destimulated more efficiently. Producers withdrew 6% less electricity to cover their own demand (consumption of power plants for production purposes) than last year. When analyzing the data in the table above, one should bear in mind that there was a large number of interruptions in the supply of customers in 2014 due to weather disasters – floods and icy rain which some of the regions in Serbia faced several times during 2014.

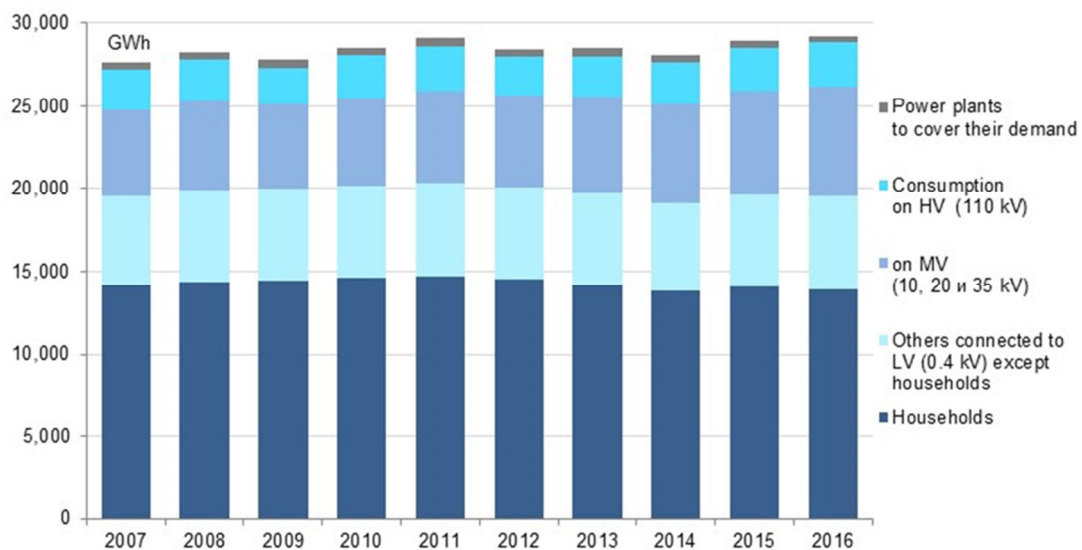


Figure 3-11: Electricity consumption structure in Serbia in the period 2007-2016 (without APKM)

The total number of metering points for customers' delivery in Serbia without APKM (without metering points of facilities within Železnice Srbije/Serbian Railroad – there are 41 of them on the transmission system) at the end of 2016 amounted to 3, 624,625. Compared to 2015, the number was increased by 0.2%.

Table 3-26: Number of metering points in 2015 and 2016

Consumption category	2015	2016	2016/2015
Households	3,221,533	3,227,966	100.2
Other customers connected to low voltage (0.4 kV)	391,897	392,228	100.1
Customers connected to medium voltage (10, 20	4,303	4,378	101.7

and 35 kV)			
Customers connected to medium voltage (110 kV)	48	53	110.4
Total number of metering points	3,617,781	3,624,625	100.2

3.5.1.2.2 Electricity sale in regulated market

In 2016, electricity was purchased in the regulated market only by households and small scale customers (that, in addition to the requirement related to the annual income and the number of employees, also have a limit of 30,000 kWh of consumption in the previous calendar year and a requirement imposing that all their facilities have to be connected to the network of less than 1 kV voltage). The newly-established legal limit had an enormous impact on the reduction of supply in the regulated market from 17,221 GWh in 2015 to 16,138 GWh in 2016, which is by 6.3% lower. In the end of 2016, electricity was delivered to final customers at regulated prices on 3,517,989 metering points in total.

Pursuant to the 2004 Law, regulated electricity prices for final customers were applied on January 1, 2008 for the first time, upon the positive opinion of the Energy Agency on the PE EPS proposal and the approval given by the Government of the Republic of Serbia.

The current electricity price for regulated guaranteed supply of final customers was approved on October 1, 2016. In 2016, the Agency Council adopted an amendment to the Methodology for Setting Electricity Price for Guaranteed Supply.

The current regulated electricity prices for final customers are available on the Agency's website (www.aers.rs).

In 2016, average market, i.e. wholesale price, which is set on the basis of the trend of the so called "futures"⁷ in the neighbouring power exchanges for the following year and which cannot contain transmission and distribution costs amounted to average 36.67 €/MWh in on the Hungarian exchange (HUPX) for base load, i.e. 44.48 €/MWh for peak load.. Wholesale price for the procurement of electricity, which serves as the base for setting the price for regulated supply when the final approval is given to the price, amounted to 3.3 RSD/kWh, i.e. 26.81 €/MWh, calculated with the average € exchange rate for 2016.

Table 3-27 represents the trend of average realised annual prices for customers entitled to public supply (supply of the last resort), i.e. to electricity being purchased at regulated prices. The level and trend of given average prices (VAT and duties free) for each year separately depend primarily from the dynamics and electricity quantities consumed by certain customers' categories and groups during the year and on the date of application of approved prices.

Table 3-27: Average annual regulated prices for final customers (VAT and duties free)

Consumption category	Realised average annual price					
	2011	2012	2013	2014	2015	2016
High voltage (110kV)	4.06	4.30	4.28	-	-	-
35 kV	4.66	4.86	5.03	-	-	-
10 kV	5.22	5.40	5.65	-	-	-
Total high and medium voltage	4.78	5.02	5.50	-	-	-
Low voltage (0.4 kV I grade)	7.64	7.99	8.48	9.47	9.58	10.08
- 0.4 kV II grade	7.33	7.63	7.90	8.28	8.19	8.55
- households	5.36	5.60	5.79	6.14	6.26	6.49
Public lighting	5.05	5.24	5.48	5.75	5.91	6.39
Total low voltage	5.89	6.16	6.40	6.66	6.71	6.84
TOTAL AVERAGE guaranteed supply (as universal service)	5.57	5.84	6.19	6.66	6.71	6.84

Figures 3-13 and 3-16 indicate the comparison of electricity prices for reference customers from two categories - households and industry in Serbia, EU countries and the region. The prices were applied in the second half of 2015 and calculated in line EUROSTAT methodology and given in their reports. One should bear in mind that the reference average annual electricity consumption in households which is used in EUROSTAT methodologies between 2,500 and 5,000 kWh and that it is in line with the European average and standards, while the average annual consumption in households in Serbia is higher. This is why it is more adequate to calculate it for the reference customer using 7,500 kWh annually. The given prices in Serbia are the lowest, both with and without VAT and duties, not only in comparison to developed European countries, but also in comparison to the countries in the region. VAT for electricity in Serbia amounts to 20% while the excise amounts to 7.5% and it is higher than in most EU countries.

⁷ futures – purchase and sale in organized electricity market (exchange) for a future period/date.

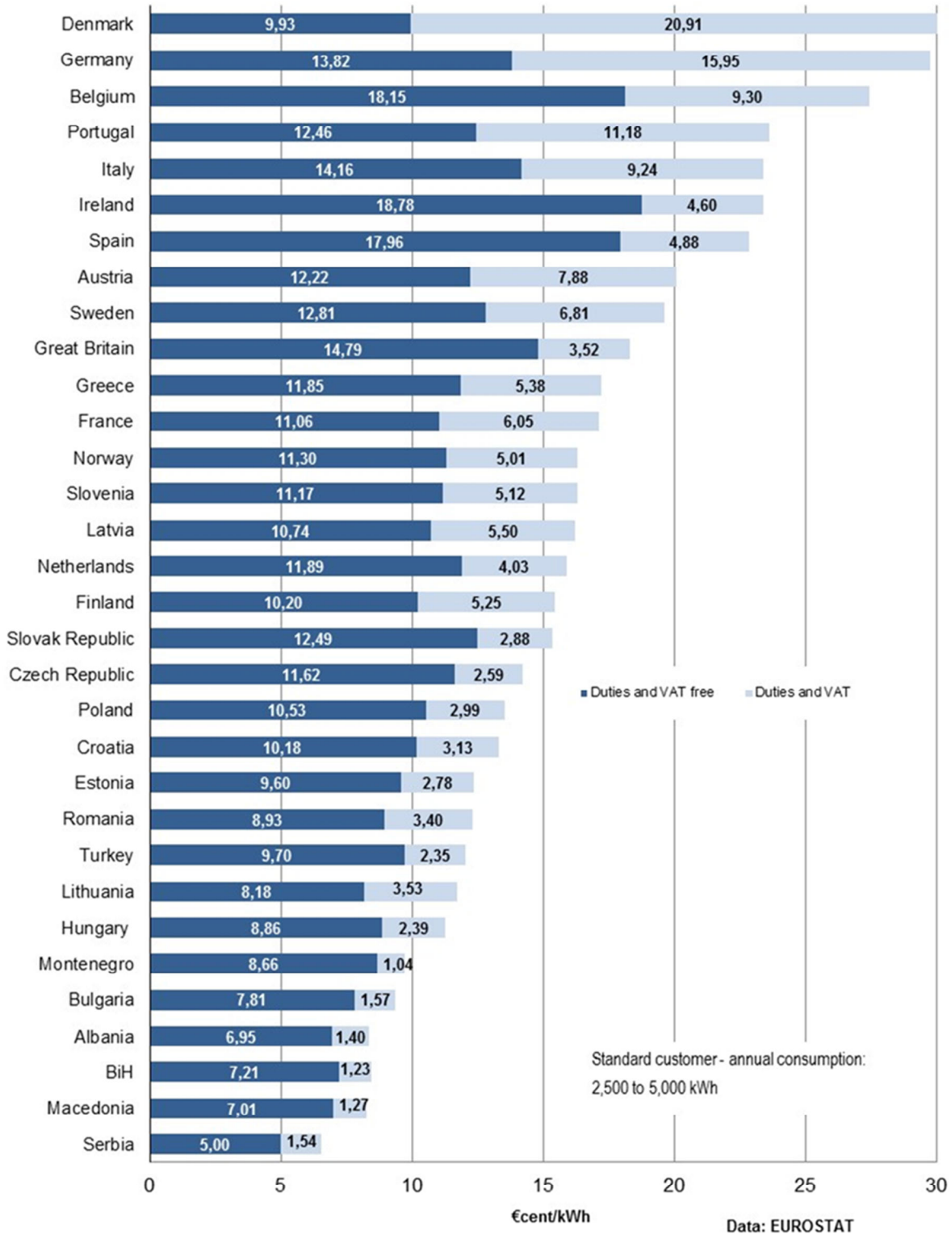
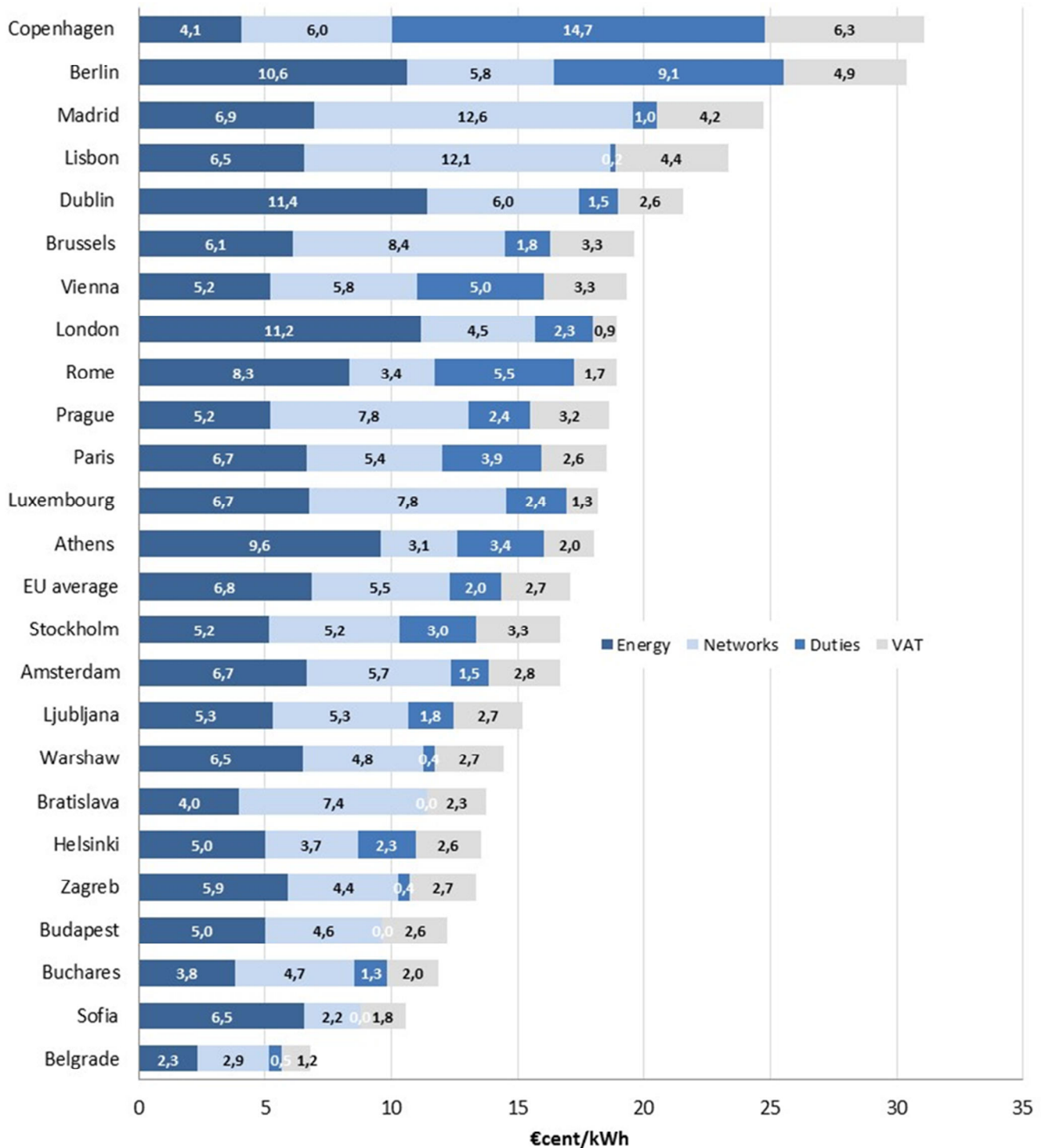


Figure 3-12: Electricity prices for households – second half of 2016

Figure 3-13 indicates a more detailed structure of retail electricity price for households in some of European capitals in December 2016. The data indicate that both the lowest energy prices and the lowest transmission and distribution use-of-system charges are recorded in Serbia.



Data source: E-Control and VaasaET (prices on Dec 1, 2016)

Figure 3-13: Structure of retail electricity price for households in some of European capitals in December 2016

So as to make better comparison between electricity household prices, figure 3-14 indicates the structure of electricity final price for households at purchase power parity in some of European capitals in December 2016. In such a way, the differences in living standards which exist between different European countries were taken into account. In this case, electricity household prices in Belgrade were not the lowest ones in comparison to prices in other European capitals since in Stockholm, Helsinki, Luxembourg and Amsterdam and the ratio between salaries and electricity price is more favourable than in Serbia.

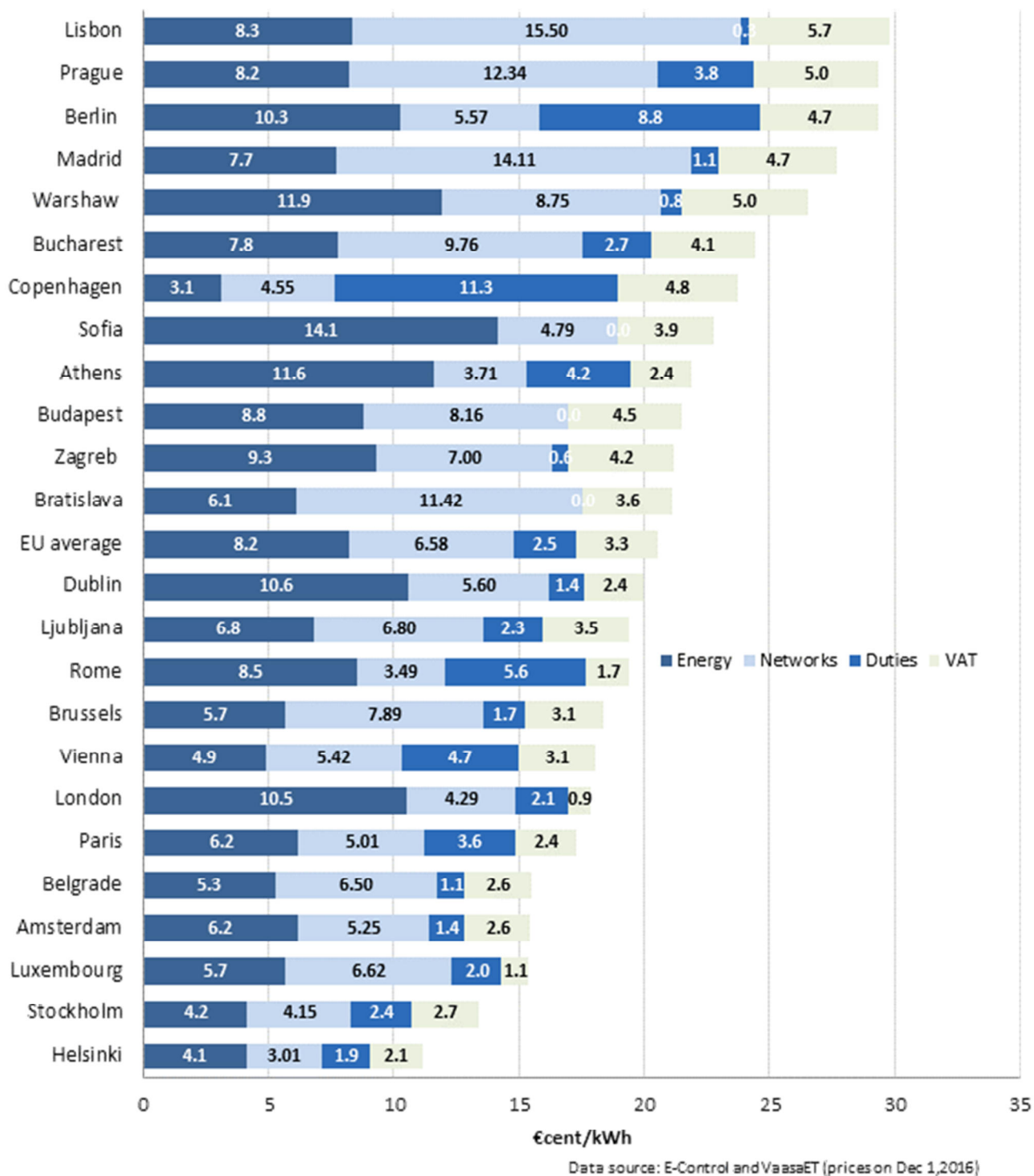


Figure 3-14: Electricity final price structure for households in some European capitals in December 2016 at purchase power parity

In 2016, average electricity price offered to industry sector in the open market in Serbia (duties and VAT free) was the lowest one in Europe.

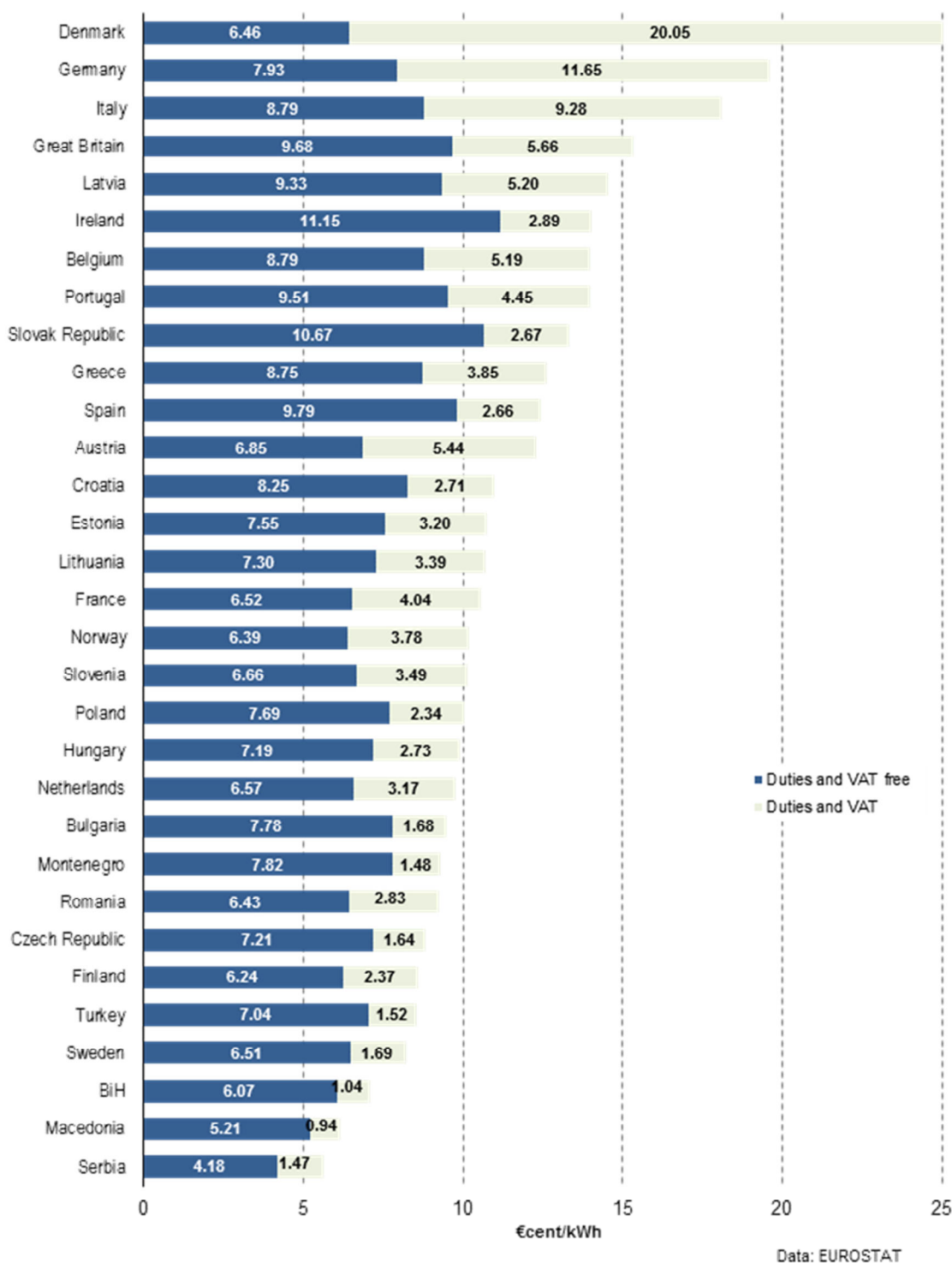


Figure 3-15: Electricity prices for industry – second half of 2016

3.5.1.2.3 Electricity sale in the open market

Since 2015, all final customers are entitled to purchase electricity in the open market. In 2016, 12,474 GWh of electricity were delivered in the open market which amounts to 43.3% of final customers' consumption. Electricity was delivered to final customers in the open market on over 85 thousand metering points (with public lighting, it amounts to 102 thousands). Households represent a negligible number of customers in the open market. Out of 60 companies which were licensed for electricity supply in the end of 2016, there were 14 of them active in the open retail market. PE EPS was still the dominant supplier in the open market with 95% of the total electricity quantities sold to final customers in the open market and with 97% of the total final consumption.

Table 3-28: Average annual retail prices in the open market for final customers (VAT and duties free)

Consumption category	RSD/kWh		
	Average annual price		
	2014	2015	2016
High voltage (110kV)	5.60	5.71	5.51
35 kV	6.74	6.87	6.42
10 kV	6.70	6.85	6.60
Total high and medium voltage	6.45	6.58	6.34
Low voltage (0/4 kV I grade)	8.92	9.04	9.02
- 0.4 kV II grade	8.50	9.24	8.44
- households	8.65	8.63	9.03
Public lighting	7.75	7.98	7.57
Total low voltage	8.74	8.93	8.70
TOTAL AVERAGE	6.83	7.09	7.01

The structure of retail prices in the open market in 2016 is given in the table below.

Table 3-29: Structure of realised average annual retail price in the open market for final customers

Elements	Price RSD/kWh
HIGH VOLTAGE - (110kV) on transmission	
Total price	5.5
Transmission price	0.4
Electricity price	5.1
MEDIUM VOLTAGE (35kV + 10 (20)kV)	
Total price	6.6
Distribution price	1.4
Electricity price	5.2
MEDIUM VOLTAGE - (35 kV)	
Total price	6.4
Distribution price	1.3
Electricity price	5.1
MEDIUM VOLTAGE - (10/20 kV)	
Total price	6.6
Distribution price	1.4
Electricity price	5.2
LOW VOLTAGE (0.4 kV I rate)	
Total price	9.0
Distribution price	3.6
Electricity price	5.4
MASS CONSUMPTION	
Total price	8.4
Distribution price	3.3
Electricity price	5.1
MC (Mass c.) – Commercial and other (0.4 kV II rate)	
Total price	8.4
Distribution price	3.3
Electricity price	5.1
MC - household	
Total price	9.0
Distribution price	3.6
Electricity price	5.4
PUBLIC LIGHTING	
Total price	7.6
Distribution price	2.9
Electricity price	4.7
TOTAL SALE ON DISTRIBUTION NETWORK	
Total price	7.3
Distribution price	2.1
Electricity price	5.2
TOTAL ON TRANSMISSION AND DISTRIBUTION NETWORK	
Total price	7.0
Distribution price	1.8
Electricity price	5.2

Being the supplier of the last resort, PE EPS delivered 207 GWh of electricity to customers, i.e. 0.7% of the total electricity delivered to final customers. The structure of the realised average price of supply of the last resort for each voltage level separately and for customer categories and groups is given in the table below.

Table 3-30: Average annual price of the supplier of the last resort for final customers (VAT and duties free)

Consumption category	Average annual price		
	RSD/kWh		
	2014	2015	2016
High voltage (110kV)	7.59	7.92	8.28
35 kV	8.93	9.28	9.64
10 kV	9.36	9.55	9.77
Total high and medium voltage	8.89	9.36	9.71
Low voltage (0/4 kV I grade)	11.23	11.59	12.03
- 0.4 kV II grade	10.43	10.94	10.86
- households	-	-	12.07
Public lighting	10.25	10.48	10.42
Total low voltage	10.77	11.13	11.39
TOTAL AVERAGE	9.43	9.86	10.34

The total realised average electricity price in the retail market in Serbia which relates to all types of trade in electricity amounts to 7.01 RSD/kWh or 5.69 €/kWh, if calculated in line with the average Euro exchange rate for 2016. The structure of this total average price for each voltage level, customer category and group separately is given in the table below:

Table 3-31: Total average annual prices for regulated market, open market and supply of the last resort (VAT and duties free)

Consumption category	Average annual price		
	RSD/kWh		
	2014	2015	2016
High voltage (110kV)	5.77	5.76	5.52
35 kV	7.03	7.19	6.47
10 kV	6.89	6.99	6.66
Total high and medium voltage	6.63	6.71	6.39
Low voltage (0/4 kV I grade)	9.35	9.38	9.35
- 0.4 kV II grade	8.37	8.47	8.54
- households	6.14	6.26	6.49
Public lighting	6.86	7.47	7.50
Total low voltage	6.87	6.99	7.18
TOTAL AVERAGE	6.80	6.91	6.94

Except for the electricity meant to meet the demand of final customers, open market also provided for the energy meant for the recovery of losses in the transmission and distribution networks, as well as the electricity meant to satisfy the demand in the production processes in hydro power plants and thermal power plants of PE EPS. It was necessary to purchase 6,233 GWh of electricity for these purposes.

The table below reviews all the realised average annual electricity prices for each activity in the electricity market in Serbia separately.

Table 3-32: Review of realised average annual prices for each activity (VAT and duties free)

Activity	Structure	Price
		RSD/MWh
Wholesale market	Available for sale	3.82
Transmission	Access to the transmission network	0.21
	Losses in the transmission network	0.14
	Ancillary services and capacity reserve	0.08
	Transmission – total	0.43
Distribution	Access to the distribution network	2.23
	Losses in the distribution network	0.75
	Distribution – total	2.98
Retail	Public supply at regulated prices	6.84
	Supply of the last resort	10.34
	Supply of eligible customers at market prices	7.01
	Retail – total	6.94
Other	Additional costs and duties	0.09
Final customers - average		7.03
- industrial customers (out of the total number)		7.38
- households (out of the total number)		6.49

3.5.1.2.4 Supplier switching

Supplier switching procedure implies any voluntary switch of the final customer with the selected supplier in line with the Law and Rules on Supplier Switching. The procedure when final customers had to quit regulated public supplier “by the rule of the law” and select a supplier is not considered to be a supplier switching procedure since customers had to switch to the supply of the last resort before they selected their supplier.

Table 3-33: Supplier switching for metering points separately in 2016

Consumption category	Number of metering points			Electricity delivered (MWh, %)		
	Total	With the supplier switch	%	Total	At metering points with new supplier	%
High voltage (110 kV)	53	0	0.0	2,672,936	0	0
Medium voltage (35 kV)	115	26	22.6	1,067,341	39,557	3.7
Medium voltage (10 and 20 kV)	4,263	792	18.6	5,483,123	645,287	11.8
Low voltage - (0.4kV I grade)	42,574	1,874	4.4	3,096,017	195,125	6.3
Mass consumption – Commercial and other (0.4kV II grade)	328,138	5,942	1.8	2,009,352	57,096	2.84
Public lighting	21,516	196	0.0	559,328	708	0.1
Households	3,227,966	3,150	0.1	13,931,349	70,958	0.5
Total	3,624,625	11,980	0.3	28,819,815	1,008,731	3.5

The legal deadline for the completion of the supplier switching procedure amounts to 21 days as defined by the Rules on Supplier Switching. For those customers with facilities connected to the transmission system, supplier switching procedure lasted one day by average, while for those customers connected to the distribution system, it practically took the whole legal deadline of twenty-one days to complete the supplier switching procedure.

3.5.2 Electricity balancing market

In 2016, there was a follow-up of the trend of improvement of electricity market in the Republic of Serbia by the adoption of new Electricity Market Rules in November 2016 and by harmonizing them with the 2014 Energy Law. In contrast to the past, the Law and amendments to the Rulebook on Energy Licensing and Certification, foreign companies were also allowed to obtain electricity wholesale licence and thereby gain the right to be registered as a balancing responsible party. In line with the Electricity Market Rules, customers who were no longer entitled to public supply were obliged to regulate

their balancing responsibility for all delivery points. By rule, they transferred it to the supplier, while there was one customer who decided to become the balancing responsible party himself.

In 2016, the number of balancing responsible parties varied. In the end of 2016, there were 55 electricity market participants who signed a Contract on Balancing Responsibility with the transmission system operator.

In 2016, in line with the Contract on Ancillary Services and the Contract on Participation in Balancing Mechanism which EMS JSC signed with PE EPS, EMS JSC engaged balancing entities for secondary and tertiary control within its control area in order to maintain balance between total production, consumption and nominated electricity block exchange. In addition, in 2016, EMS JSC worked on the so-called cross-border balancing by engaging balancing energy in order to balance its control area in line with contracts on the exchange of cross-border tertiary control energy with neighbouring transmission system operators which included the engagement of manual cross-border frequency restoration reserve (emergency energy) and engagement of balancing reserve within settlement accounting period (based on the Contract with the transmission system operator of Montenegro (CGES) on purchase and sale of tertiary control energy for system balancing purposes).

In 2016, total engaged balancing energy amounted to 938 GWh, for which the total weighted settlement price amounted to 36.673 €/MWh. Bearing in mind the direction of activated balancing entities, it amounted to 47.267 €/MWh for upward activation and 11.016 €/MWh for downward activation.

3.5.3 Organised electricity market

Pursuant to the Energy Law, organisation and administration of the organised electricity market and making connection between it and organised electricity markets of other countries is performed by the market operator. Market operator's organisation and operation, conditions and the manner of business operation of players within the organised electricity market and other conditions which provide for electricity market functioning in line with the Law is regulated in more detail by the Government of the Republic of Serbia. As the energy entity holding the license for electricity market organisation, on July 14, 2015, EMS JSC established SEEPEX JSC Belgrade – power exchange. It was established on the basis of partnership with EPEX SPOT. It was decided that in the beginning of operation SEEPEX will operate the organised market with standardized products in the "day-ahead" market. The exchange started operating in February 2016 and the review of its activities is available on the website www.seepepex-spot.com. There were 13 participants registered in the power exchange in 2016 while 11 of them traded actively. The product offered in the exchange is "base", i.e. the offer includes 24 amounts, one for each hour, and they may vary (the amount may be zero as well). The total electricity quantity which was subject to SEEPEX trade amounted to 533,270 MWh. The highest monthly scale of trade of 93,625 MWh was recorded in September. The highest daily trade was recorded on 06/09/2016 and it amounted to 7,177 MWh. The lowest monthly trade was recorded in June and it amounted to 31,161 MWh. The highest hourly price was recorded on 19/12/2016 at 6 p.m. and it amounted to 93.63 €/MWh. Average price on the annual level amounted to 34.75 €/MWh.

3.5.4 Transparency

In line with the Treaty establishing the Energy Community and with the decision of the Permanent High Level Group Ministerial Council of June 24, 2015, the Republic of Serbia assumed an obligation to transpose the Regulation 543/2013 into national legislation. This Regulation defines the data and deadlines within which these data should be published in order to increase the electricity market transparency. The Energy Law defines that this Regulation will be practically transposed into our legal framework by the adoption of the Rules on Publication of Key Market Data. On the session held on December 9, 2016, the Council of the Agency approved the Rules on Publication of Key Market Data which were adopted by the Assembly of the Joint Stock Company „Elektromreža Srbije“ Belgrade. Upon the publication of the decision of the Agency in the Official Gazette of the Republic of Serbia, the Rules were published on the website of the transmission system operator and they entered into force on the eighth day upon their publication.

3.5.5 Regional coupling

A set of activities relevant for the whole region are organised within EnC, with active participation of the Agency representatives. The most important of them are given in following categories:

Wholesale market

The implementation of the Regional Action Plan for Wholesale Electricity Market in the South-eastern Europe (SEE) was still followed. This activity is aimed at reaching a European target model for electricity, in terms of long-term (annual and monthly) and short-term (day-ahead and intraday) cross-border capacity allocation and balancing. In line with the new network code for Capacity Allocation and Congestion Management – CACM which were published within the EU Regulation which entered into force in the EU in August 2015 and with the grounds and objectives of the so called "Berlin Process" (the process for 6 West Balkans participants – WB6), in 2016, the ECRB Electricity Working Group observed the work of EU regulators on the organisation of enforcement of this Regulation and considered possibilities for more prompt enforcement of this code in EnC Contracting Parties. The analysis of impact of this Regulation on Contracting Parties was continued and, at the same time, it was intended to update the existing Regional Action Plan for South-eastern Europe. ECRB considered options for more active cooperation with the Agency for Cooperation of Energy Regulators ACER and an agreement was reached between the Secretariat and ACER on the criteria for the participation of representatives of regulators of Contracting Parties in the ACER working groups as observers. In addition, it was agreed that Contracting Party representatives should participate at the meetings of ARA WG (All Regulatory Authorities Working Group) within the

Electricity Regulator's Forum (Energy Regulators' Forum – ERF) in order to be able to observe the current discussions among EU regulators about the early enforcement of CACM Regulation.

ECRB agreed that the regulators from the region should represent uniform position and proposals during meetings of Day-Ahead Market Integration Steering Committee (DAMI SC) within WB6 initiative. Regulators harmonise their positions beforehand within the ECRB Electricity Working Group (EWG).

In 2016, the ECRB contributed to the harmonisation of the regulatory framework in the electricity sector by adopting recommendations: for the adoption of auction rules for the Coordinated Auction Office in the SEE, for the development of guidelines for market monitoring and with a set of indicators for the assessment of calculations and cross-border capacity allocation and for the analysis of network codes and guidelines within the Third Package in the electricity sector within public hearings which were organised by ACER on the drafts of these documents.

During 2016, so as to increase the transparency of the electricity market in the SEE region, transmission system operators used the internet ENTSO-E Transparency Platform (EMFIP). In 2016, the ECRB Electricity Working Group monitored the compliance with the requirements of the Regulation 543/2013 which became valid for EnC Contracting Parties by having every regulatory body, in cooperation with the transmission system operator, submitting a report on the ENTSO-E transparency platform compliance. In 2016, the report on transparency in 2015 was published. The EnC Secretariat is obliged to monitor the enforcement of Regulation 543/2013 for transparency in Contracting Parties. The ECRB Electricity Working Group presented a detailed review in its 2016 report on the data which transmission system operators did not publish although they should have published them, as well as the reasons for failing to publish the data and the deadlines. This was not the task of this group in the first place.

The project on the establishment of the Coordinated Auction Office in the SEE, aimed at harmonisation of the allocation rules and nomination of rights for the use of cross-border capacity on both long-term and short-term level in the eighth region⁸ was developed since 2008 in several phases. The Office was established in April 2014 in Podgorica and it gathers founders – transmission system operators from BiH (NOS BiH), Croatia, (HOPS), Montenegro (CGES), Kosovo* (KOSTT), Albania (OST), Greece (IPTO) and Turkey (TEIAS). The Office covers cross-border capacity allocation on seven borders. By establishing the Office, electricity market players were provided with one spot for contact and purchase of rights to the use of cross-border capacity with single and harmonised allocation rules in the SEE region in line with the European Commission decree and the Third Package. EMS, JSC, the TSO of Serbia did not participate in the establishment of the Office, but bilateral negotiations were continued between PE EMS and the Coordinated Auction Office in 2016 on the conditions for participation.

In 2016, ECRB analysed existing balancing mechanisms in the eighth region and prepared report draft with a proposal for further regulatory *stEPS* and initiatives regarding the implementation of market balancing models in the Energy Community Contracting Parties which will be published in the beginning of 2017. In the end of 2016, within the WB6 initiative, there was an announcement of the establishment of the management board for balancing as a common activity of transmission system operators, regulators and ministries within regional balancing initiative in order to start early enforcement of network codes for balancing in the Energy Community Contracting Parties.

The Transmission System Operator EMS JSC concluded contracts on the exchange of emergency energy in cases when the safety of operations of the power system and/or supply of customers in the country is endangered, on natural exchange basis or on commercial basis. In 2016, EMS JSC concluded one-year contracts on commercial basis with transmission system operators of Hungary (MAVIR) and Croatia (HEP-OPS). In 2016, contracts on emergency energy exchange signed on natural basis for indefinite period of time between EMS JSC and Bulgarian, Romanian and Greek transmission system operator were valid. In the end of 2016, the contract between EMS JSC and the Romanian Transmission System Operator on emergency energy exchange on natural basis was terminated because such a contract was no longer acceptable for the Romanian party. Therefore, drafting a new contract on commercial basis was initiated.

Market monitoring

In EnC, great attention is paid to the development of tools and data bases for electricity and natural gas market monitoring. As early as in 2015, there were negotiations between ACER and EnC Secretariat on the types of cooperation between ACER and ECRB working groups in order to follow the activities in the EU more easily and implement the EU mechanisms in the EnC Contracting Parties. Although the Memorandum of Understanding between ACER and EnC Secretariat which implies that electricity wholesale and retail market monitoring in Contracting Parties would be a part of the ACER report was signed in 2016, ACER abandoned an idea to include the data from EnC Contracting Parties in their report, except for the data for gas market of Ukraine. For this reason, ECRB Working Groups for electricity, customers and retail market decided that they should continue market monitoring within their activities and fully in line with the indicators used by ACER.

Based on the Guidelines for Regulatory SEE Market Monitoring which were approved by the ECRB in 2014, during 2015, there were periodical assessments on whether the market was functioning in line with the adopted rules and on the basis of transparency and non-discrimination principles in terms of calculation of available cross-border capacity and organised allocation procedures. The implementation of these Guidelines aims at the establishment of a harmonised approach to

⁸ One of 8 European regions within which regional electricity markets are developed which are being integrated in the EU market. The region includes: Albania, Bosnia and Herzegovina, Serbia, Montenegro, Kosovo*, Macedonia, Slovenia, Croatia, Hungary, Romania, Bulgaria, Greece and Italy with the future undersea cable.

regulatory tasks and an introduction of a possibility for regional market monitoring. However, the Guidelines are not legally binding. The Guidelines also include recommendations to regulators from the region for the collection of necessary data for monitoring use of cross-border capacities. In 2016, it was acknowledged that there is different interpretation among transmission system operators and regulatory authorities in the region of the calculation of indicators for available cross-border capacity. For this reason, upon the analysis of the reasons for different interpretations, the ECRB Electricity Working Group (EWG) made recommendations for the harmonisation of the interpretation and calculation of these indicators for transmission system operators from the south-eastern Europe in order to have all the operators interpreting and calculating the indicators in the same manner. Thus, the implementation of the Guidelines for Regulatory Market Monitoring in SEE is enabled to make comparisons and monitor successfully.

In terms of electricity market monitoring in SEE, the EWG members continued using software for the internet platform SEEAMMS, as a trial, in order to get software users familiar with its functions and with the possibilities of reporting options and of detecting indicators deviations. In 2016, it was agreed to draft the biannual report on cross-border capacity monitoring on the basis of monitoring results collected via SEEAMMS platform. The report would include detected deviations of indicators from common levels. The process of drafting of these reports is expected to start in 2017. In the end of 2016, SEEAMMS platform software was transferred from USA (PE Consultant) to the Energy Community Secretariat server in Vienna for operation and maintenance purposes.

Upon the EWG proposal and with the support of ECRB, it was agreed to organise electricity market monitoring in EnC Contracting Parties on the basis of the same indicators as those used for market monitoring by the ACER in the EU. Although not every electricity market monitoring indicator which is applied by ACER is applicable to all Contracting Parties at the moment, due to a different level of market monitoring in the SEE region in comparison to the EU countries, it was agreed to collect only available data in 2016. Since the monitoring of these data for our region should have been assumed by ACER within its 2016 report and this idea was abandoned at the last notice, the drafting of this report was assumed by the ECRB Electricity Working Group and Customer Protection Working Group and the report will be published in 2017.

In 2016, within the ECRB Working Group for Customers and Retail Market, data were collected and a report was made on conditions which have to be complied in order for an electricity supplier to participate in electricity retail market in EnC Contracting Parties. So as to take insight into future harmonisation with indicator for electricity retail monitoring which are monitored within ACER, a report was made on the basis of indicators which are currently monitored or which will be monitored in EnC Contracting Parties in nearby future. Retail market development slightly increases the problem of settling disputes among market participants and it is therefore important to enable peaceful dispute settlement in relevant institutions without courts. Bearing that in mind, working group for customers and retail market made a report where the current legislation in this field in the EnC Contracting Parties is presented.

3.6 Monitoring and regulation of the quality of delivery and supply

The Council of the Agency adopted Rules on Monitoring Technical and Commercial Indicators and on Regulating Quality of Electricity and Natural Gas Delivery and Supply (Rules on Quality) in 2013. Rules on Quality were adopted on the basis of the gathered experience in data collection and monitoring electricity delivery and supply quality indicators as well as of international practice in the quality monitoring of services provided by energy entities. The Rules were established in order to harmonise the method of data registering and calculation of quality indicators which enables the establishment of a base of complete, reliable and comparable data and calculated indicators in order to compare and regulate them. The collected data and calculated indicators should enable the definition of demanded indicators' values in future amendments of the Rules on Quality and the method of assessment of the quality that has been reached. Upon that, the procedure in case of deviation from demanded indicators' values will be also defined afterwards as it is defined in the Energy Law. In 2016, the data on quality of delivery and supply which were submitted by energy entities during previous years which will be used as the basis for the amendment of the Rules and their harmonisation with the Law.

The collection of data on delivery and supply quality was established in line with the Rules on Quality by defining the type, scale and format of the data and indicators on technical and commercial aspects of quality as well as the deadlines for the submission of them by energy entities to the Agency. As is was the case in the past, when most distribution companies improved their practice and infrastructure necessary for data register, calculation of indicators and provision of the data on quality, the distribution system operator continued these activities in 2016, especially in the field of registering continuity of delivery.

3.6.1 Continuity of electricity delivery

Electricity transmission and distribution system operators monitor the continuity of electricity delivery regularly and these data indicate the number and duration of planned and unplanned delivery interruption. The entities submit monthly reports for all interruptions in the transmission and distribution network longer than 3 minutes. These reports are submitted to the Agency and the data on interruptions present the basis for the calculation of annual interruption indicators within the transmission and distribution network, for planned and unplanned interruptions and in total in the 2009-2016 period.

3.6.1.1 Transmission network continuity of delivery

Indicators of discontinuity of delivery in the transmission network which are monitored and calculated are the following:

- Power failure – undelivered power [MW] – total failed power on all measuring points where supply was interrupted;

- ENS [MWh] – total undelivered electricity;
- ENS [%] – a share of undelivered electricity in total delivered electricity;
- AIT [min] – average interruption duration in minutes, a quotient of undelivered electricity and average power.

Indicators of discontinuity in delivery within the transmission network, power failure and ENS, for the period 2009 - 2016 are given in Table 3-34.

Table 3-34: Indicators of discontinuity in delivery within the transmission network in the period 2009 - 2016

Interruptions		Power failure – undelivered power	ENS	ENS
		MW	MWh	%
2009				
	Planned	189	984	0.002
	Unplanned	3,589	1,525	0.004
	Total	3,778	2,509	0.006
2010				
	Planned	131	473	0.001
	Unplanned	2,790	1,418	0.004
	Total	2,921	1,891	0.005
2011				
	Planned	392	1,875	0.005
	Unplanned	3,212	3,364	0.008
	Total	3,604	5,239	0.013
2012				
	Planned	129	757	0.002
	Unplanned	2,390	1,395	0.004
	Total	2,519	2,152	0.005
2013				
	Planned	161	618	0.002
	Unplanned	1,770	747	0.002
	Total	1,931	1,365	0.004
2014				
	Planned	115	110	0.0003
	Unplanned	1,905	3,496	0.0104
	Total	2,020	3,605	0.0107
2015				
	Planned	359	1,543	0.0046
	Unplanned	2,292	1,659	0.0049
	Total	2,351	3,202	0.0095
2016				
	Planned	167	547	0.0016
	Unplanned	1,693	1,317	0.0039
	Total	1,860	1,864	0.0055

In comparison to 2015, these indicators for planned and unplanned interruptions were improved in 2016. The biggest reduction is recorded with power failure, and, thereby, reduction in the amount of undelivered electricity due to planned interruptions arising from planned works on the transmission system, connection of new elements of the transmission system and overhaul in existing elements of the transmission system.

The values of the most frequent indicator of discontinuity within the transmission network AIT are given in Figure 3-16, separately for planned and unplanned interruptions and in total.

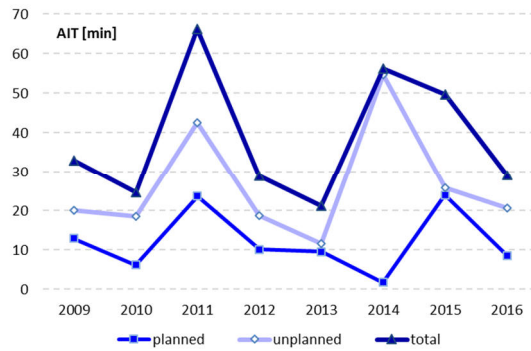


Figure 3-16: Average duration of supply interruption

In 2016, there was a big reduction in the average duration of planned interruptions which used to amount to 23.97 minutes to 8.55 minutes which is 2.8 times less than previously. The average duration of unplanned interruptions was on the same level as last year. It is 5 minutes shorter and it amounted to 20.6 minutes.

Figure 3-17 indicates all the causes of unplanned interruptions and their share in the quantities of undelivered energy due to unplanned interruptions in 2016.

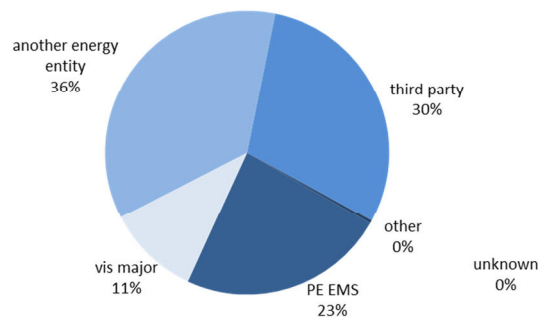
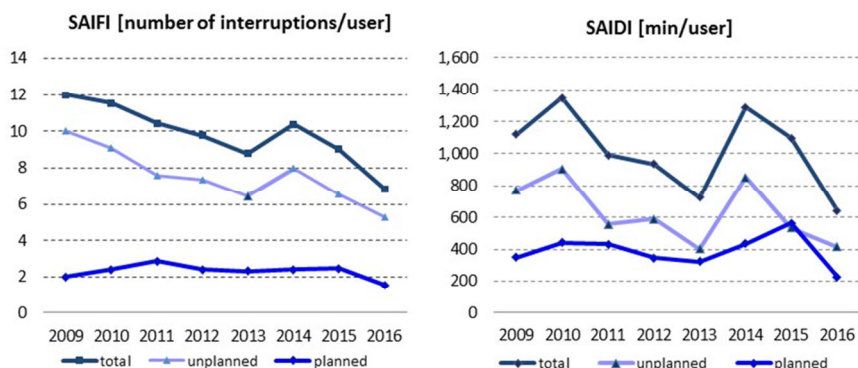


Figure 3-17: Causes of unplanned interruptions and their share in undelivered energy due to unplanned interruptions in 2016

3.6.1.2 Distribution network continuity of delivery

The indicators for the estimation of discontinuity of delivery in the distribution network are the following:

- SAIFI⁹ – average frequency of interruptions per each user, and
- SAIDI¹⁰ – average duration of interruptions in minutes per user.



⁹ calculated as a quotient of the cumulative number of interruptions and total number of users [number of interruptions/user]

¹⁰ calculated as a quotient of cumulative duration of interruption and total number of users [min/user]

Figure 3-18: SAIFI and SAIDI for the period 2009 - 2016

There were considerable improvements with continuity indicators for unplanned interruptions in the distribution network in 2016 in Serbia. The average frequency of unplanned interruptions was decreased by 1.2 interruptions (from 6.55 to 5.29 interruptions per average customer), while the average duration of unplanned interruptions was decreased by almost 120 minutes per customer (from 534.6 to 416.3 minutes per average customer). Average frequency of planned interruptions was also reduced by even one interruption per customer (from 2.47 to 1.55 interruptions per customer), while the average duration of planned interruptions reduced by around 300 minutes per average customer (from 562.9 to 227.1 minutes). However, even taking these improvements into account, the indicators values are still much higher than those in the European Union member states¹¹, and, therefore, it is crucial to take further measures in order to reduce the number of supply interruptions and reduce their duration.

The reasons for unplanned interruptions and their ratio in the total number and duration of interruptions are indicated in the Figure 3-19.

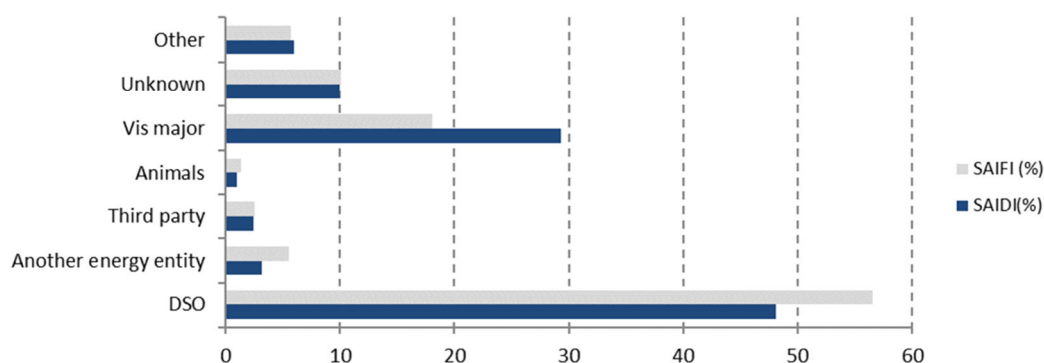


Figure 3-19: Share of causes of unplanned interruptions in SAIFI and SAIDI for 2016

The share of certain interruption causes within the number and duration of unplanned interruptions was on the last year level. The share of causes has not changed in general, but the share “unknown causes” and “other” continued with the reduction trend and, in 2016, it was smaller than in previous years as well. This indicates that if one had better identification of the causes of interruptions, more adequate measures can be implemented so as to remove the causes of interruptions and reduce the number and duration of those.

3.6.2 Quality of electricity

The Rules defined the obligation of the system operators to record disruptions in the operations which cause the voltage and frequency to exceed the limits prescribed by the Decree on Electricity Delivery and Supply Conditions and transmission, i.e. distribution network code. In practice hitherto, system operators did not submit the reports on bad voltage conditions within the grid to the Agency, except in terms of users’ appeals which are being monitored within commercial quality area.

3.6.3 Commercial quality

Rules on Quality which were adopted by the Agency define the data which system operators, i.e. suppliers are obliged to register so as to enable commercial quality monitoring, i.e. monitoring compliance with the prescribed obligations as regards an energy entity’s obligations towards customers, i.e. services users.

Based on Agency’s request, energy entities submitted reports on commercial aspects of quality to the Agency regularly. That has provided the data for the calculation of some indicators of commercial quality on national level since 2009. After the market was opened in 2013 for customers connected to the transmission system and in 2014 for all customers, except households and small customers, there has been significant change in the necessity of monitoring commercial quality since the data on commercial quality have to be submitted to the Agency by all suppliers who supply final customers apart from by the system operator. In 2016, for the purpose of commercial quality monitoring, DSO, electricity suppliers and public (guaranteed) supplier submitted quarterly reports and final annual report with available data to the Agency.

In terms of commercial quality monitoring, DSO has improved the method of data recording considerably, but, even so, registering data on commercial quality has not still reached the expected level of reliability and accuracy which could provide a relevant analysis of the indicators in the national and international framework, especially in the field of data on call centers and metering device control. By having a greater number of customers entering the market, a necessity to

¹¹ 6th CEER Benchmarking Report on the Quality of Electricity and Gas 2016

monitor commercial quality introduced with licensed electricity suppliers as well was recognized. Further improvement of quality monitoring is also necessary with electricity suppliers, in particular with reference to customer care and the establishment of call centers.

For analytical purposes, the collected data were grouped in four main categories of biggest importance for customers which describe commercial quality. They include:

- 1) connection, load shedding and disconnection;
- 2) metering and billing;
- 3) removal of technical obstacles in delivery and
- 4) customer services.

The given data, especially those on average time for the performance of certain obligation are of indicative character since they were calculated on the basis of the available sets of data submitted by the distribution system operator. The analysis of these data proved that they do not include the whole territory of the distribution system since the data on the time of settling or removal of some of problems for certain segments of the distribution system (reflecting former distribution companies) are not available.

3.6.3.1 Connection, loadshedding and disconnection

The DSO data on applications for connection to the system in 2016 are given in Table 3-35 for different voltage levels, for medium voltage (MV) and low voltage (LV) separately and in total.

Table 3-35: Connection applications by voltage levels and in total in 2016

Connection applications		MV	LV	Total	
Number	of submitted applications	304	33,106	33,410	
	of settled applications	Approving connection	276	25,144	25,420
		Denying connection	5	164	169
		Settled differently	37	5,671	5,708
		Total	318	30,979	31,297
	Within 30 days for final customers, 60 days for producers	240	23,678	23,918	
%	Settled applications in comparison to the submitted ones	105	94	93	
	Applications approving connection in comparison to the number of settled ones	87	81	81	
	Settled applications within 30 days for final customers, 60 days for producers	68	76	76	
Average time	Necessary for settlement – given in days	12	17	17	

In comparison to previous year, the number of submitted applications for connection is slightly larger, as well as the number of decisions approving connections. Since some of the applications which were submitted in 2015 were settled in 2016, there is a larger number of settled applications in the table referring to medium voltage than the number of submitted applications in 2016.

Table 3-36: Connection of facilities/metering points by voltage levels in 2016

Connection		MV	LV	Total
Number	of connected facilities/metering points	143	36,795	36,938
	of facilities connected/metering points within 15 days' period	82	29,065	29,147
%	of facilities connected/metering points within 15 days' period	57	79	79
Average time – given in days	Necessary for connection since the day all the conditions are met	13	6	6

Around 900 more facilities/metering points were connected 2016 than in 2015. The indicators describing the connection of a facility/metering point (Table 3-35) deteriorated in comparison to 2015. Almost 80% of connections (5% more than in 2015) were made in 15 days, while the average time necessary for connection since the day conditions are met is three days shorter for low voltage and it amounts to 6 days, while the average time necessary for connection on medium voltage is eight days longer and amounts to 13 days.

In 2016, there were 89,320 disruptions upon suppliers' request, registered due to unsettled liabilities as regards electricity in the prescribed deadline, which is 55% less than in 2015. The average time of reconnection upon the removal of causes of disruption/disconnection, i.e. upon unjustified disruption/disconnection amounted to 1.76 days on the level of the distribution system operator, while in different areas which correspond geographically to prior electricity distribution companies, it amounted to between 1 and 4 days and it corresponds to the values in the previous year.

3.6.3.2 Metering and calculation

Regular control of meters were planned for 792,132 meters in 2016 (only 21.8% out of total 3,624,625 of metering devices) and 344,855 of them were checked, i.e. 44% of them. (only 9.5% of the total number of metering devices). Out of the number, with 40,142 meters, i.e. 11.6% of them, irregularities were recorded. There were 42,488 extraordinary checks of metering points requested by customers, and checks were organised for 41,272 (97.1%) and there were irregularities in 63% of extraordinary checks (26,046). The irregularities were removed in 25,842 cases. The distribution system operator is obliged to organize regular check of all metering devices once a year. It is necessary to have considerable upgrade of the metering devices control.

Upon registering the disappearance, restraints or damage of meters, in 76% of cases, proper metering was provided within 2 days upon registration. Average time necessary to provide proper metering since the moment of occurrence, restraints or damage of meters within the categories of high, medium and low voltage (metering points where active energy, reactive energy and maximum active power are metered) amounted to between 2 and 5 days, depending on the voltage level.

In 2016, around 1.4% out of total number of issued bills – 41,979,515 were revised. More than two thirds of them were revised due to improper reading and improper metering. Average time necessary for complaints settlement amounted to 4.31 days. The reasons for billing corrections and their share in the total number of revised bills are given in Figure 3-20.

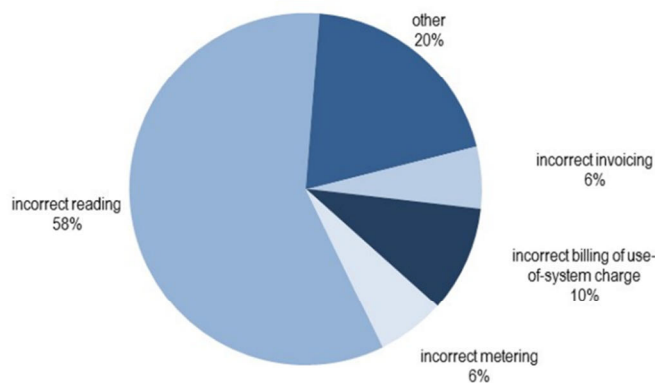


Figure 3-20: Reasons for bills corrections and their share in the total number of revised bills in 2016

3.6.3.3 Removal of technical disturbances in delivery

Out of the total number of customers' requests in 2016 for the removal of voltage disturbances which are repeated in a long time frame - 908 of them, more than 80% of requests (731) were justified. Voltage disturbances were removed in 117 cases, i.e. 16% of justified cases, which represents 72% lower performance level than in 2015.

The register of the data on average time necessary for a distributor to address the request of a customer for the removal of voltage disruptions, i.e. the time since the submission of the application until voltage is checked on the spot and informing the customer as well as on the average time since the voltage disruption establishment till its removal should be improved so as one could get a more realistic picture of the quality of such service.

3.6.3.4 Customer services

Despite the progress that has been made on the improvement in providing services to customers in customers' and contact centres (call centres), data which could serve for the assessment of the quality of services in these centres are still unavailable in most cases due to the lack of adequate information support for data monitoring and registration. In their future activities on customer services quality monitoring, all energy entities, especially suppliers licenced for the supply of final customers as well, will have to start registering, i.e. improving the registration of these data.

3.7 Security of electricity supply

The reliability and efficiency of the power system in the Republic of Serbia have been increased by investments into revitalization and modernisation of production, transmission and partly distribution capacities for several years. Even without new production capacities, the security of electricity supply was considerably higher and the import demand decreased. The planned construction of new capacity units will further increase the security of electricity supply in Serbia.

3.7.1 Consumption forecast

In line with the Energy Sector Development Strategy until 2025, with projections until 2030, electricity consumption is expected to increase by less than 1% annually. Such expectations are based on GDP projections and the consumption

increase in the industrial sector, as well as on the implementation of energy efficiency measures in all consumption sectors.

3.7.2 Generation adequacy/prospects

Out of the total electricity production in the Republic of Serbia, under average hydrological circumstances, around 2/3 of electricity is produced in coal-fired thermal power plants and 1/3 from hydro potential.

The Energy Sector Development Strategy until 2025 with projections until 2030 and the National Action Plan for Use of Renewable Energy Sources of the Republic of Serbia indicate the plan to have considerable increase of the share of renewable energy sources in production with planned production of around 3 TWh by 2020.

All thermal blocks in PE EMS are subject to the requirements of the Large Combustion Plants Directive 2001/80/EC (LCPD) and the Industrial Emission Directive 2010/75/EU (IED) to the extent of limitation of the emission of polluting substances in the air – sulphur dioxide (SO₂), nitrogen oxides (NO_x) and powder substances. On October 24, 2013, the Energy Community Ministerial Council adopted decisions which include rules for operation of large combustion plants D/2013/05/MC-EnC and D/2013/06/MC-EnC which impose for PE EPS to reduce the emission of polluting substances into the air from existing combustion plants as of January 1, 2018 and by 31/12/2027 at the latest.

In the end of 2015, a preliminary National Emission Reduction Plan (NERP) of the Republic of Serbia was submitted to the Energy Community with a plan for the adjustment of the emission of polluting substances in the air for plants subject to the above mentioned Directives. The final NERP is expected to be adopted in October 2017. In line with the preliminary NERP, due to old-fashioned technology, high production costs and environment protection, until 2027, there will be successive shutting down of the oldest and energy-wise most inefficient thermal units. At the same time, there are continuous activities in PE EPS on the revitalization and modernisation of existing power plants which will enable the increase in energy efficiency and installed capacity. The construction of new thermal unit B3 in TPP Kostolac B, with 350 MW capacity, fuelled by Kostolac lignite (PE EPS is the investor) was initiated. There are ongoing preparations for the beginning of construction of a combined heat and power plant CHP Pančevo with simultaneous production of heat and power and maximum capacity of 140MWe in the condensing regime, the first phase (*Naftna industrija Srbije* (Petroleum Industry of Serbia), JSC and Gasprom energoholding, Russia are the investors).

The development of capacities in lignite mines is adjusted to the demand of thermal power plants by the expansion of existing and opening new pits which will replace the pits which are at the end of their exploitation life.

There are ongoing activities on the revitalization and modernisation of hydro power plants Đerdap 1 (there is ongoing revitalization of the fourth aggregate out of six with the increase of aggregate capacity from 190 MW to 201 MW), of the hydro power plant Zvornik (the revitalization of the second aggregate was initiated with the total capacity upgrade of around 10MW) as well as preparation activities for the revitalization of HPP Potpeć, HPP Bistrica, Vlasinske HPP and HPP Đerdap.

3.7.3 Use of renewable energy sources

The Decree on Incentive Measures for Electricity Generation through the use of renewable energy sources and combined electricity and heat energy generation prescribes incentive measures for electricity generation through the use of renewable energy sources and for energy purchase – feed-in tariff in more detail. Incentive measures include setting procurement prices based on power plant type where electricity is produced through the use of renewable energy sources and based on installed capacity. Privileged producers have no balancing responsibility which is an additional incentive measure and this may have a negative effect to their aptitude and competence for planning their production.

The conditions for obtaining the privileged producer status are prescribed in the Decree on conditions for obtaining the privileged electricity producer status and criteria for evaluation of these conditions. The implementation of the given decrees is in the jurisdiction of the ministry in charge of energy issues (www.mre.gov.rs). 2016 final prices for privileged electricity producers are given in the Table 3-37.

Table 3-37: Final prices for privileged electricity producers

No.	Type of power plant	Installed capacity (MW)	Incentive price (c€/ kWh)			
			2013	2014	2015	2016
1	Hydro power plants					
1.1		Up to 0.2	12.40	12.57	12.62	12.60
1.2		from 0.2 to 0.5	13.73	13.92	13.97	13.933 – 6.667*P
1.3		from 0.5 to 1	10.41	10.54	10.6	10.6
1.4		from 1 to 10	10.747 – 0.337*P	10.747 – 0.337*P	10.790 – 0.337*P	10.944 – 0.344*P
1.5		from 10 to 30	7.38	7.48	7.51	7.50
1.6	With the existing infrastructure	Up to 30	5.90	5.98	6.01	6.00
2	Biomass-fired power plants					
2.1		Up to 1	13.26	15.47	19.54	13.26
2.2		From 1 MW to 10 MW	13.82 – 0.56*P	14.013 – 0.56*P	14.069 – 0.56*P	13.82 – 0.56*P
2.3		Over 10	8.22	8.34	8.37	8.22
3.	Biogas-fired power plants					
3.1		From 0 - 2				18.333 – 1.111*P
3.2		from 2 to 5				16.85 – 0.370*P
3.3		Over 5				15.00
4.	Power plants fired by landfill gas and gas from plants for treatment of public utility waste water		6.91	7.01	7.03	8.44
5.	Wind powered power plants		9.20	9.33	9.37	9.20
6.	Solar power plants					
6.1	Roof-mounted	Up to 0.03	20.66	20.95	21.03	14.60 - 80*P
6.2	Roof-mounted	From 0.03 to 0.05	20.941 – 9.383*P	21.243 – 9.383*P	21.319 – 9.383*P	12.404 – 6.809*P
6.3	Ground-mounted		16.25	16.48	16.54	9.00
6.4		from 0.2 to 2	C ₀ = 10.667 – 1.333*P	C ₀ = 10.821 – 1.333*P	C ₀ = 10.860 – 1.333*P	9.00
6.5		from 2 to 10	C ₀ = 8,20	C ₀ = 8.32	C ₀ = 8.35	9.00
7.	Geothermal power plants					
7.1		Up to 1	9.67	9.81	9.84	8.2
7.2		from 1 to 5	10.358 – 0.688*P	10.503 – 0.688*P	10.545 – 0.688*P	8.2
7.3		Over 5	6.92	7.02	7.04	8.2
8.	Waste fired power plants		8.57	8.69	8.72	8.57
9.	Natural gas-fired combined cycle power plants					
9.1		Up to 0.5				8.20
9.2		from 0.5 to 2				8.447 – 0,493*P
9.3		from 2 to 10				7.46

Table 3-38: Structure of prices and applied prices (VAT and duties free) of electricity withdrawn from privileged producers in 2016

Privileged producers category		Quantity	Amount	Price
		MWh	000 RSD	RSD/MWh
1	Small hydro power plants	192,453	2,037,043	10.58
2	Biogas-fired power plants	34,048	606,160	17.80
3	Wind-fired power plants	26,237	188,810	7.20 ¹²
4	Solar power plants	11,100	276,976	24.95
4.1	Ground-mounted solar power plants	7,198	181,440	25.21
4.2	Roof-mounted solar power plants	3,902	95,536	24.48
5	Fossil fuel-fired combined heat and power plants	78,188	807,153	10.32
5.1	Gas-fired power plants	66,456	688,738	10.36
5.2	Coal-fired power plants	11,732	118,415	10.09
6	TOTAL	342,026	3,916,142	11.45

In 2016, final electricity customers paid a separate fee for stimulating privileged electricity producers in the amount of 0.093 RSD/kWh.

Table 3-39: Incentive fee for privileged electricity producers

	2013	2014	2015	RSD/kWh 2016
RES incentive fee	0.044	0.081	0.093	0.093

Electricity quantities withdrawn from privileged producers in the last three years are presented in Table 3-40.

Table 3-40: Electricity withdrawn from privileged producers

Renewable energy source/ Fuel for combined production	MWh		
	2014	2015	2016
Water flow	146,614	151,223	192,453
Fossil fuels (coal, heating oil (mazoute) and natural gas) – combined production	30,748	44,265	78,188
Biogas	15,667	21,984	34,048
Solar energy	5,232	10,006	11,100
Other	5,356	417	26,237
TOTAL	203,617	227,895	342,026

In line with the obligations arising from EnC Treaty, Contracting Parties are obliged to reach certain percentages of increased share of renewable energy in gross final energy consumption until 2020. Therefore, Serbia assumed the commitment to have 27% of gross energy final consumption provided from renewable energy sources.

The Agency has no specific authority in the field of renewable energy sources, except for license issuance for the facilities with installed capacity of 1 MW or more.

3.7.4 Construction of new transmission capacities

In 2016, the activities on regular maintenance and overhaul and reconstruction of facilities were executed within the transmission system. In 2016, EMS JSC initiated the construction of the first phase of Trans Balkans Corridor by construction double-circuit overhead line 2x400 kV Pančevo 2 – Rešica. The project on connection of eastern and western Europe by 400 kV lines via the territory of Serbia was hereby initiated. It will additionally increase the security of supply in Serbia as well. There were works on the reconstruction of TS Obrenovac 400/220 kV/kV and these works will continue in 2017 as well. The works on the reconstruction of TS Belgrade 3 220/110 kV/kV are completed. The most important

¹² This price mainly refers to price for trial production

investment maintenance in transformer stations was on the replacement of the transformer in TS Kraljevo 3 with 150 MVA and TS Belgrade 4 with 63 MVA.

Transmission system operator is obliged by the Energy Law to prepare a transmission system development plan every year for the following 10-year period. The development plan is based on the amended version of the former one, in line with new insights and requirements, bearing in mind the experience in transmission network operation and maintenance. The plan is being harmonised with the plans of neighbouring distribution and transmission system operators. The position of the Serbian transmission system within a synchronised area of "Continental Europe" is considered and there is active participation in the preparation of a Ten Years Network Development Plan as well as the Regional Investment Plan within ENTSO-E. The goals of Pan-European ten-year development plan are to provide transparency related to transmission network development as well as the support to decision-making process on regional and European level which may happen in the future. The Law stipulates that the electricity transmission system operator is obliged to adopt a plan of investments in the transmission network every year for the three-year period, in line with the distribution system investment plan.

The Development Plan of the Transmission System of the Republic of Serbia for the period from 2016 until 2025 (2030) was drafted by EMS JSC and submitted to the Agency on 12/05/2016 and it is harmonised with the provisions of the Energy Law in general. In comparison to the previous plan, some elements of the document were upgraded and harmonised with the ENTSO-E criteria further. The Plan was drafted in line with the Pan-European Transmission Network Development Plan and with regional investment plans.

Analysing the state of play in the transmission network within the Transmission System Development Plan, taking into consideration consumption forecast and expected commission of new generation units, EMS JSC proposed the construction of new elements of transmission network, i.e. rehabilitation or upgrade of existing ones. Thereby, existing and expected congestions could be removed and the efficiency of transmission system operations could be increased. The development plan was harmonised with the development plans of DSO, in line with the data submitted by DSO to EMS JSC during the Plan draft preparation phase.

As far as the 400 kV transmission network is concerned, interconnection projects and internal 400 kV network projects are planned. These projects are of regional and Pan-European importance for electricity transmission and they contribute directly to the long-term energy security of the Republic of Serbia. However, bearing in mind the results of the feasibility study, there is still an open question of the sources of financing the construction and a need to provide grants for the facilities in Serbia to the greatest extent possible.

The most important planned interconnection projects include:

- double-circuit interconnection overhead line TS Pančevo – TS Rešica which represents Section 1 of the Trans Balkans Corridor;
- new interconnection between the Republic of Serbia, Bosnia and Herzegovina and Montenegro, which represents Section 4 of the Trans Balkans Corridor.

The following planned projects for internal 400 kV network may be highlighted:

- construction of new overhead line 400 kV TS Kragujevac 2 – TS Kraljevo 3, which represents Section 2 of the Trans Balkans Corridor;
- in the western Serbia region, the upgrade of 220 kV network to 400 kV voltage level – the upgrade of hub Bajina Bašta to 400 kV voltage level and construction of new double-circuit 400 kV overhead line between TS Obrenovac and TS Bajina Bašta which represents Section 3 of the Trans Balkans Corridor;
- construction of 400 kV facility instead of 220 kV in TS Srbobran and construction of lines for connection of TS Srbobran and
- upgrade of existing TS Smederevo 3 and connection lines.

Bearing in mind planned demand, construction of new sources, planned development of regional and European network, these projects would contribute to the security of supply and reliability of system operations. The realization will also depend on financing conditions, especially as far as the construction of the section of Trans Balkans Corridor, the interconnection between Serbia, Montenegro and Bosnia and Herzegovina is concerned.

In terms of the transmission network of 220 kV voltage level, the EMS JSC has a strategic plan to withdraw this network gradually, i.e. to increase its voltage level to 400 kV within the Trans Balkans Corridor Project. However, until this is completed, there is a plan to construct TS 220/110 kV Bistrica and to increase the installed capacity in Zrenjanin and Kruševac 220/110 kV transformer stations.

In terms of the development of the 110 kV transmission network, the Development Plan offers solutions for the existing areas with insufficient security of electricity supply, first of all, for the area of Raška and south Banat, as well as for radially supplied areas. The development of this network is particularly important in order to harmonise with the distribution system development plan.

In 2016, the Agency was not in a position to build its staff capacity and, therefore, could not consider submitted development plan to the extent necessary to create conditions for giving approval of these plans. In mid-2016, with new employees, conditions were created for the analysis of submitted plan. In September 2016, the Agency offered suggestions to EMS JSC for the improvement of content and quality of Transmission System Development Plan of the

Republic of Serbia for period 2017-2026 and Plan of Investments into Transmission System for period 2017-2019 which were submitted in early 2017 to the Agency for approval purposes.

3.7.5 Distribution system operator's investment activities

In line with the Law, the DSO is obliged to adopt network development plans, harmonised with the transmission system development plan and connection applications. During 2016, the DSO was preparing the development plan. However, the DSO did not submit the development plan to the Agency.

As it is prescribed by the Law, apart from the development plan, the DSO is supposed to submit the plan for the transfer (overtaking) of metering equipment, metering switchboards, installations and equipment in metering switchboards, lines and other devices within connections on facilities of existing customers, i.e. producers. The DSO complied with this commitment and it submitted a Plan for Transfer of Meters to the Agency on 12/12/2016. The Agency made comments to the plan and the submission of the final plan and the report on realised transfer in 2015 and 2016 is expected in 2017.

The delay in investments was partially compensated by other activities, revitalisation or replacement of existing old-fashioned equipment in the distribution network, especially transformer stations 110/x kV/kV transferred from the TSO as well as other measures in terms of modernisation of operations and business activities.

The following works were either completed or initiated within the distribution systems:

- on distribution lines:
 - Construction and reconstruction of a set of distribution lines within the distribution medium voltage network;
 - Construction of low voltage network, in line with the local growth in electricity consumption and transmission capacities development as well as with the need to upgrade quality of supply;
- on transformer stations:
 - construction of new ones or reconstruction: TS 110/35 kV "Mosna" 20 MVA, TS 110/10kV "Belgrade 41" 80 MVA TS 110/35/20kV "Ljig" 31.5 MVA, TS 110/20/35 kV "Vladimirci" 31,5 MVA, TS 110/35kV "Subotica 1" 51.5 MVA and TS 110/20kV "Sombor 1" of 63 MVA;
 - construction of new ones, expansion or reconstruction of existing TS 35/10 kV. The most important was commissioning of TS "Rogačica" of 4 MVA and "Veliko Gradište" of 4 MVA;
- metering and management:
 - Upgrade of metering devices and further development of remote reading system has not been done to the planned scale primarily since the tender for the procurement of meters was not realised.

3.7.5.1 Smart grids

The replacement of meters in the distribution companies with more modern models is planned. PE EPS is preparing a project on the modernisation of the system for electricity distribution so as to provide monitoring, protection and automatised optimisation of the work of all system parts and installations between system users, power plants, network and connected customers' facilities. However, there is great delay in the realization. After the establishment of a single DSO, the improvement of metering system with users connected to the medium voltage network was defined as the primary goal while among the users with facilities connected to the low voltage network, priority is given to users who have their active and reactive energy and monthly maximum power metered.

Smart grids and measurement systems will enable high reliability and quality level of delivered electricity. They will stimulate better consumption management and more dynamic market, as well as considerable reduction of technical and commercial electricity losses.

3.7.5.2 Reduction of electricity losses in the distribution network

The DSO continued reducing energy losses in the network by organising some of investment activities in 2016 (increased grid capacity, replacement of invalid meters, dislocation of metering points) better control over electricity theft and increase in the collection rate. In 2016, in comparison to 2015, losses were reduced from 141% to 13.0% of electricity withdrawn into the distribution system. However, these activities have to be continued in the future and intensified further since losses need to be placed to an acceptable level in technical terms as soon as possible. Some measures, such as the installment of new meters and transfer of metering devices and connection lines were hardly implemented in the past at all.

Measures which should contribute to further loss reduction which are also envisaged by the DSO plan for loss recovery include:

- construction of new network facilities, overhead lines and transformer stations;
- transfer of metering devices, switchboards, connection lines, installation and equipment in the switchboard and other devices within the connection in the facilities of existing customers and their operation in line with technical regulations and distribution system code;
- procurement and installation of new meters with most of customers;
- modernisation of the remote measuring system and consumption management;
- improvement of technical and business system for calculation and collection of electricity bills;

- activating existing devices and construction of new ones for reactive power compensation and
- improvement of cooperation with state bodies as regards electricity theft prevention.

4. NATURAL GAS

4.1 Sector structure and capacities

4.1.1 Organisational and ownership structure

Gas sector organisational structure at the end of 2016 is given in Figure 4-1. *Naftna industrija Srbije* (Petroleum Industry of Serbia) JSC, Novi Sad (hereafter NIS JSC) is the only natural gas producer. Gas production is not a regulated activity.

Naftna industrija Srbije (NIS)	Underground gas storage BANATSKI DVOR	Public Enterprise SRBIJAGAS	YUGOROSGAZ JSC	32 Energy entities	37 Energy entities
natural gas PRODUCTION	natural gas STORAGE OPERATOR Storing and storage operation	TRANSMISSION SYSTEM OPERATOR Transmission and transmission system operation	TRANSMISSION SYSTEM OPERATOR Yugorosgaz-transport LLC Niš Transmission and transmission system operation		
		DISTRIBUTION SYSTEM OPERATOR Distribution and distribution system operation	DISTRIBUTION SYSTEM OPERATOR Distribution and distribution system operation	DISTRIBUTION SYSTEM OPERATOR Distribution and distribution system operation (32)	
natural gas SUPPLY in the open market		natural gas SUPPLY <ul style="list-style-type: none"> • regulated public supply • in the open market <ul style="list-style-type: none"> - supply of the last resort - supply of public suppliers 	natural gas SUPPLY <ul style="list-style-type: none"> • regulated public supply • in the open market 	natural gas SUPPLY <ul style="list-style-type: none"> • regulated public supply (31) • in the open market (25) 	natural gas SUPPLY in the open market (37)

Figure 4-1: Organisational structure of the natural gas sector at the end of 2016

In Serbia, natural gas transmission and transmission system operation are performed by two transmission system operators (TSO): PE *Srbijagas*, Novi Sad and Yugorosgaz-Transport LLC, Niš. In 2015, TSO Yugorosgaz-Transport LLC completed legal and functional unbundling from a vertically-integrated company „Yugorosgaz“ JSC Belgrade in line with the independent system operator model. In PE *Srbijagas*, decisions on legal and functional unbundling of TSO – *Transportgas Srbija* LLC from the parent company were adopted but *Transportgas Srbija* LLC has not started operating by the end of 2016, which is why the transmission is still operated by its founder PE *Srbijagas*.

Natural gas distribution and distribution system operation are performed by 33 licenced distribution system operators (DSO). There is one more energy entity awarded with a licence, but the company has not started its operation yet. Apart from DSO PE *Srbijagas* and Yugorosgaz JSC, this activity is performed by another 31 licenced companies. Most of them are owned by municipalities and towns, some of them are public-private partnership, and some of them are private companies. Since all DSOs have less than 100,000 connected final customers, they are also entitled to perform supply, in the regulated market and in the open market and they are not obliged to unbundle the system operator and supplier (pursuant to the Article 259 of the Law). In 2015, PE *Srbijagas* adopted a decision on the establishment of a daughter company for the performance of natural gas distribution – Distribucija Srbija LLC Novi Sad which has not started operating until the end of 2016. For this reason, natural gas distribution is still performed by its founder - PE *Srbijagas*.

In the end of 2016, there were 65 energy entities licenced for the supply in the open gas market. Out of the number, 30 suppliers were active. There were 33 public suppliers performing natural gas public supply of final customers at regulated prices and these companies also deal in natural gas distribution.

In line with the Law, for 2016, the Government of RS appointed PE *Srbijagas* as the supplier of public suppliers and supplier of the last resort of final customers who are entitled to it by the Law.

Storage operator performs natural gas storage and storage operation. There is only one storage, Natural Gas Underground Storage Banatski Dvor, LLC, founded and owned by PE *Srbijagas* (49%) and Gazprom Germania (51%). This was defined on the basis of the Agreement of the Republic of Serbia and the Government of the Russian Federation on Cooperation in Oil and Gas Industry (Law on Confirmation of the Agreement of the Republic of Serbia and the Government of the Russian Federation on Cooperation in Oil and Gas Industry "Official Gazette of RS – International Agreements, No. 83/08) concluded in January 2008. The agreement on the realisation of the joint project was signed in October 2009.

4.1.2 Production, transmission, distribution and storage capacities

4.1.2.1 Production

Natural gas production in Serbia is realized in Vojvodina area and the only natural gas producer is *Naftna Industrija Srbije* (Petroleum Industry of Serbia, hereafter: NIS). After preparation process which makes produced gas applicable to final customers, produced gas is delivered to 13 points into the transmission system and much smaller quantities (up to 6% of produced volume) to 4 points into the distribution system. The total annual production which was delivered to the transmission and distribution system in 2016 amounted to 399 million m³ which is 7.6% less than last year production volume. After significant growth in 2011, production has been constantly decreased since 2012 although it is still higher than in 2010.

Table 4-1: Natural gas production in Serbia in period 2010 - 2016

Production/Year	2010	2011	2012	2013	2014	2015	2016
Delivered to transmission system	331	441	466	451	453	422	388
Delivered to distribution system	21	21	18	17	14	10	11
Total production (million m ³)	352	462	484	468	467	432	399
Variation in comparison to (n-1) year		31.3	4.8	-3.3	-0.2	-7.5	-7.6

Out of the total volume delivered into the transmission and distribution system in 2016, 175.1 million m³ (44%) of natural gas was sold to other suppliers, while larger volume of natural gas was spent by NIS to cover its own demand, mostly in Pančevo oil refinery.

4.1.2.2 Transmission

At the end of 2016, the length of the transmission system where PE *Srbijagas* performs the activity amounted to 2,298 km in north and central Serbia, while the length of the Yugarosgaz transport LLC transmission system amounted to 125 km in southeast Serbia (Table 4-2). PE *Srbijagas* operates 95% of the gas transmission network, while Yugarosgaz JSC operates the remaining 5% of gas transmission lines.

Table 4-2: Length of the transmission network in Serbia in 2010 - 2016

Year	2010	2011	2012	2013	2014	2015	2016
Network length, km	2,258	2,321	2,391	2,398	2,423	2,423	2,423

Around 5 million people or 70% of Serbian population live in the area with developed transmission grid and which provides for the potential for further development of the gas system and natural gas consumption growth.

Table 4-3 indicates the most important technical characteristics of the transmission system of PE *Srbijagas* and the system managed by Yugarosgaz transport LLC.

Table 4-3: Important technical characteristics of the transmission system

Important technical characteristics of the transmission system	PE <i>Srbijagas</i>	Yugarosgaz-transport LLC
Capacity, mill. m ³ /day	≈ 18	≈ 2.2
Pressure, bar	16 - 75	16 - 55
Length, km	2,298	125
Diameter	DN 150 - DN 750	DN 168 - DN 530
Compressor station, power, MW	4.4	-
Number of entries into the transmission system	15	1
From another transmission system	1	1
From production fields – domestic gas	13	-
From the storage	1	
Number of exits from the transmission system	242	5
Metering and regulating stations on transmission system exit	239	5

Overtaking stations	2	-
Entry into YugoRosgaz transmission system	1	-
Interconnector towards Bosnia and Herzegovina	1	-
Natural gas storage	1	-

Transmission system operators were obliged as early as of 2011 to provide automatic collection and processing of the data on natural gas flows with collection interval of 24 hours or shorter for all delivery points from the transmission system. Such metering and data acquisition equipment is necessary for market functioning and development. So far, it has been installed in all exits on the system which is operated by YugoRosgaz-transport LLC and on 35% of the total number of exits from PE *Srbijagas* transmission system.

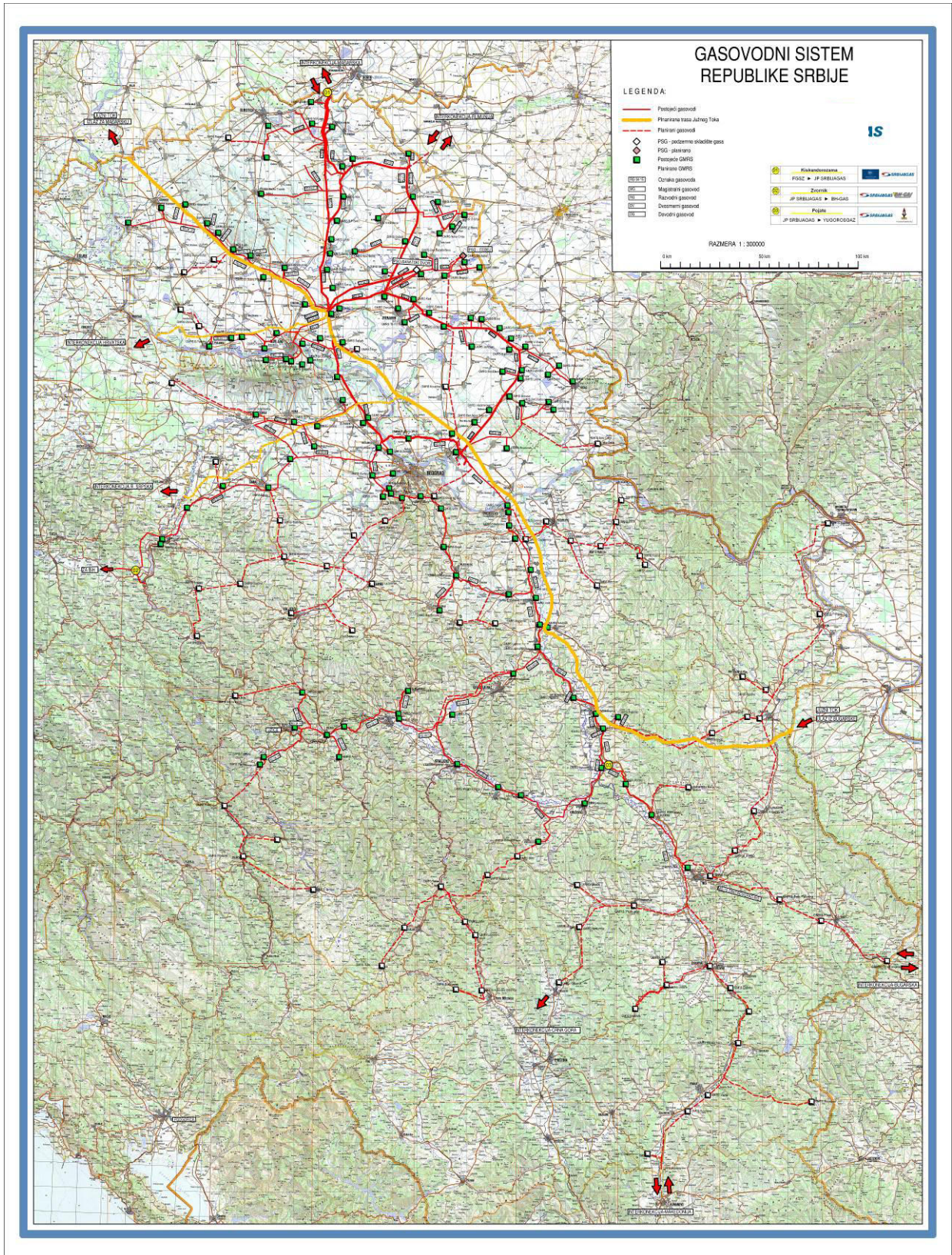


Figure 4-2: Natural gas transmission system of the Republic of Serbia

4.1.2.3 Distribution

The length of the distribution network in Serbia has increased from 2012 to 2016 by 7.8%, i.e. to 16,653 km (without connections) thus creating the conditions for the connection of new customers. However, in comparison to the previous year, the network was extended by only 121 km which amounts to only 0.7% increase which is a follow-up of the trend of the reduction of investments in distribution networks. The greatest share of increase in distribution network length in 2016 was with PE *Srbijagas* which performs the activity on 47.6% of the total distribution network in Serbia.

Table 4-4: Length of the distribution network in Serbia in 2012 - 2016

	2012	2013	2014	2015	2016
Length of the distribution network	15,348	15,839	16,363	16,532	16,653

The number of active connections (delivery points) within distribution networks amounts to 267, 000. In comparison to the previous year, it has been increased by around 4,600 connections (1.75%).

Table 4-5: Length of distribution network and number of delivery points on 31/12/2016

No.	Natural gas distributor	Distribution grid length, m	Number of active connections
1	7. Oktobar, Novi Kneževac	54,354	1,531
2	Beogas, Belgrade	275,220	8,880
3	Beogradske elektrane, Novi Beograd	331,020	3,952
4	Boss construction, Trstenik	29,860	58
5	Čoka, Čoka	27,190	804
6	Drugi oktobar, Vršac	198,266	12,580
7	Elgas, Senta	59,800	1,759
8	Gas – Feromont, Stara Pazova	586,070	16,752
9	Gas – Ruma, Ruma	463,803	7,005
10	Gas, Bečej	198,197	1,643
11	Gas, Temerin	255,500	6,649
12	Graditelj, Srbobran	150,200	2,271
13	Gradska toplana, Zrenjanin	510,564	22,676
14	Ingas, Inđija	357,099	9,573
15	Interklima, Vrnjačka Banja	108,050	957
16	Komunalac, Novi Bečej	121,158	2,301
17	Kovin – Gas, Kovin	333,094	3,935
18	Loznica - Gas, Loznica	127,860	1,455
19	Novi Sad – Gas, Novi Sad	2,362,175	45,487
20	Polet, Plandište	239,300	3,559
21	Resava Gas, Svilajnac	60,184	308
22	Rodgas, Bačka Topola	149,624	1,265
23	Cyrus energy, Belgrade	21,173	1,843
24	Sigas, Požega	19,987	306
25	Sombor – Gas, Sombor	172,000	1,818
26	<i>Srbijagas</i> , Novi Sad	7,926,402	86,550
27	Srem - Gas, SrEMSKa Mitrovica	263,083	5,021
28	Standard, Ada	42,000	983
29	Suboticagas, Subotica	413,820	9,593
30	Toplana – Šabac, Šabac	170,381	2,565
31	Užice – gas, Užice	138,498	679
32	Vrbas – Gas, Vrbas	186,388	1,596
33	Yugorosgaz, Beograd	300,450	752
	TOTAL	16,652,770	267,106

Plan for the transfer of metering devices, i.e. metering and regulation stations

The Law (Article 261, paragraph 1) prescribed the obligation of a DSO to adopt a plan for transfer of metering devices, i.e. metering and regulation stations (MU/MRS) in the facilities of current customers, i.e. producers and to report to the Ministry of Mining and Energy and the Agency twice a year on planned and taken activities on the realisation of the transfer plan. The goal is to transfer (take over) all MD/MRS until December 31, 2020.

Following the adoption of the Law, out of 33 DSOs, all MD/MRS in 18 of them are owned by the operator. In the remaining 15 DSOs, around 45% of MU/MRS (88,500 out of 195,000) were not owned by DSOs. One DSO is under bankruptcy and it does not perform DSO activity, 13 of them submitted their transfer plans which were approved by the Agency and the plan of the PE "Srbijagas" was harmonised with the Agency but it has not been submitted for approval officially.

Table 4-6 summarises the MD/MRS transfer plan for 2015 and 2016 as well as the transfer plan for period 2017-2020 and the number of MD/MRS which DSO should take over in total. Based on the data submitted by DSO, the number of MD/MRS which were transferred in 2015 and 2016 were presented, as well as the percentage of realisation of the plan for the whole period. In 2015 and 2016, around 18,000 MD/MRS were transferred, while the transfer plan for this period was to transfer around 21,000 MD/MRS. Based on the data given in the table, some distributors have significantly lower realization than the planned number of MD/MRS which should have been transferred in 2015-2016. If significant changes are not made in this area within DSO activities, the legal obligation of DSO to take over all MD/MRS inscribed into its ownership will not be realized by 2020. Additional problem is recognized in the fact that the number of MD/MRS which should be taken over is doubled year by year in the period 2017-2020 in comparison to 2015 and 2016.

Table 4-6: Plans of MD/MRS transfer and realisation

No.	Distribution company	MD/MRS transfer plan per year				MD/MRS transfer plan realisation per year				
		2015	2016	2017-2020	Total	2015	2016	2015 (%)	2016 (%)	Total (%)
1	"Srbijagas" Novi Sad	1,009	1,010	8,064	10,083	4	15	0.4	1.5	0.9
2	"Novi Sad Gas" Novi Sad	5,025	7,632	32,122	44,779	5,194	7,603	103.4	99.6	101.1
3	"Gas-feromont" S. Pazova	750	1,054	5,835	7,639	475	942	63.3	89.4	78.6
4	"Ingas" Inđija	116	129	892	1,137	206	326	177.6	252.7	217.1
5	"Gas Ruma" Ruma	190	190	1,278	1,658	145	62	76.3	32.6	54.5
6	"GAS" Temerin	650	650	4,942	6,242	415	1,066	63.9	164.0	113.9
7	"Polet" Plandište	289	289	2,308	2,886	300	333	103.8	115.2	109.5
8	"Kovin Gas" Kovin	285	285	2,281	2,851	165	375	57.9	131.6	94.7
9	"Graditelj" Srbobran	236	241	1,800	2,277	40	181	17.0	75.1	46.3
10	"Komunalac" Novi Bečej	238	230	1,791	2,259	0	6	0.0	2.6	1.3
11	PE "Vrbas-Gas" Vrbas	66	66	497	629	0	0	0.0	0.0	0.0
12	"Sombor-Gas" LLC Sombor	43	42	336	421	46	43	107.0	102.4	104.7
13	"Gas-Bečej" LLC Bečej	162	162	1,280	1,604	21	8	13.0	4.9	9.0
14	"Loznica-Gas" LLC Loznica	3	5	9	17	3	5	100.0	100.0	100.0
	Total:	9,062	11,985	63,435	84,482	7,014	10,965	77.4	91.5	85.4

The number of MU/MRS – 84,482 - which should be transferred should be extended by 4,061 additional ones since they belong to the distribution network of ZIP (handcraft –installation company) "Sloga" Kanjiža which went bankrupt and where PE "Srbijagas" Novi Sad performs energy activities of general interest in line with the Conclusion of the Government of the Republic of Serbia but has no right to become the owner of metering devices.

4.1.2.4 Storage

Underground gas storage Banatski Dvor is very important for the security of natural gas supply. It is located on the depleted gas deposit whose capacity used to amount to 3.3 billion m3 of natural gas. Total area of the storage amounts to around 54 km2. There are currently 450 million m3 of available capacity while the designed withdrawal capacity amounts to 5 million m3/day.

Banatski Dvor storage was commissioned in November 2011. Bidirectional gas pipeline Gospođinci – Banatski Dvor enables unhindered and full connection of the underground gas storage with the transmission system of PE *Srbijagas*. The basic data on this gas pipeline are the following:

- length 42.5 km
- nominal diameter DN 500
- maximum working pressure: $p_{max}=75$ bar
- maximum gas flow:
 - withdrawal from UGS B. Dvor $Q=415,000$ m³/h (10 million S m³/day) and
 - injection into UGS B.Dvor $Q=230,000$ m³/h (5.5 million S m³/day).

After the second development phase, the storage will have the capacity of 800 million m³. The underground storage is connected by two gas pipelines to the gas pipeline junction point in Elemir.

In 2016, maximum technical capacity of injection was 2.7 million m³/day and maximum withdrawal capacity (from the storage) was 5.0 million m³/day. Maximum daily injection quantities in 2016 amounted to 2.6 million m³/day and maximum daily withdrawn quantities recorded 4.95 million m³/day.

In 2016, the cushion gas quantity in the storage did not change and it amounted to 530 million m³.

In 2016, more gas was withdrawn than injected. In the beginning of 2016, there were 448 million m³ of commercial gas. 200 million m³ of gas was injected from the transmission system into the storage, out of which 3 million m³ were spent to cover the storage demand. The remaining 197 million m³ of commercial gas were injected for commercial purposes. Users withdrew 254 million m³ from the storage, and this is also the volume injected into the transmission system. In the end of 2016, 391 million m³ of commercial gas were stored in the storage.

4.2 Natural gas consumption and supply sources

In 2016, 2,448 million m³ of natural gas in total were available from: import, local production and underground storage. 2 million m³ were available for consumption and 2, 226 million m³ of natural gas were consumed.

Most of natural gas quantities are provided through import from the Russian Federation based on the long-term contract. The company Yugorosgas JSC (shareholders: Gazprom Moscow 50%, PE *Srbijagas* 25% and Central ME Energy and Gas, Vienna 25%) procures natural gas from Gazprom Moscow for customers in Serbia.

In 2016, natural gas import from the Russian Federation in line with a long-term contract amounted to 1,807 million m³. out of that volume, 1,795 million m³ were withdrawn from the Hungarian transmission system, while 12 million m³ were withdrawn from the storage.

In 2016, local production of 399 million m³ could meet only 16% of the demand.

Table 4-7: Natural gas supply sources and consumption in 2015 and 2016

	2015 million m ³	2016 million m ³	2016/2015 Index
Local production	432	399	92
Import from the Russian Federation – via long-term contract	1,733	1,807	104
Import from other sources – via other contracts	7	-	-
Total import	1,740	1,807	104
Quantities withdrawn from the underground storage	113	242	214
TOTAL AVAILABLE QUANTITIES	2,285	2,448	107
Injected into the storage	228	197	86
Gross consumption	2,057	2,251	109
Transmission system losses and consumption	8	11	138
Distribution network losses	8	14	175
For final consumption	2,041	2,226	109

In 2016, 2,226 million m³ of natural gas were consumed – 9% more than in 2015. Consumption increased by 10% in households while it decreased by 3% in district heating companies and increased by 14% in the industrial sector. Possible reasons for the consumption growth with households are 0.1 degree lower average mid-day temperature in wintertime in comparison to 2015 (if we compare January, February and December) with the reduction of public supply natural gas price in 2016. In district heating companies which provided natural gas in the open market, natural gas consumption in 2016 was slightly lower since, depending on the fuel price parity, those district heating companies, which were able to use mazoute as well, used it along with natural gas.

The number of delivery points in 2016 was increased by 4,567 in comparison to 2015. At the end of 2016, it amounted to 267,158. There were 52 of them on the transmission system and 267,106 delivery points on the distribution system. Out of the number, households accounted for 254,227 or 95.2%, i.e. only around 10% of all households in Serbia.

Table 4-8: Number of delivery points at the end of 2015 and 2016

Consumption category	2015	2016	Variation 2016-2015
Households	249,803	254,227	4,424
District heating companies	75	122	47
Industry and other	12,494	12,809	315
Total	262,591	267,158	4,567

Consumption structure for customer categories is given in Table 4-9.

Table 4-9: Consumption structure in 2015 and 2016

Consumption category	2015 million m ³	2016 million m ³	2016/2015 Index
Households	191	210	110
District heating companies	569	551	97
Industry and other	1,281	1,465	114
Total	2,041	2,226	109

Households consumption accounts for 9% of final natural gas consumption in 2016. District heating companies consumption accounted for 25%, while industry and other customers covered 66% (this consumption includes the quantities purchased in the market and the quantities NIS spent from its local production).

The structure of the final natural gas consumption in 2016 is given in Figure 4-3.

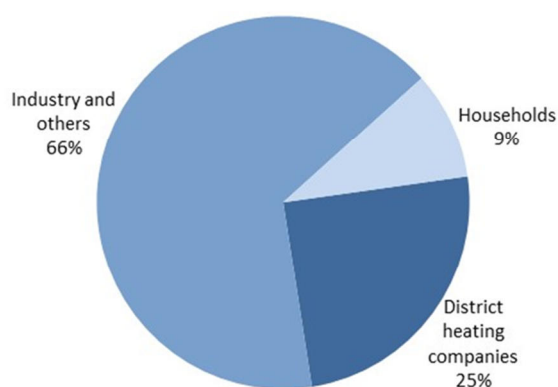


Figure 4-3: Structure of natural gas consumption in Serbia in 2016

Average annual natural gas consumption per connected household amounted to 828 m³ in 2016 (including active delivery points for households which did not consume gas during 2016) which amounts to 9% more than in 2015. If one only takes into account the households which consumed natural gas during 2016 (there were 226,898 of them), average annual consumption per household amounted to 927 m³.

4.3 Regulation of the transmission system operator

The transmission system operator *Transportgas Srbija* LLC is a newly-established but it has not started operating until the end of 2015 which is why the natural gas transmission and transmission system operation is still performed by its founder – PE *Srbijagas*.

In 2014, “Yugorosgaz-transport” LLC is the transmission system operation which completed legal and functional unbundling from its founder - the vertically-integrated company “Yugorosgaz” JSC Belgrade as an independent system operator and obtained the licence for transmission and transmission system operation in line with the law regulating the energy sector at that time. Yugorosgaz-transport LLC submitted an application for certification to the Agency and the Agency adopted a decision on it in 2016 but the whole process has not been completed yet. In line with the Law, Issuing the licence to this operation will be considered after an adequate certificate is issued.

PE *Srbijagas* Transmission Network Code was adopted and published in the Official Gazette of RS in August 2013 and it is still applicable. New code was drafted and harmonized with the Law, but it was not submitted to the Agency for approval purposes in 2016.

“Yugorosgaz” JSC submitted a draft of the Natural Gas Transmission Network Code in December 2014. The Agency approved the Code in January 2015 and the Code is in force. The Code should be harmonised with the Law and the Code of *Transportgas Srbija* LLC once it is adopted.

4.3.1 Unbundling of TSO

Until the end of 2016, *Transportgas Srbija* LLC did not start operating as TSO in line with the Law. In the end of 2014, the Government of RS adopted a Conclusion on Grounds for Restructuring of PE *Srbijagas* which defined that the transmission and distribution system operators should be legally unbundled entities from PE *Srbijagas* while owned by PE *Srbijagas*. The Plan was also harmonized with the Energy Community thereby representing a feedback to the invitation of the EnC Ministerial Council sent to Serbia in September 2014 asking Serbia to comply with its obligations arising from the Treaty establishing the EnC regarding the unbundling of the transmission system operator.

PE *Srbijagas* Supervisory Board adopted a decision on the establishment of *Transportgas Srbija* LLC as well as the decision on the establishment of *Distribucijagas Srbija* LLC on June 22, 2015. On the session held on June 27, 2015, the Government of the Republic of Serbia approved these decisions. These companies were established on August 22, 2015 and registered in the registry of companies as active companies but they did not start operating. By the Decision of November 19, 2015, the Government of the Republic of Serbia enabled the companies *Transportgas Srbija* LLC and *Distribucija Srbija* LLC to perform the activities of general interest, transmission and transmission system operator and distribution and distribution system operation under PE *Srbijagas* licence until the licence validity period expires. The Government also recommended that all necessary activities are taken in order to obtain relevant licences as soon as possible. In addition, by the Conclusion of December 23, 2016, the Government of the Republic of Serbia enabled PE *Srbijagas* to continue performing the activity of general interest – transmission and transmission system operation either independently or via the company *Transportgas Srbija* LLC until the licence for the performance of this activity is obtained. The Government recommended to *Transportgas Srbija* LLC to take all necessary actions in order to obtain this licence as soon as possible.

Yugorosgaz – Transport LLC Niš was legally unbundled from Yugorosgaz JSC Belgrade which owns it before the Law was adopted and the company obtained the licence for the performance of natural gas transmission and transmission system operation in September 2013 in line with the law which was ruling at that time. In line with the EU regulations, the 2014 Law defined three models of organization, i.e. unbundling of the transmission system, i.e. as: transmission system operator in line with ownership unbundling model, independent system operator and independent transmission operator. Acting within the deadline prescribed by the law, Yugorosgaz – Transport LLC Niš submitted an application to the Agency for certification in line with independent system operator model in August 2016. Bearing in mind the ownership structure of this company and the structure of its mother company, the application was treated as the certification of the transmission system operator related to third countries, in line with the Law.

By adopting a decision in December 2016, the Agency certified Yugorosgaz – Transport LLC Niš as an independent system operator but under the condition that within a year the company should harmonise its organisation and operation in a way providing for the compliance with conditions related to the independence of the system operation in line with the given model. Otherwise, the certificate will be withdrawn. The harmonisation implies the harmonisation of ratified international treaties concluded with the Russian Federation and the EU, i.e. the countries of the Southeastern Europe which should be done beforehand. In addition, the system operator is instructed to submit the ten-year transmission system development plan, the programme for non-discriminatory treatment and an act signed with the transmission system owner which provides for the guarantees which will enable financing of the transmission system development within the same deadline.

The final decision will be adopted upon the completion of the procedure prescribed by the law with the participation of the competent body which provides its opinion, in line with the obligations arising from ratified international treaties. The adoption of the final decision is expected in 2017 and it will depend on the possibility of the applicant to comply with imposed conditions within the given deadline. The first condition is not within the jurisdiction of the Agency and the compliance with it depends exclusively on competent state bodies.

4.3.2 Price regulation

4.3.2.1 System connection costs

Transmission system connection costs are set by TSO on the basis of elements from the connection application and on the Methodology for Setting Costs of Connection to Natural Gas Transmission and Distribution System (“Official Gazette of RS”, No. 42/16; valid as of 01/05/2016) which is adopted by the Agency. The Methodology sets types of costs: collection of documentation, procurement and installment of equipment and material, execution of works, as well as the method of calculation of all costs. After connection costs are set in the connection decision, the operator is obliged to use market prices of goods, works and services.

The applicant for connection pays the connection service to the System Operator. Connection service costs are set by the TSO and they correspond to average costs of construction of standard connection (i.e. to true connections of construction of other types of connections) and prescribed segment of cost which was caused by the connection of an applicant's facility to the system.

By rule, TSO is the investor, i.e. the owner of the constructed connection (of the connection line, metering equipment and other equipment, all up to the metering point within the customer's facility).

Since connections on the transmission system cannot be standardized and since each of them is a project of its own, the TSO is obliged to comply with the principles with publicity and non-discrimination and to give the applicant, upon his/her request, insight into the documents which serve as the basis for setting the level of connection costs and for the method of calculation of these costs. The applicant has to cover true connection costs and a part of costs for system development which arose from this connection which depend on characteristics of that connection.

4.3.2.2 Use-of-system charges

The natural gas transmission use-of-system charges of PE *Srbijagas* and Yugorosgaz-Transport LLC were not modified in 2016. In 2016, average approved transmission use-of-system charge of PE *Srbijagasa* was 2.70 RSD/m³ and of Yugorosgaz-Transport LLC – 1.62 RSD/m³.

Table 4-10: Average approved natural gas transmission use-of-system charge¹³

Transmission system operator	RSD/m ³	
	31/12/2015	31/12/2016
<i>Srbijagas</i>	2.70	2.70
Yugorosgaz-Transport	1.62	1.62

Current charges and chronological review of the natural gas transmission use-of-system charges are available on the website of the Agency (www.aers.rs).

4.3.3 Access to cross-border capacities

The Republic of Serbia has two interconnections with gas pipeline systems of neighbouring countries (one entry and exit point):

- Hungary – Serbia (Kiskundorozsma) – entry point and
- Serbia – Bosnia and Herzegovina (Zvornik) – exit point.

Both interconnections are a part of *Srbijagas* transmission system, while there are no gas pipelines connected with the transmission systems of neighbouring countries within the Yugorosgaz JSC transmission system.

In line with PE *Srbijagas* Transmission Network Code which was adopted in 2013 and which is still applied, the first annual capacity allocation was supposed to be organized in early 2014 for the gas year starting in July 2014. Since legal unbundling of the transmission system operator from PE *Srbijagas* was not realized, the first capacity allocation was postponed for 2015, and afterwards for 2016, but in line with this code, the allocation was not organized.

New code was prepared, harmonized with the Law. The code modified capacity allocation on the transmission system by having it organized for the gas year beginning in October, but it will be possible to apply the code once Transporgas Srbija LLC starts performing transmission and transmission system operation and obtains the approval of the Agency of this code.

4.3.3.1 Capacity allocation on interconnection lines and congestion management

As it is mentioned, both cross-border interconnections are a part of the transmission system of *Srbijagas* and the transmission system operator of *Srbijagas* its network code defines the rules for the allocation of all transmission capacity, cross-border capacity included as well as the rules for congestion management. The first capacity allocation was supposed to be organised in early 2016 for the gas year which begins on July 1, 2016. The right to use capacity on interconnection gas pipelines is awarded by PE *Srbijagas*, i.e. *Transportgas Srbija* LLC. However, the transmission system operator did not organise capacity allocation in 2016 in line with the transmission network code since the unbundling of the operator from its owner was not completed.

On the entry point Hungary – Serbia (Kiskundorozsma), capacity was used by: PE *Srbijagas*, Gazprom Export and Gas Production and Transport Company BH – Gas LLC Sarajevo while the exit capacity on the interconnection towards Bosnia and Herzegovina was used by BH – Gas and Gazprom Export. In 2016, congestion problems were not faced. There were sufficient free capacity on interconnectors even during winter months.

In 2016, the utilisation rate of the entry firm capacity on Serbian-Hungarian border amounted to average 42.6 % with 540,000 m³/hour (13 million m³/day to cover the demand in Serbia and Bosnia and Herzegovina) (In 2015, it amounted to 41.4%), but it is important to bear in mind that natural gas consumption depends on the season and therefore, it is uneven. For this reason, capacity utilisation is considerably lower during summer. The highest daily quantity withdrawn into the transmission system on the Serbian-Hungarian border amounted to 10.43 million m³/day. 8.94 million m³/day was used by

¹³ Average approved charge is the quotient of the maximum approved revenue and approved natural gas quantities

customers in Serbia, while 1.49 million m³/day were intended for Bosnia and Herzegovina. Bearing in mind the available interconnector capacity for natural gas customers in Serbia of 11 million m³/day and interconnector utilisation rate of 90%, it is possible to have around 3.6 billion m³ imported which is greatly higher than 1.795 billion m³ which is the volume imported in 2016, i.e. than 1.864 billion m³ which is the average annual import in ten-year period 2007-2016.

4.3.4 Transmitted natural gas quantities

In 2016, 2, 669 million m³ of natural gas were withdrawn into PE *Srbijagas* transmission system. These quantities were transmitted so as to meet the demand on the side: customers, transit for Bosnia and Herzegovina, storage, transmission and distribution systems for gas losses recovery and compressor operations. Transmission was reliable and safe, with remote control and control of parameters of transmission system situation from control centers which are located in Belgrade and Novi Sad.

Table 4-11: Transmitted natural gas quantities in 2015 and 2016

Transmitted volumes	2015 million m ³	2016 million m ³	2016/2015 index
Production on the transmission system	422	388	92
Entry into Serbia from Hungary to meet Serbia's demand	1,740	1,795	103
Entry into Serbia to meet Bosnia and Herzegovina's demand	223	232	104
Total	2,386	2,415	101
From storage	113	254	225
Total	2,499	2,669	107

4.3.5 Balancing

Pursuant to the Law, transmission system operators are responsible for natural gas system balancing in the Republic of Serbia. The operator is obliged to procure gas for balancing purposes and so as to provide secure system operation and recover losses in the transmission system, in line with the principles of minimum costs, transparency and non-discrimination.

Transmission system users are obliged to transfer into the system and withdraw from it the same gas volume on daily level. Being natural gas market participants, they are obliged to regulate their balancing responsibility by concluding the contract on transmission which regulates the financial responsibility for the variation between the natural gas volume delivered on entries into the transmission system and withdrawn on exits from the transmission system.

In 2016, system balancing is realised by changing nominated imported gas quantities and by using the gas from the very system (line pack) during the day, as well as using natural gas from the storage. When natural gas demand on exit points exceeds the capacity contracted on entry points, the transmission system operator may interrupt a part of capacity on the exit points to the customers who have an option to use alternative fuel so as to reach balance in the system. However, there was no need to do that in 2016.

Natural gas transmission system operator is responsible for the establishment and realisation of balancing responsibility of market players and for keeping balancing responsibility registry, in line with the Transmission Network Code and Supplier Switching rules. The Transmission Network Code prescribes the TSO's obligation to conclude a contract with a supplier who will provide the gas for balancing purpose when there is lack of it in the system, i.e. who will withdraw extra gas when there is a surplus of it in the system. The application of balancing responsibility for transmission system users was supposed to start as of July 1, 2016, but that did not happen. Therefore, transmission system users did not bear financial consequences of disbalance in 2016.

4.3.5.1 Price of system services – balancing costs

Ancillary services in the gas sector include the use of gas from linepack and gas which TSO has to procure/sell in the market in order to operate the transmission system, keeping the pressure level within the network and operational balancing of daily quantities on entry into and exit from the system. Activities described in detail, procedures and deadlines which the TSO is obliged to comply with in order to provide gas for system balancing purposes in due time are prescribed in the draft of the Transmission Network code of *Transportgas* LLC, but they were not applied in 2016 because *Transportgas Srbija* LLC did not submit the code draft to the Agency for approval.

The prices at which the operator procures/sells gas for operational balancing are not regulated. The TSO is supposed to provide gas source for system operation and operational balancing in the market. The costs of use of gas in real time should be transferred by the TSO to market participants who caused the disbalance and the TSO should be financially neutral on the annual level.

4.4 Regulation of the distribution system operator

In 2016, 33 companies performed natural gas distribution and distribution system operation (DSO). The license is also held by another company which has not started operating.

Natural gas distribution sector has one dominant feature, i.e. great fragmentation. For this reason, there is no economy of scale and therefore, charges for the use of these networks are higher. PE *Srbijagas* acquired one small gas distributor, but, in general, the initiative that would lead to enlargement is not strong enough.

In 2016, the Agency adopted amendments to the Methodology for Setting Natural Gas Distribution Use-of-System Charge and the Methodology for Setting Costs of Connection to the Natural Gas Transmission System in order to harmonise them with the Energy Law.

4.4.1 Unbundling of DSO

In all DSO in Serbia, natural gas distribution activities and distribution system operation are unbundled in terms of accounting from supply and other energy related and non-energy related activities. Except in accounting terms, DSO which is a part of a vertically-integrated company has to be independent from other activities which are not related to distribution in terms of legal form, organization and decision-making process.

In line with the Energy Law, the independence of DSO is ensured by having persons responsible for DSO management cannot participate in management bodies of vertically-integrated company which are directly or indirectly responsible for natural gas production, transport or supply as well as by taking measures which will secure that persons responsible for DSO management act professionally in order to provide their independence in operation. In addition, DSO should adopt decisions independently from vertically-integrated company in terms of funds necessary for operation, network maintenance and development if these are within the limits of the approved financial plan. Also, DSO which is a part of a vertically-integrated company is obliged to adopt the Compliance Programme for Non-Discriminatory Behaviour which includes measures for the prevention of discriminatory behavior, the method of monitoring the implementation of these measures and obligations of employees aiming at the achievement of set goals (Articles 257).

Since all DSOs in Serbia have less than 100,000 connected final customers, they are also entitled to deal in supply in both regulated and open market and they are not obliged to unbundle DSO and supplier legally (in line with Article 259 of the Law). In 2015, PE *Srbijagas* adopted a decision on the establishment of a daughter company for natural gas distribution – Distribucijagas Srbija LLC Novi Sad which did not start operating till the end of 2016 which is why natural gas distribution is still performed by PE *Srbijagas*.

4.4.2 Price regulation

4.4.2.1 System connection costs

Distribution system connection costs are set by DSO on the basis of elements from the connection application and on the Methodology for Setting Costs of Connection to Natural Gas Transmission and Distribution System (“Official Gazette of RS”, No. 42/16; valid as of 01/05/2016) which is adopted by the Agency. The Methodology sets types of costs: collection of documentation, procurement and installment of equipment and material, execution of works, as well as the method of calculation of all costs. In addition, the operator is obliged to use market prices of goods, works and services when setting connection costs in the connection decision. The DSO is obliged to comply with the principles with publicity and non-discrimination and to give the applicant, upon his/her request, insight into the documents which serve as the basis for setting the level of connection costs and for the method of calculation of these costs.

The applicant for connection pays the connection service to the System Operator. Connection service costs are set by the DSO and they correspond to average costs of construction of standard connection (i.e. to true connections of construction of other types of connections) and prescribed segment of cost which was caused by the connection of an applicant’s facility to the system.

By rule, DSO is the investor, i.e. the owner of the constructed connection (of the connection line, metering equipment and other equipment, all up to the metering point within the customer’s facility).

Since connections on the transmission system cannot be standardized and since each of them is a project of its own, the applicant has to cover true connection costs and a part of costs for system development which arose from this connection which depend on characteristics of that connection.

The connections on low pressure are grouped into different types in the Methodology and therefore the DSO document on the level of costs of connection of standard connections also includes the level of:

- cost of construction of standard connection for each category of standard connection;
- cost of construction of connection in case of simultaneous construction of network and standard connection for each category of standard connection;
- unit variable cost and
- cost of part of the system which is set by the operator in line with the methodology.

If, based on submitted data as well as on the data which Agency may request in line with the Law, the Agency estimates that the document on the level of connection costs was not adopted by the DSO in line with the Methodology, the Agency will demand that a new harmonized document is sent by the DSO 30 days since the day the written request is sent by the Agency.

Since there was low interest in connection to gas network, distribution companies try to make connection costs acceptable to the market and the Agency did not receive any complaints related to the connection to the system.

4.4.2.2 Regulation of distribution use-of-system charges

In 2016, the natural gas distribution use-of-system charges of 4 DSOs were modified. Average weighted approved distribution use-of-system charge for all distribution networks in Serbia on 31/12/2015 amounted to 4.31 RSD/m³. The variation in distribution use-of-system charges with different DSOs is the result of the size and features of the distribution systems, the structure and number of customers, the age of the distribution system and other factors.

Table 4-12: Average approved natural gas distribution use-of-system charge

No.	Distribution system operator	31/12/2015 RSD	31.12.2016 RSD
1	<i>7 Oktobar, Novi Kneževac</i>	10.15	10.15
2	<i>Beogas, Belgrade</i>	3.65	7.87
3	<i>Beogradske elektrane, Novi Beograd</i>	5.63	5.63
4	<i>Čoka, Čoka</i>	6.86	6.86
5	<i>Drugi oktobar, Vršac</i>	6.91	6.91
6	<i>Elgas, Senta</i>	7.30	7.30
7	<i>Gas – Feromont, Stara Pazova</i>	5.69	5.69
8	<i>Gas – Ruma, Ruma</i>	5.64	5.64
9	<i>Gas, Bečej</i>	11.24	11.24
10	<i>Gas, Temerin</i>	8.71	8.71
11	<i>Graditelj, Srbobran</i>	6.26	6.26
12	<i>Gradska toplana, Zrenjanin</i>	7.33	7.33
13	<i>Ingas, Inđija</i>	5.96	5.96
14	<i>Interklima, Vrnjačka banja</i>	7.02	7.02
15	<i>Komunalac, Novi Bečej</i>	7.14	7.14
16	<i>Kovin – Gas, Kovin</i>	4.86	4.86
17	<i>Loznica – Gas, Loznica</i>	3.77	3.77
18	<i>Novi Gas – Gas, Novi Sad</i>	6.13	6.13
19	<i>Polet, Plandište</i>	7.53	7.53
20	<i>Resava Gas, Svilajnac</i>	6.49	6.49
21	<i>Rodgas, Bačka Topola</i>	4.39	5.67
22	<i>Sigas, Požega</i>	12.56	12.56
23	<i>Sombor – Gas, Sombor</i>	5.15	5.87
24	<i>Srbijagas, Novi Sad</i>	3.80	3.80
25	<i>Srem – Gas, SrEMSKa Mitrovica</i>	4.98	4.98
26	<i>Standard, Ada</i>	8.87	8.87
27	<i>Suboticagas, Subotica</i>	6.02	6.02
28	<i>Toplana – Šabac, Šabac</i>	6.43	6.43
39	<i>Užice – gas, Užice</i>	5.87	5.87
30	<i>Vrbas – Gas, Vrbas</i>	5.28	5.28
31	<i>Yugorosgaz, Belgade</i>	2.28	2.28
	AVERAGE	4.26	4.31

The current natural gas distribution system use-of-system charges and the chronological review of these charges are available on the Agency's website (www.aers.rs).

4.4.2.3 Regulation of prices of natural gas public supply

In 2016, the Council of the Agency approved 76 decisions on natural gas public supply price for 33 public suppliers. Average approved natural gas price for all customers entitled to public supply in Serbia on 31/12/2016 amounted to 31.84 RSD/ m³. For low scale consumption which includes households, the price amounts to 35.02 RSD/ m³. The prices for all customers entitled to public supply on 31/12/2016 are 16.3% lower in comparison to the prices valid in the end of 2015, while the prices for low scale consumption which includes households, prices are 14.9% lower. This price drop is primarily a result of reduction of import price of natural gas.

Table 4-13: Average approved natural gas public supply price¹⁴

No.	Natural gas public supplier	RSD/m ³			
		All customers		Small customers	
		31/12/2015	31/12/2016	31/12/2015	31/12/2016
1	7 Oktobar, Novi Kneževac	44.97	38.78	45.55	39.36
2	Beogas, Belgrade	39.00	36.95	39.15	37.35
3	Beogradske elektrane, Novi Beograd	39.67	33.48	40.34	34.16
4	Čoka, Čoka	42.51	36.33	45.03	38.85
5	Drugi oktobar, Vršac	41.11	30.95	43.33	33.16
6	Elgas, Senta	41.94	35.76	42.09	35.90
7	Gas – Feromont, Stara Pazova	39.74	33.56	40.57	34.38
8	Gas – Ruma, Ruma	39.49	33.31	41.70	35.51
9	Gas, Bečej	47.82	41.30	48.04	41.52
10	Gas, Temerin	42.33	36.14	42.48	36.30
11	Graditelji, Srbobran	41.25	35.06	42.85	36.67
12	Gradska toplana, Zrenjanin	43.52	37.34	43.83	37.65
13	Ingas, Inđija	39.57	33.39	41.08	34.90
14	Interklima, Vrnjačka banja	40.00	33.87	41.14	35.01
15	Komunalac, Novi Bečej	41.76	35.58	42.54	36.36
16	Kovin – Gas, Kovin	39.09	32.91	42.21	36.02
17	Loznica – Gas, Loznica	36.99	30.81	38.61	32.43
18	Novi Gas – Gas, Novi Sad	40.22	34.04	41.21	35.03
19	Polet, Plandište	42.25	36.06	44.49	38.30
20	Resava Gas, Svilajnac	42.64	36.46	43.08	36.90
21	Rodgas, Bačka Topola	37.90	37.48	41.35	38.32
22	Sigas, Požega	51.07	44.89	51.32	45.13
23	Sombor – Gas, Sombor	38.56	36.80	40.00	37.22
24	Srbijagas, Novi Sad	37.58	31.39	40.55	34.36
25	Srem – Gas, SrEMSKa Mitrovica	38.59	29.02	40.46	30.89
26	Standard, Ada	43.83	37.64	44.66	38.47
27	Suboticagas, Subotica	39.48	33.30	40.84	34.66
28	Toplana – Šabac, Šabac	40.07	33.88	40.14	33.96
29	Užice – gas, Užice	40.41	34.23	41.15	34.97
30	Vrbas – Gas, Vrbas	38.96	32.79	41.04	34.86
31	Yugorosgaz, Belgade	34.69	28.63	36.76	30.70
	AVERAGE	38.06	31.84	41.16	35.02

The current natural gas distribution system use-of-system charges and the chronological review of these charges are available on the Agency's website (www.aers.rs).

Figure 4-4 indicates the change of average gas price for all customers entitled to public supply and for households separately.

¹⁴ In 2015, Boss petrol, Trstenik and BOSS Construction, Trstenik applied natural gas public supply prices on the level of those of Srbijagas, Novi Sad. Sloga, Kanjiža ceased dealing in natural gas public supply in 2015.

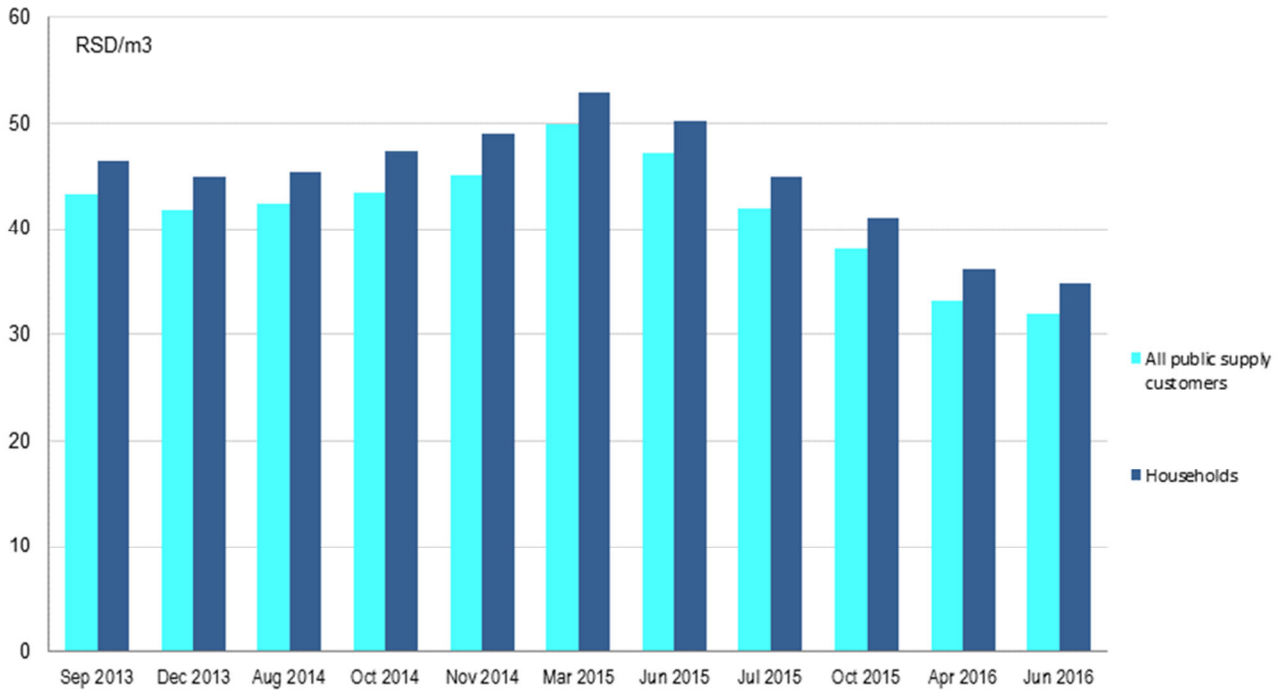


Figure 4-4: Change of average public supply gas price

The costs of natural gas purchase represent the dominant share within natural gas public supply tariff with all public suppliers. On 31/12/2016, the costs of natural gas procurement account for around 80% of the total average approved price of public suppliers. Figure 4-5 indicates the structure of average regulated natural gas public supply tariff of PE *Srbijagas* of 31.39 RSD/m³ which was applied on 31/12/2016.

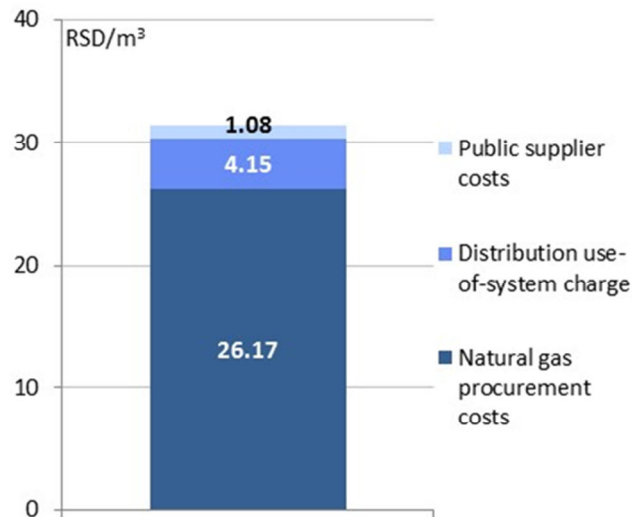


Figure 4-5: Structure of average approved natural gas public supply price of PE *Srbijagas* on 31/12/2016

Figure 4-6 indicates the comparison between natural gas household price in Serbia and in other EU countries and in the region. The price is given for a reference household customer for the second half of 2016.

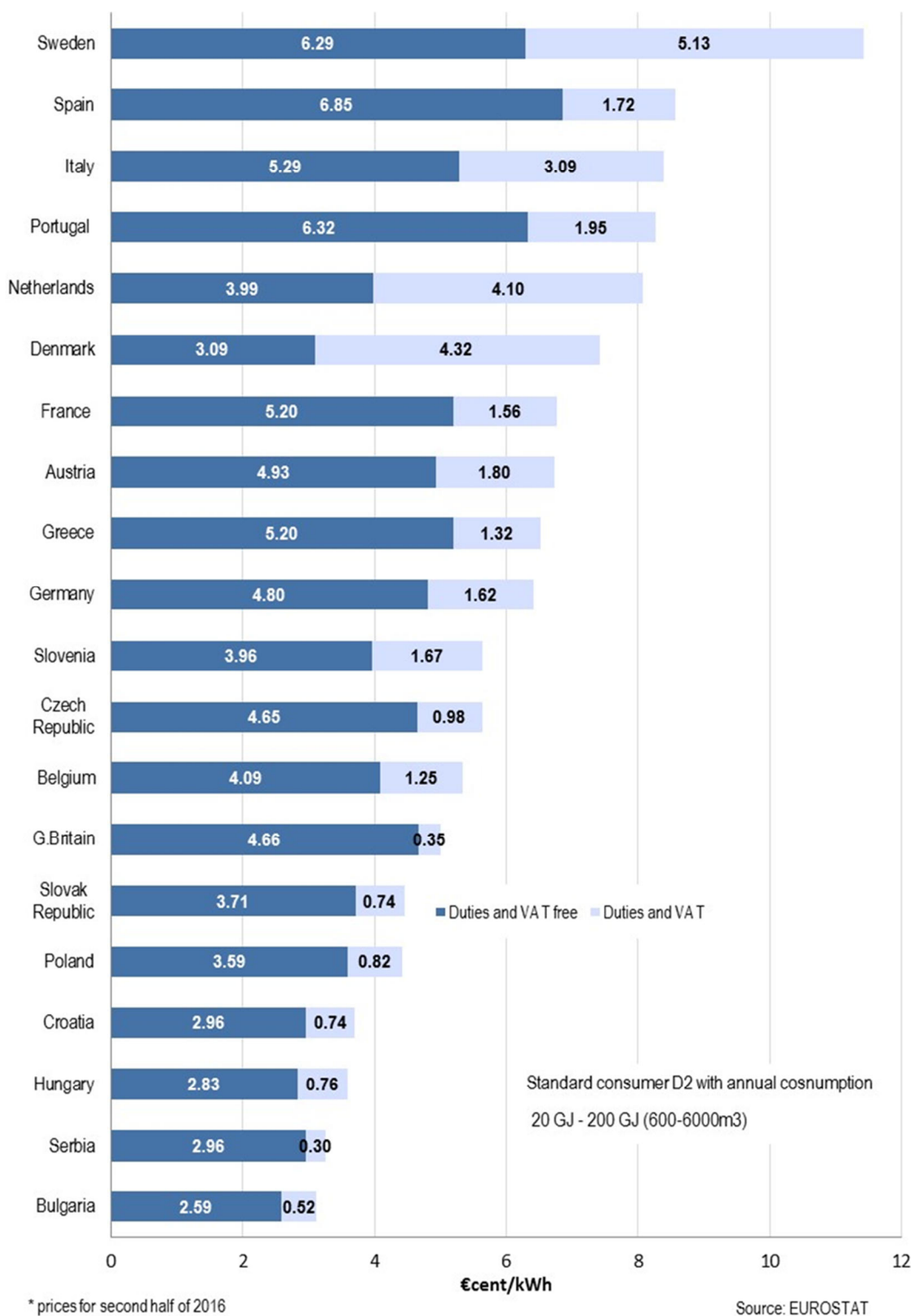
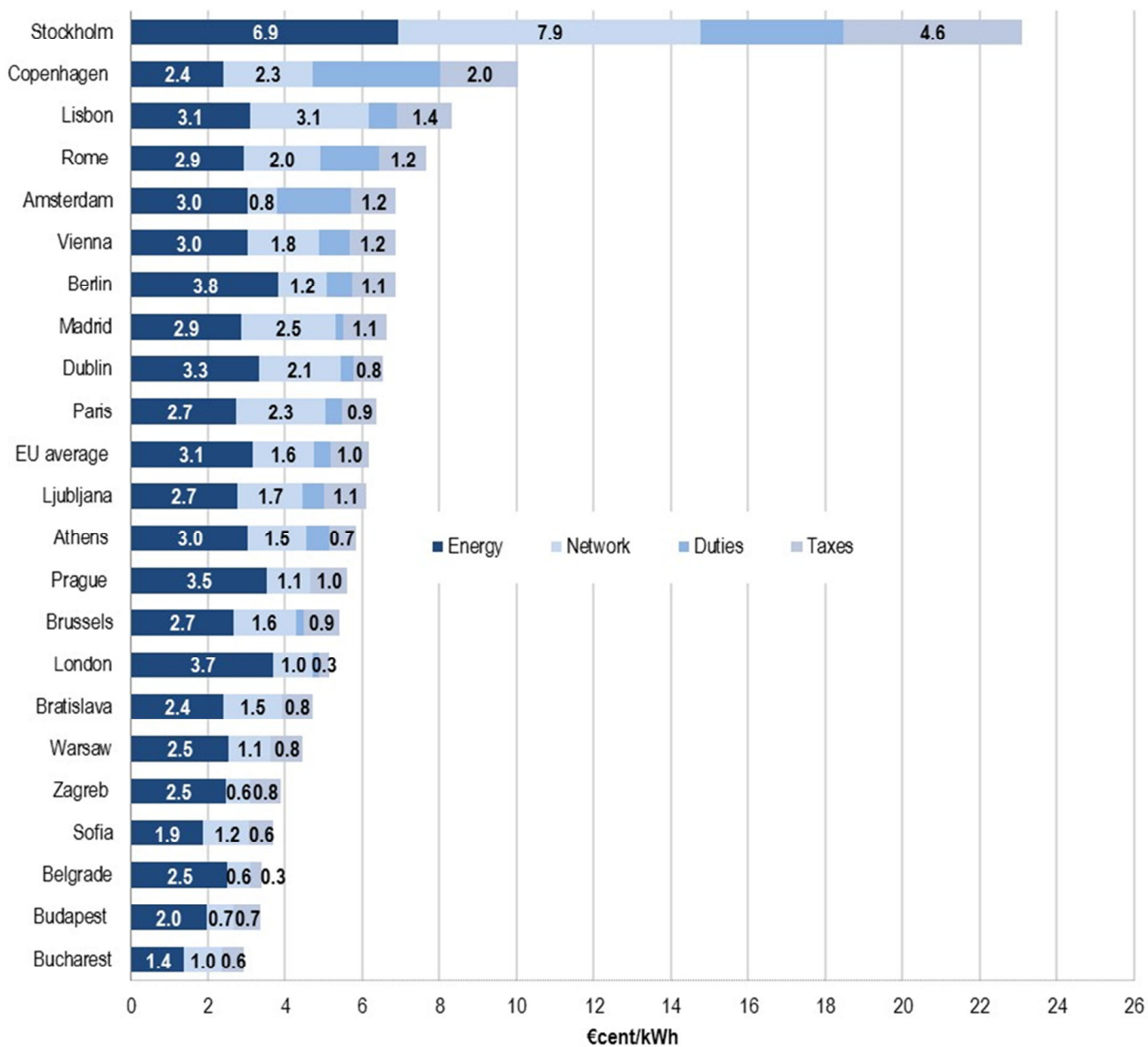


Figure 4-6: Natural gas prices for households – second half of 2016

Figure 4-7 indicates a more detailed structure of elements of the natural gas household prices in some of European capitals in December 2016. Based on the given structure of natural gas price, one can notice that the share of use-of-system charges (which are subject to regulation) in the total natural gas price for households in Serbia are the lowest ones, and they amount to around 17%, while the European average amounts to around 26%. It is also evident that there is also a considerably lower share of costs of taxes and duties.



Data source: E-Control and VaasaET (price on Dec 21, 2016)

Figure 4-7: Structure of natural gas household prices in some of European capitals in December 2016

Figure 4-8 indicates the structure of the final natural gas price for households in some European capitals in December 2016 given in purchase power parity. Thereby, when comparing prices, one also took into consideration the differences in salaries, living standard and wealth between European countries. In this case, natural gas prices for households in Belgrade are among the highest ones in comparison to the prices in other European capitals, which is a result of a different living standard in European countries.

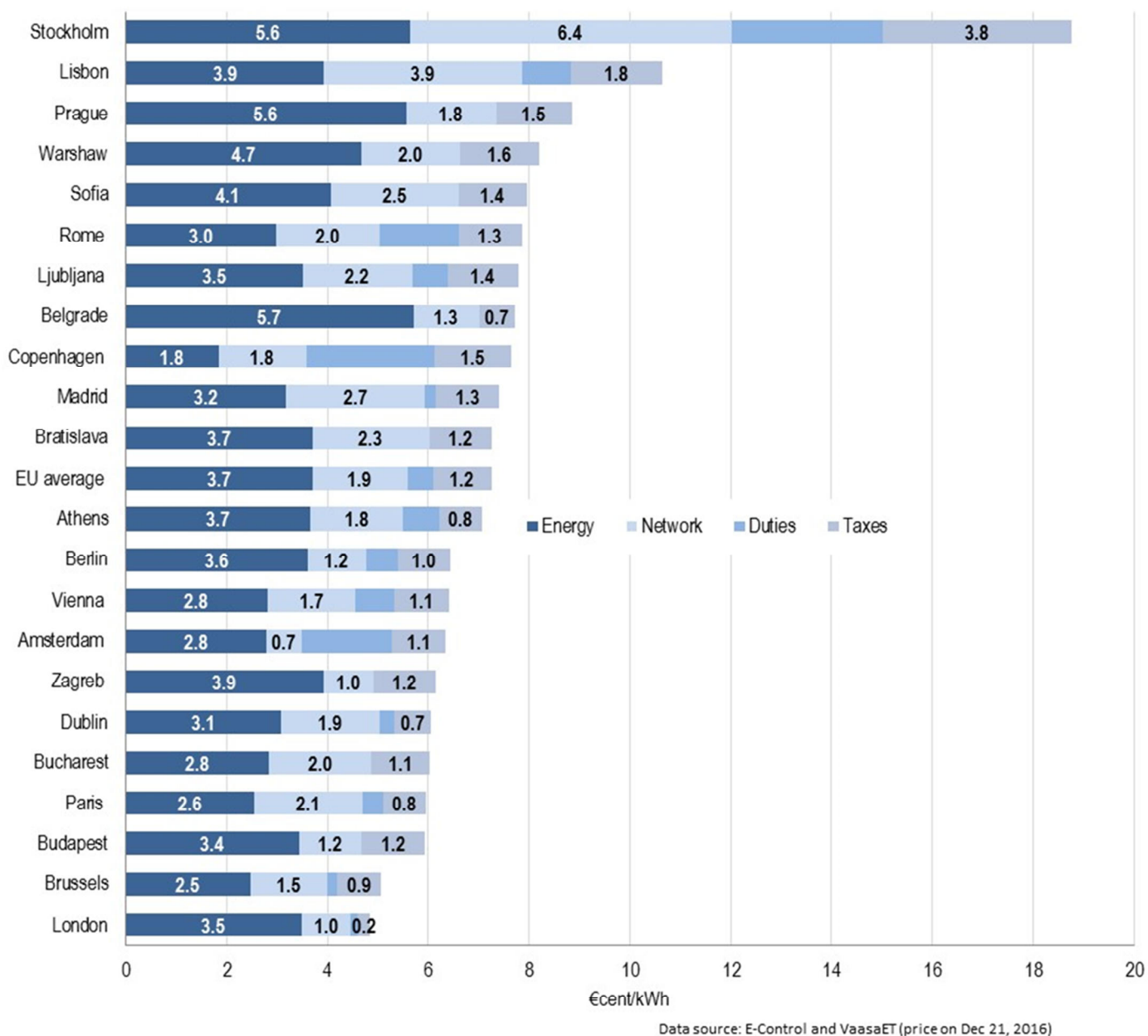


Figure 4-8: Structure of natural gas household prices in some of European capitals in December 2016 given in purchase power parity

Figure 4-9 indicates the comparison between the natural gas prices for a reference customer from the category – industry in Serbia and in other countries, either from the EU or from the region, in the second half of 2016. The variation between prices is greatly influenced by different tax policy, i.e. different duties and taxes borne by industrial consumers.

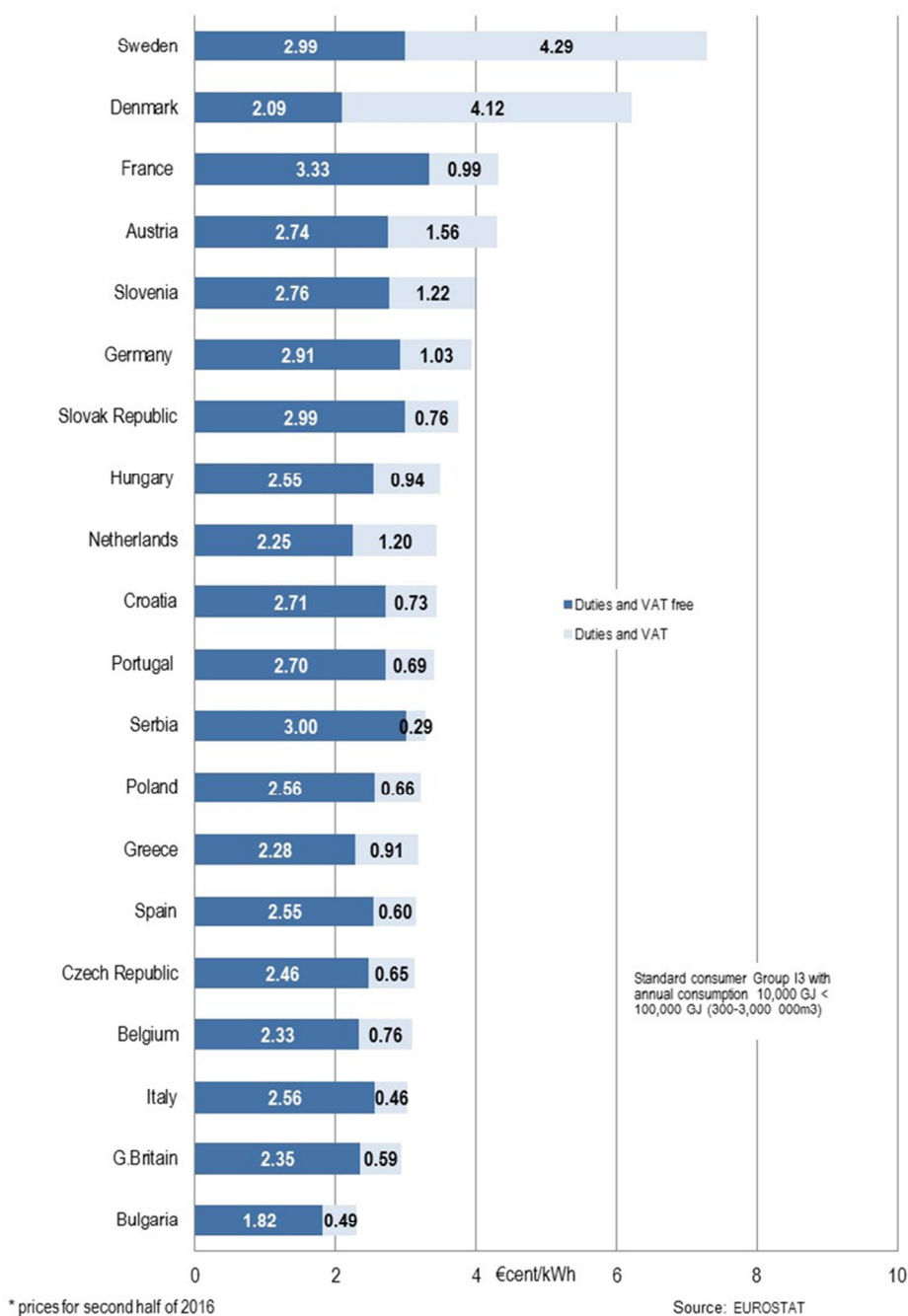


Figure 4-9: Natural gas prices for industry – second half of 2016

4.4.3 Distributed natural gas quantities

Natural gas quantities are withdrawn into the distribution systems mostly from the natural gas transmission system. Some distribution systems withdraw natural gas from another distribution system. Only small quantities are provided from natural gas production facilities connected to the distribution system. In 2016, only PE *Srbijagas* withdraw gas directly from production facilities. Table 4-14 indicates natural gas quantities withdrawn into natural gas distribution systems and distributed in 2016.

Table 4-14: Distributed natural gas quantities in 2016

	2015 million m ³	2016 million m ³	2016/2015 index
Total distributed quantities	1,405	1,474	105
withdrawn from the transmission system	1,310	1,371	105
withdrawn from distribution systems	85	92	108
withdrawn from production facilities	10	11	110
losses	8	14	175
	0.57%	0.95%	167

4.5 Natural gas market

In the natural gas sector, only bilateral market is developed. Market players include:

- producer (1);
- suppliers (65);
- public suppliers (33);
- final customers (265,671 using regulated supply and 923 in the open market);
- TSOs (2);
- DSOs (34 one of them does not perform the activity and
- storage operator (1).

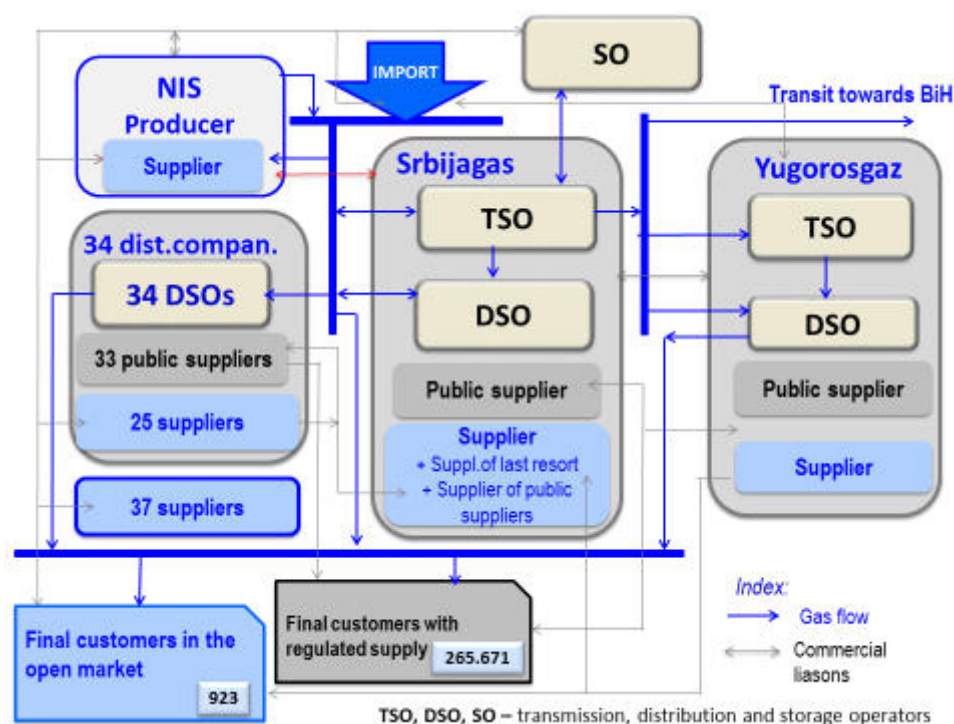


Figure 4-10: Natural gas market scheme

Being a supplier in the open market, PE *Srbijagas* was also defined as the supplier of public supplier and the supplier of the last resort in line with the Law. On the wholesale market, participants traded in natural gas at free prices, while on retail market, supply was organized at free and regulated prices since all customers except households and small customers had to procure natural gas in the open market in 2016. Households and small customers had an option to select a supplier in the open market although they can always return to the public supplier.

The Government of RS appointed PE *Srbijagas* to be the supplier of natural gas public suppliers in the period 01/09/2013 – 01/07/2017 and it is obliged to supply all the public suppliers demanding it, natural gas supply under the same conditions and at a same price. The Government of RS set the manner how this price is established. The same conditions are valid for PE *Srbijagas* as a public supplier.

4.5.1 Wholesale market

In the wholesale natural gas market, purchase and sale are performed directly between market participants. In 2016, wholesale natural gas market was based on trade among natural gas suppliers and natural gas suppliers and producers.

4.5.1.1 Supply of public suppliers

Except for gas purchase for public suppliers' sake, the wholesale natural gas market was based on bilateral contracts between suppliers and between producers and suppliers. In 2016, there were only two companies in the wholesale market which sold natural gas to suppliers and to public suppliers in order to meet the final customers' demand. The total average weighted wholesale price at which natural gas was purchased for final customers in 2016 by suppliers and public suppliers amounted to 29.05 RSD/m³. Average weighted price at which only public suppliers procured natural gas for final customers in 2016 amounted to 28.79 RSD/m³.

4.5.1.2 Regional coupling

In Hungary, transmission system operator operates joint regional platform for cross-border capacity reserve on interconnectors between Hungary and Austria, Hungary and Croatia, Hungary and Romania, Romania and Bulgaria and Bulgaria and Greece. For the time being, Serbia does not participate in this process of capacity allocation but one may expect that the capacities on the border between Serbia and Hungary will be also available on the regional platform.

4.5.2 Retail market

In 2016, total final customers' procurement and consumption amounted to 2,001 million m³. In addition, NIS spent 225 million m³ of gas they produced and this quantity was not placed in the market. 923 customers procured gas in the open market, while 10 of them were also using supply of the last resort. In total, 1,712 million m³ were delivered to them, i.e. 85.5% of the total gas volume delivered to final customers. 30 suppliers were selling the gas to them (PE *Srbijagas* with the greatest share - 87%).

In 2016, households and small customers with annual consumption lower than 100,000 m³ and with all facilities connected to the distribution system were entitled to regulated public supply. There were 33 public suppliers supplying customers at regulated prices in 2016.

The volumes delivered in order to supply customers in the open market and in the regulated market are presented in Table 4-15. In total, 12 million m³ were delivered for the supply of the last resort.

Table 4-15: Total natural gas consumption (in open and regulated markets)

	2015 million m ³	2016 million m ³	2016/2015 index
Consumed in the open market	1,514	1,712	113
Consumed in the regulated market	261	289	111

Based on the data provided by natural gas suppliers and public suppliers, average retail price in the open market in 2016, including transmission and distribution use-of-system charges amounted to 32.53 RSD/m³ while the average retail price in the regulated market amounted to 36.98 RSD/m³. For small customers' group which also includes households, the price amounted to 37.70 RSD/m³. The price in the regulated market is higher than the price in the open market primarily since a large number of customers who contact their natural gas price freely have their facilities connected to the transmission system and do not pay for the use of the distribution network or they are connected to medium pressure distribution network where the price of system use is lower than on low pressure.

PE *Srbijagas* was the supplier of the last resort selected by the Government in line with the Law for the supply of the last resort of final customers who are not entitled to public supply. Average realised retail price of the supply of the last resort amounted to 35.58 RSD/m³.

In 2016, only 3 DSOs delivered more than 30 million m³ to customers, while 22 of them delivered less than 10 million m³.

The greatest share of natural gas, i.e. 1,579 million m³ or around 79% of total quantities was sold to customers by PE *Srbijagas* in 2016. The second greatest share was sold by DC Novi Sad Gas sold 66 million m³ of gas, i.e. around 3% and YugoRosgaz JSC with 48 million m³, i.e. 2.4% of total consumed quantities in 2016. Individual share of other suppliers amounts to around 2% or below 2% of total quantities. Natural gas volumes sold to final customers by suppliers (excluding the gas both produced and consumed by NIS) in 2015 and 2016 are given in Table 4-16.

Table 4-16: Natural gas sale to final customers in 2015 and 2016

No.	Trader	2015 (000 m ³)				2016 (000 m ³)				2016/2015			
		Househ.	DHC	Industry and others	Total	Househ.	DHC	Industry and others	Total	Househ	DHC	Industry and others	Total
1	7 Oktobar, Novi Kneževac	599	0	299	898	661	0	319	980	10	0	7	9
2	Beogas, Belgrade	11,255	0	4,073	15,328	11,840	3	5,673	17,516	5	0	39	14
3	Beogradske elektrane, Novi Beograd	2,379	0	532	2,911	2,539	0	540	3,079	7	0	2	6
4	Boss petrol, Trstenik	11	0	482	493	15	0	251	266	38	0	-48	-46
5	Čoka, Čoka	239	0	321	560	262	0	343	605	10	0	7	8
6	Drugi oktobar, Vršac	5,791	1,645	12,494	19,930	6,928	0	13,712	20,640	20	-100	10	4
7	Elgas, Senta	1,009	0	500	1,509	1,100	0	695	1,795	9	0	39	19
8	Gas – Feromont, Stara Pazova	13,652	720	8,066	22,439	14,976	807	9,419	25,202	10	12	17	12
9	Gas – Ruma, Ruma	4,315	519	10,340	15,174	4,893	511	11,316	16,720	13	-2	9	10
10	Gas, Bečej	1,251	0	1,362	2,613	1,357	0	1,693	3,050	8	0	24	17
11	Gas, Temerin	4,541	0	1,402	5,943	4,703	0	1,567	6,270	4	0	12	6
12	Graditelj, Srbobran	936	596	1,185	2,717	1,037	537	757	2,331	11	-10	-36	-14
13	Grejanje, Zrenjanin	10,646	9,454	3,584	23,684	12,023	9,345	4,098	25,466	13	-1	14	8
14	Ingas, Indija	6,229	0	7,374	13,603	7,005	0	9,116	16,121	12	0	24	19
15	Interklima, Vrnjačka banja	690	0	1,390	2,080	744	0	1,457	2,201	8	0	5	6
16	Komunalac, Novi Bečej	975	0	906	1,881	1,075	0	1,132	2,207	10	0	25	17
17	Kovin – Gas, Kovin	2,423	1,097	5,422	8,942	2,807	1,129	4,232	8,168	16	3	-22	-9
18	Loznica – Gas, Loznica	1,345	3,687	3,535	8,567	1,466	3,563	4,310	9,339	9	-3	22	9
19	MET, Belgrade					0	0	14,780	14,780	0	0	100	100
20	NIS, Novi Sad	0	0	51,817	51,817	0	0	3,731	3,731	0	0	-93	-93
21	New Europe Gas, Belgrade					0	0	10,415	10,415	0	0	100	100
22	Novi Sad - Gas, Novi Sad	35,603	868	24,738	61,209	39,035	1,682	25,762	66,479	10	94	4	9
23	Polet, Plandište	1,550	0	2,621	4,171	1,643	0	2,889	4,532	6	0	10	9
24	Resava Gas, Svilajnac	364	0	1,056	1,420	379	0	675	1,054	4	0	-36	-26
25	Rodgas, Bačka Topola	914	0	5,165	6,079	1,032	0	6,879	7,911	13	0	33	30
26	Sajrus Energy, Belgrade	1,977	0	199	2,176	2,165	0	220	2,385	10	0	11	10
27	Sigas, Požega	201	0	70	271	207	0	99	306	3	0	41	13
28	Sombor – Gas, Sombor	1,485	1,393	3,747	6,624	1,688	0	4,216	5,904	14	-100	13	-11
29	Srbijagas, Novi Sad	62,889	509,038	804,637	1,376,564	69,367	496,466	1,012,708	1,578,541	10	-2	26	15
30	Srem – Gas, SrEMSKa Mitrovica	4,112	886	7,857	12,855	4,607	878	10,561	16,046	12	-1	34	25
31	Standard, Ada	622	0	801	1,423	641	42	888	1,571	3	0	11	10
32	Suboticagas, Subotica	7,576	0	14,723	22,299	8,636	0	15,183	23,819	14	0	3	7
33	Toplana – Šabac, Šabac	2,674	0	585	3,259	2,805	0	773	3,578	5	0	32	10
34	Užice – gas, Užice	401	2,573	1,366	4,341	620	4,686	1,686	6,992	54	0	23	61
35	Vrbas – Gas, Vrbas	1,409	0	2,411	3,820	1,545	0	2,645	4,190	10	0	10	10
36	Yugorosgaz, Belgrade	604	27,636	16,003	44,243	644	26,369	20,547	47,560	7	-5	28	7
37	CESTOR-VEKS, Kruševac	0	1,579	1,327	2,906	0	3,102	1,516	4,618	0	96	14	59
38	Elgras Energy Trading, Belgrade	0	7,423	12,640	20,063	0	0	34,439	34,439	0	-77	159	72
	Total:	190,668	569,115	1,015,029	1,774,813	210,445	549,120	1,241,242	2,000,807	10	-3	22	13

4.5.2.1 Supplier switching

Rules on Supplier Switching were adopted in July 2015. Based on experience in the enforcement, amendments of the Rules were prepared in 2016 and adopted in early 2017. These Rules regulate conditions and procedure for the switch of a supplier supplying final customers in line with the contract on full natural gas supply. In order to monitor this procedure, the Agency collected data on supplier switching from TSO and DSO in 2016, too and analysed difficulties suppliers and customers faced in realisation. The data on supplier switching on the transmission system relate to the metering systems which are within the PE *Srbijagas* system, since there are no final customers connected to the transmission system of Yugorosgaz-Transport.

Within the transmission system, out of 65 metering points for final customers, no suppliers were switched on any of metering points in 2016.

Most of DSOs stated that there was no supplier switch within their systems. On the distribution level, the total number of delivery points for final customers in 2016 amounted to 267,106. Out of that number, suppliers were switched on 22 metering points, where 74 million m³ were delivered. It amounts to 5.1% of natural gas quantities out of total 1,456 million m³ delivered to final customers connected to distribution systems.

In total, in 2016, suppliers were switched on 22 of total 267,158 metering points for final customers within both transmission and distribution system. Out of total delivered natural gas quantities for final customers, 3.7% gas quantities were subject to gas supplier switch.

4.6 Monitoring and regulation of quality of delivery and supply

As the Energy Law prescribes, the Agency adopts the Rules on Monitoring Technical and Commercial Indicators and on Regulating Quality of Electricity and Natural Gas Delivery and Supply. The Agency Council adopted these rules in December 2013 and they entered into force in early 2014. Above all, the aim was to prescribe the method and deadlines for the collection of data from energy entities operating in the field of natural gas transmission, distribution and supply, in order to establish the system of delivery and supply quality regulation.

Reliability of system operations and natural gas quality are defined as technical indicators of quality, while timely compliance with prescribed obligations which affect the quality of natural gas delivery and supply were set as commercial indicators of quality.

These rules define that the energy entities gather the data on the indicators of natural gas delivery and supply in a systematic and the same way and inform the Agency on this once a year.

Data collection was initiated in 2015 and continued in 2016. It was organized on the annual level in order to enable the Agency to monitor the quality of delivery and supply and compare the results of energy entities which perform the same energy activity based on submitted data and reports. Not all energy entities provided the requested data for 2016 and submitted them to the Agency.

4.6.1 Continuity of delivery

The continuity of natural gas delivery is set on the basis of the number and duration of interruptions in natural gas delivery and it is monitored both on the transmission and distribution system. The data on continuity of delivery on the distribution system was submitted by 31 DSOs. Based on the submitted data, annual indicators of continuity of delivery were calculated.

4.6.1.1 Continuity of delivery from transmission systems

The data on the continuity of delivery within transmission systems which are monitored are the following:

- number of planned and unplanned interruptions;
- duration of interruptions and
- time of announcement of planned interruptions.

In 2016, natural gas transmission system operators submitted data on the number and duration of planned and unplanned interruptions in line with the causes of interruptions and these data are given in Table 4-17. Within the transmission system of PE *Srbijagas*, there were no unplanned interruptions while there were planned interruptions which lasted 44 hours in total and, in line with the rules, planned pipe replacement and other interventions on system maintenance and expansion were stated as their cause. On the transmission system of Yugorosgaz-Transport, there were no circumstances which would lead to natural gas delivery interruption.

Table 4-17: Interruptions within transmission systems by causes

TSO	Interruption causes					
	planned interruptions		unplanned interruptions		vis major	
	number of interruptions	total duration (min)	number of interruptions	total duration (min)	number of interruptions	duration
Srbijagas	7	2,640	0	0	0	0
Yugorosgaz-Transport	0	0	0	0	0	0

4.6.1.2 Continuity of delivery from distribution systems

Natural gas distribution system operators submitted data on the number and duration of interruptions for 2016 by their causes. Both for planned and unplanned interruptions which lasted longer than 60 minutes, delivery continuity indicators SAIFI¹⁵ and SAIDI¹⁶ were calculated. The data were given in total for all distribution system for which data were obtained and maximum and minimum SAIFI and SAIDI realised in single distribution system. Summary data on the continuity of delivery from distribution system refer to 163,804 out of total 267,106 delivery point, i.e. on 61.3% delivery points.

Table 4-18: Summary indicators of continuity of distribution systems for unplanned interruptions

Interruption cause	Unplanned interruptions				
	Number of interruptions	SAIFI (number of interruptions/user)	SAIDI (min/user)	Maximum reached SAIFI	Maximum reached SAIDI
Delivery reduction from upstream system	6	0.00	0.1	0.12	34.14
Gas leak	84	0.04	6.3	2.00	15.85
Third party	183	0.02	3.86	0.54	710.00
Inadequate network capacity	0	0.00	0.00	0.00	0.00
Other reasons	0	0.00	0.00	0.00	0.07
Total	273	0.06	10.26	2.00	710.00

The results show that there were no unplanned interruptions caused by inadequate network capacity or by any other circumstance, and that the greatest number of unplanned interruptions in 2016 was caused by the third party operation.

Table 4-19: Summary indicators of continuity of distribution systems for planned interruptions

Interruption cause	Planned interruptions				
	Number of interruptions	SAIFI (number of interruptions/user)	SAIDI (min/user)	Maximum reached SAIFI	Maximum reached SAIDI
Cause within a system connected to it	5	0.00	0.21	0.03	6.98
Administrative interruption	2	0.00	0.04	0.55	0.65
Operator's interruption	27	0.11	104.85	0.31	631.92
Uncategorized interruption	32	0.01	1.57	0.11	12.13
Total	66	0.12	106.67	0.55	631.92

When continuity indicators SAIFI and SAIDI for planned interruptions are analysed, based on available data, in terms of interruption duration per user, interruptions caused by distribution system operator's activities had the greatest impact on customers.

¹⁵ SAIFI (number of interruptions/delivery point) - average frequency of interruptions per each user; it is calculated as a quotient of the cumulative number of interruptions and total number of users

¹⁶ SAIDI (min/user) - average duration of interruptions in minutes per user and it is calculated as a quotient of cumulative duration of interruption and total number of users

Summary data on delivery continuity within distribution system on the level of Serbia both in terms of planned and unplanned interruptions are given in Table 4-20.

Table 4-20: Summary continuity indicators of distribution systems

Type of interruptions	Summary continuity indicators		
	Number of interruptions	SAIFI (number of interruptions/user)	SAIDI (min/user)
Planned interruptions	66	0.12	106.67
Unplanned interruptions	273	0.06	10.26
Total	339	0.18	116.93

4.6.2 Commercial quality

Rules on monitoring quality also define the data which system operators and suppliers have to register in order to enable monitoring commercial quality.

The data which are collected are grouped in four areas which describe commercial quality:

- 1) connection, suspension and disconnection;
- 2) access to the system;
- 3) metering and charging and
- 4) customer service.

In 2016, the data on commercial quality were collected on the annual level and it still takes time for them to achieve adequate level of reliability and accuracy. Out of 33 DSOs, data were delivered by 31 DSOs which deliver natural gas to 61% of delivery points (163,804 out of 267,106).

4.6.2.1 Connection, disruption and disconnection

The data related to settling applications for connection are given in total in Table 4-21.

Table 4-21: Application for connection

Applications for connection			
Number	of filed applications		1,748
	of settled applications	approving connection	1,710
		denying connection	3
		settled otherwise	35
		Total	1,748
		within 30 days	1,713
%	of settled applications in comparison to the number of filed ones		100
	of applications approving connection in comparison to the number of settled ones		97.8
	of settled applications within 30-day deadline		98
Average time	necessary for settling an application – days		10

After the connection is constructed and all conditions for connection are met, operators have a 15-day deadline to connect the facility to the distribution system. The data on the connection of facilities are given in total in Table 4-22.

Table 4-22: Connection of facilities

Connection			
Number	of connected facilities		1,565
	of facilities connected within a 15-day deadline		1,552
%	of facilities connected within a 15-day deadline		99.0
Average time - days	Necessary for connection since the day all conditions are met		5

4.6.2.2 Access to the system

Since natural gas market has become open for all customers since the beginning of 2015, one could expect that customers' suppliers which entered the market will be submitting applications for the access to the systems to which the facilities of these customers are connected. However, DSOs did not keep adequate registries on applications for the access to the system and, therefore, no good-quality and reliable data on commercial quality were gathered.

4.6.2.3 Metering and billing

Justified objections which were submitted against billings included the following causes: inaccurate reading 86%, inaccurate metering 8%, inaccurate billing (energy section) 1%, inaccurate invoicing 1% and other 4%. Average time necessary for the settlement of objection against billing in 2016 amounted to at least 1 day and 8 days at most.

The total number of filed applications filed by users – final customers for extraordinary check of metering equipment in 2016 amounted to 141. The number of the checks made amounted to 141 (100%) of the total number of applications. Out of the number, there were 56 irregularities (40% of checks made) were noted and 53 irregularities removed (95% of the total number of noted irregularities). The number of extraordinary checks of metering equipment which were done within the prescribed deadline of 10 days amounted to 75 (53% of checks made).

4.6.2.4 Call center

Although efforts were made in order to organised data collection on this aspect of commercial quality as well, the data on call centres are still not available.

4.7 Security of natural gas supply

So as to provide long-term security of natural gas supply, it is extremely important to plan the system development adequately. Ten-year transmission system development plans have to be drafted and adopted and submitted to the Agency for approval by the TSO, i.e. by *Transportgas Srbija* LLC and *Yugorosgaz-transport* LLC. *Transportgas Srbija* LLC did not submit the ten-year transmission system development plan to the Agency. *Yugorosgaz-transport* LLC submitted the ten-year plan. In December 2016, the Agency organised public consultations and presented proposals for the upgrade of this plan and, therefore, the approval of the Agency to the *Yugorosgaz-transport* LLC plan is expected in 2017.

4.7.1 Natural gas consumption forecast

Future natural gas consumption will depend on gas price to a great extent. If the current, lower natural gas prices remain, there could be a gradual consumption growth in the following years as it was the case in 2016 in comparison to 2015. Consumption growth is also encouraged by the construction of new distribution networks in those areas which were not gasified in the past.

A considerable consumption growth could be also fostered by the construction of capacities for natural gas-fired electricity production, cogeneration plants in the first place.

4.7.2 Projects aimed at the increase of security of supply

The security of supply is considerably increased by commissioning the operation in the underground storage *Banatski Dvor* with designed withdrawal capacity of 5 million m³/day.

There are ongoing preparations for the construction of a interconnector with Bulgaria. It is planned on the basis of the Agreement on the Construction of Gas Pipeline *Niš-Dimitrovgrad-Sofia* and it would contribute greatly to the increase in the security of supply. The Agreement was signed in 2012 while the Memorandum of Understanding between the Government of the Republic of Serbia and the Government of the Republic of Bulgaria was prepared to be signed (and was signed in January 2017). The gas pipeline is expected to be around 150 km long and the capacity should amount to 1.8 billion m³ annually. The gas pipeline is expected to be operable in 2020.

In addition, connections with gas pipeline systems with other neighbouring countries can be also important for the increase in the security of supply, especially with those countries which have a more developed gas infrastructure and additional options for gas provision, such as Romania and Croatia.

5. CRUDE OIL, OIL DERIVATIVES, BIOFUELS AND COMPRESSED NATURAL GAS

5.1 Sector structure and capacities

Adopting the Energy Law in 2014, in line with the energy policy objectives, competition development was fostered in the field of oil, oil derivatives, biofuels and compressed natural gas in the Republic of Serbia so as to increase the efficiency of this sector via market mechanisms. In line with the Law, licenced energy activities in the field of oil, oil derivatives, biofuels and compressed natural gas include:

- oil derivatives production;
- oil transport through oil pipelines;
- oil derivatives transport through product lines;
- trade in oil, oil derivatives, biofuels and compressed natural gas;
- trade in motor fuels and other types of fuels on petrol stations;
- storage of oil, oil derivatives, biofuels and compressed natural gas;
- biofuels production;
- bioliquids production;
- trade in fuels outside petrol stations;
- filling vessels for liquid petroleum gas, compressed and liquified natural gas;
- trade in fuels meant for vessels and
- blending biofuels with fuels of oil origin.

5.1.1 Organisational and ownership structure of the oil sector

Naftna industrija Srbije JSC (hereinafter: *NIS*), the company dealing in oil, oil derivatives and natural gas exploration, production, processing and sales is the dominant oil and oil derivatives market player in Serbia. Vertically integrated company *NIS* has been on the stock exchange since 2010. It is owned by the Russian company "Gasprom Njeft" with the share slightly higher than 56%, by the Republic of Serbia with slightly less than 30%, while around 14% are owned by a great number of small shareholders. *NIS* deals in refinery processing of crude oil, owns the greatest retail network and the greatest storage capacities for all motor fuels and crude oil. In retail of motor fuels and other types of fuels, a considerable share is also held by Lukoil, OMV, MOL Serbia, ECO-Serbia, Knez Petrol, Petrol and smaller independent retail systems Eurogas, Europetrol, Stana Mihajlović, Golubović, AVIA, etc.

PE Transnafta transports oil through oil pipelines and was awarded with the licence for the performance of this activity for the second ten-year period in 2016.

In Serbia, there is no infrastructure for public transport of oil products through product lines except in those companies which use this means of transport for their own purposes.

5.2 Production and transport capacities

5.2.1 Production of oil, oil derivatives and biofuels

New Energy Law defined that the production of oil derivatives also includes all those technological processes which result in standardized products with prescribed quality apart from the process of production of oil derivatives by refining crude oil, by degasification or by separation of light liquefied hydrocarbons.

Until the end of 2016, there were four energy entities licensed for oil derivatives production: *NIS* which obtained the licence for this activity in 2016 for the second ten-year period, Standard gas LLC Novi Sad, Hipol JSC from Odžak and Petrol LPG LLC from Belgrade.

In addition, the Energy Law, defined biofuels production as a separate activity and, therefore, licenced activity – biofuels production now includes the processes of obtaining standardized motor fuels meant for vehicles, while the licenced activity – bio liquids production includes processes of obtaining standardized energy fuels of bio origin meant for heating and cooling.

The right to blend biofuels with fuels of oil origin is given to those energy entities owning specific energy facilities for homogenisation of these fluids and which were awarded with a licence for the performance of these activities. In the same way, activities such as filling vessels with liquid oil gases which are used for energy purposes, such as propane and propane-butane blend as well as filling vessels with compressed, i.e. liquified natural gas are introduced.

Biogor Oil LLC from Sukovo is the only energy entity licensed for biofuel production and bioliquid production. This company and *NIS* are the only entity also licensed for biofuel blending with fuels of oil origin. In 2016, three energy

entities were licensed for filling containers by liquid oil gases which are used for energy purposes – Petrol LPG LLC from Belgrade, Panon Holding LLC from Ada and Sponit LLC from Čačak.

In line with the Energy Law, oil derivatives and biofuels which are placed in the market have to comply with conditions defined by regulations on the quality of liquid oil fuels and biofuels, regulations on environment protection, technical regulations and other regulations which refer to oil derivatives and biofuel trade.

Crude oil production, import and refinery processing in Serbia are performed exclusively by *NIS*. Total crude oil and semi-products consumption from local production, import and reserves in 2016 in Serbia amounted to 3.58 million tons. Crude oil production is performed by *NIS* (Exploration and Production Unit) on 63 oil fields with 660 wells both in Serbia and in Angola. In 2016, around 0.96 million tons (28.6% of the total consumption) were produced in Serbia, around 56 thousand tons were produced in Angola (in oil deposits owned by *NIS*), and 2.405 million tons (71.4%) were imported, primarily from Russia (Ural type oil). Crude oil processing is performed in the oil refinery in Pančevo.

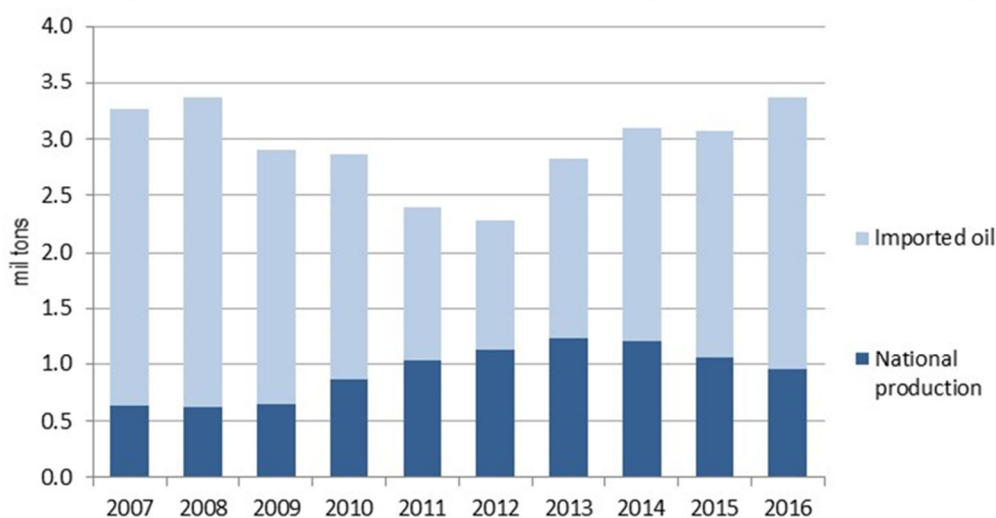


Figure 5-1: Crude oil refinery processing in Serbia in 2007 - 2016

After the completion of the first modernisation cycle in Pančevo Refinery in 2013 (light hydrocracking and hydro processing modules and production of motor fuels with “Euro 5” quality exclusively), crude oil refinery processing in 2016 reached the level of unprecedented 2008. Local crude oil production reached its maximum in 2013. In comparison to 2013 with maximum production level, in 2016, crude oil production was around 22% lower (8.7% lower in comparison to 2015). The import of crude oil and semi products recorded growth of 19.1% in comparison to 2015. The share of local crude oil in total refinery processing amounted to 18.6% in 2008, around 49.5% in 2012 and 28.55% in 2016 which is around 6% less than last year.

In Serbia, apart from being produced in Pančevo refinery, oil derivatives, or, more precisely liquid oil gases, are produced in *NIS* factory for stabilization, i.e. preparation of natural gas for transport in Elemir (propane and gas condensate) as well as in the facilities of the energy entity Standard Gas in Odžaci (propane and butane, as well as pentane-hexane fraction, i.e.), where imported gas condensate, a wide light hydrocarbons fraction is used as raw material. They are also produced in the plants of Hipol JSC which obtains propane as a side product in the process of purification of refinery, i.e. petrochemical propylene into propylene of polymer purity. The production of propane-butane blend and autogas, based on blending components is performed by Petrol LPG in their plant in Smederevo.

In comparison to the period in the past, the structure of oil derivatives production in 2015 and 2016 changed as follows: the share of gas oils increased but the share of heating oil and petrol decreased as a consequence, while the liquid petroleum gas (LPG) production remained on the same level.

Oil derivatives, as final products, except from refinery processing are also provided from import and reserves. In 2016, around 0.9 million tons of derivatives were imported (around 3% more than in 2015). Euro diesel (EN 590) and LPG were predominantly imported as well as low volumes of unleaded petrol (EN 228). In 2016, 0.7 million tons of derivatives were exported which is slightly more than last year.

Total oil derivatives consumption in 2016 amounted to around 3.9 million tons which is around 2% more than last year. Out of the volume, motor fuels production account for 2.3 million tons which represents an increase of 1.6%. Within the structure of consumption of motor fuels, petrol types account for 18.7%, gas oils for 71.8%, LPG-autogas for 9.5%. The consumption of gas oils – euro diesel and extra light (EL) Euro gas oil increased by 2.1%, i.e. 2.2% respectively in comparison to last year and the consumption of LPG was reduced by around 4%. There are no precise data on the consumption of compressed natural gas for vehicles.

Requirements in terms of quality of oil derivatives which are in the market, as well as the procedure for assessment of harmonisation of quality with the prescribed one are defined in the Rules on Technical Requirements and other Requirements for Liquid Fuels of Oil Origin, i.e. in the Rules on Technical Requirements and other Requirements for Liquid Petroleum Gas (“Official Gazette of RS”, No. 111/15). These Rules also define labelling of installations used for oil derivatives trade.

The Decree on Oil Derivatives Authentication (“Official Gazette of RS”, No.51/2015) closely prescribes the conditions, methods and procedure of authentication of oil derivatives which are traded within the market.

5.2.2 Oil and oil derivatives transport

Oil is transported mainly through the oil pipeline between the Adriatic Sea port Omisalj through Sotin in the Republic of Croatia. The connection point of the pipeline in Serbia is in Bačko Novo Selo on the River Danube and it goes to the refinery in Pančevo through Novi Sad. Oil pipeline from Omišalj to Pančevo was commissioned as a unique functional whole in 1979. A part of it in the Republic of Croatia is operated by the company Janaf, while a part of it in the Republic of Serbia is operated by PE Transnafta. In addition to the branch Sotin-Novi Sad of 63km length and the branch Novi Sad- Pančevo of 91 km length, Novi Sad terminal is also an integral part of this system, equipped with the pump and metering station and with two reservoirs of 10,000 m³ each which are used operationally for crude oil transport as well as two reservoirs of 10,000 m³ each which are used as crude oil storage.

In the period from 2005 when PE Transnafta was established until the end of 2016, around 30 million tons of oil was transported. The transport of oil from import was lower in the process of refinery modernisation – in 2011 and 2012. In 2016, around 0.72 million tons of oil produced locally and 2.2 million tons of imported oil were transported which represents a drop in the transport of local oil of around 10% and growth of transport of imported oil of around 17% in comparison to last year. PE Transnafta is the company licensed for oil transport through oil pipelines which is a regulated energy activity. A smaller scale of imported crude oil is transported by barges by the River Danube, while the local oil is also transported by road tankers from the local fields to oil refineries (these types of transport are not licensed energy activities).

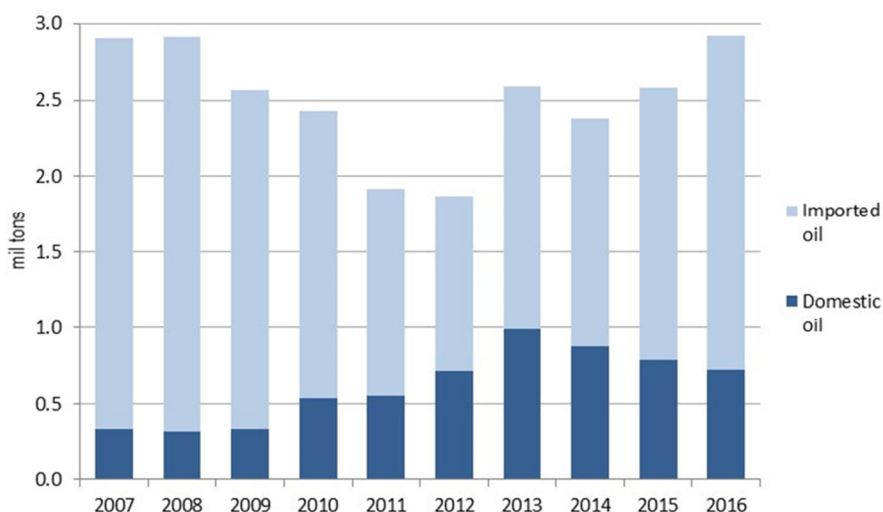


Figure 5-2: Crude oil quantities transported by oil pipeline of PE “Transnafta” in the period 2007 – 2016

If we consider the period starting from the point when the regulation of this activity started (Figure 5-2), around 13% more crude oil was transported in 2016 than last year which is slightly more than transported volumes of crude oil from 2008 when the volume level was the highest. This is primarily a consequence of the follow-up of the five-year trend of successive increase of crude oil import.

5.3 Regulation of energy entity for transport of oil and oil derivatives

5.3.1 Unbundling of energy entity for transport of oil and oil derivatives

Transport of oil via oil pipelines and planned transport of oil derivatives via product lines as regulated activities of general interest are performed by PE Transnafta at regulated prices and under prescribed and publicly announced conditions in line with principles of non-discrimination, separately from other energy-related and non-energy-related activities.

Legal unbundling is not obligatory in case of pipeline transport of crude oil. In case of PE Transnafta, there was unbundling in terms of accounting between crude oil transport and other activities for which this energy entity is licensed (trade in oil and oil derivatives, compressed natural gas and biofuels, i.e. storage of oil, oil derivatives and biofuels).

5.3.2 Access to the system for oil and oil derivatives transport

The access to the system for oil pipeline transport is prescribed by the Law. In the field of law and obligations of the transport system operator and system users, it is regulated in more detail by the Transport Network Code. The same code also prescribed physical-chemical characteristics of crude oil which may be transported via pipeline system, technical conditions for safe system functioning; rules of procedure in case of emergency; metering method, functional requests and meter accuracy classes. In 2010, with the approval of the Agency, PE Transnafta adopted Transport Network Code. This Code was applied even after the new Law entered into force without significant amendments necessary to be made. A commission was appointed in PE Transnafta for monitoring the enforcement of the code on oil transport via oil pipelines, but the commission is not active. Since there are still no product lines publicly used, the conditions were not created for the adoption of the relevant code.

In line with the Energy Law, energy entities performing oil transport via oil pipelines or oil derivatives transport via product lines are obliged to set the dynamics of construction of new transport capacities and of reconstruction of existing ones, the sources of funds and other conditions for the transport system development within the development plan. In addition, they should set the programmes and measures for the reduction of losses within the transport system and they are responsible for the realization of the development plan. The Agency approves the development plan of the system for transport of oil via oil pipelines and oil derivatives via product lines. In 2016, PE Transnafta did not submit the development plan to the Agency for approval purposes.

In the previous five-year development plan, at the time when the Agency was not legally obliged to give approval to it, PE Transnafta envisaged product line construction in several phases. After the completion of the final phase, oil derivatives will be transported on the route from Sombor via Novi Sad, Pančevo, Smederevo, Jagodina to Niš including an independent branch towards Belgrade. The construction of the line would enable pipeline connection between Serbian refineries with storage installations and create conditions for safer, more secure and more environment friendly supply of the market in motor fuels. Activities on the preparation of technical documentation for the section of the product line – Pančevo-Smederevo which were ongoing during 2015 were in the final phase in the end of 2016 and the procedure for the award of construction permit was initiated.

International project pipeline Constanza – Trieste (PEOP) is on standby.

5.3.3 Transport use-of-system charge

In 2016, the Council of the Agency approved the decision on the use-of-system charge of the system for oil transport via oil pipelines of PE Transnafta which was valid as of July 1, 2016.

Table 5-1: Transport use-of-system charges

Transnafta	Oil pipeline branch	31/12/2015	31/12/2016
Tariff "energy source" (RSD/t/100 km)	Sotin – Novi Sad	316.05	224.39
	Novi Sad – Pančevo	210.69	156.46

The current charges and chronological review of oil pipeline use-of-system charges are available on the website of the Agency (www.aers.rs).

5.4 Oil and oil derivatives market

Energy trading activities in the field of oil derivatives and biofuels were primarily regulated by the regulations in the field of trade and in the field of energy. Apart from traditional trade in motor fuels and other fuels on petrol stations, the Energy Law recognises trade in fuels out of petrol station as retail in fuels, i.e. fuels which are not used for vehicles, except for sport planes. In such a way, the supply of sport planes with jet fuels and direct supply of final customers with fuels for heating and cooling, such as heating oil, heating bio oil, propane, propane butane blend, etc. The same regulations regulate the trade in oil, oil derivatives, biofuels and compressed natural gas as a traditional wholesale activity which, in case of some fuels, except for general qualitative conditions prescribed, also has quantifying conditions defined, i.e. certain storage capacities which are used in order to trade in these fuels. Energy entities holding his licence are entitled to perform trade on the local and foreign level and they complied with minimum technical conditions for this. The trade in fuels meant for vessels is defined as specific wholesale category and it is regulated also by regulations in the field of fire protection as well as in the field of trade. The status of an energy entity which performs this activity can be awarded to companies which were awarded with the status of an operator of port activities exclusively in line with the regulations which regulate port activities and sale in national

waters. In such a way, big ships for local cruise and technical vessels in ports and water flows in the Republic of Serbia had their supply enabled.

In the regulations in the field of trade, the storage of oil, oil derivatives and biofuels are no longer recognised as trade services, but they are still licensed activities. Energy entities holding this licence are entitled to offer the service of storing fuels owned by traders, final customers, the Energy Reserves Authority – appointed to establish mandatory oil and oil derivatives reserves. They store fuels in adequate reservoirs.

There is free import of oil derivatives and the volume, as well as the necessary structure of storage capacities for each of oil derivatives and biofuels type which are imported or traded within the Serbian market by traders are defined by regulations which arise from the law regulating trade (Rulebook on Minimum Technical Conditions for Oil Derivatives and Biofuels Trade (“Official Gazette of RS”, No. 68/13 and 81/15). These regulations also regulate minimum technical conditions for the trade in motor fuels and other fuels on petrol stations (stations for the supply of vehicles, trade in fuels meant for vessels and trade in fuels out of petrol stations). There is full liberalisation of all energy activities in Serbia.

The development of oil and oil derivatives market was greatly influenced by the new Law on Commodity Reserves (“Official Gazette of RS”, No. 104/13 and 145/14) and enabled the implementation of the directives 2006/67/EC and 2009/119/EC in the local legislation. These directives relate to the provision of minimum mandatory oil and oil derivatives reserves.

The Directive 2009/28/EC which regulates the mandatory content of biofuels in motor fuels, aimed at the reduction of greenhouse gases, has not been implemented in the local legislation yet. The renewable energy sources action plan for the construction of new capacities fuelled by renewable energy sources prescribes the obligation to reach 10% of biofuels share in motor fuels by 2020, but the share of biofuels in oil derivatives market in 2016 is still negligible.

5.4.1 Wholesale market

Until the beginning of 2017, the licence for trade in oil, oil derivatives, biofuels and compressed natural gas was held by 39 energy entities, i.e. two licences less than last year and, thereby, the reduction trend of reduction of the number of energy entities in the past six years is followed. The trend was sudden in the first phase and moderate in the second phase. The trend is indicated in figure 5-3. The main reasons for the reduction of the number of licenced energy entities for this energy activity in the first phase, i.e. in the period 2010-2014 were stricter regulations in the field of trade which regulate the minimum technical requirements for this activity in 2011 and in 2013, as well as the full implementation of these regulations in 2014, when licenses were withdrawn most often for these reasons upon the proposal of market inspectors. In the second phase which includes 2015 and 2016, there was a follow-up of slight annual trend of reduction of number of licenced entities for trade as a result of expected fluctuation of the number of energy entities present in the oil, oil derivatives, biofuels and compressed natural gas market under set conditions.

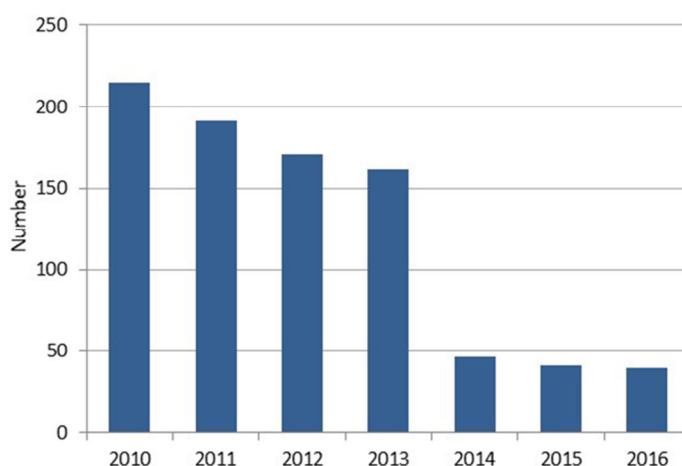


Figure 5-3: Number of active licenses for trade in oil, oil derivatives, CNG and biofuels

The number of energy entities licensed for the storage of oil, oil derivatives and biofuels has not changed. NIS was the biggest company out of 20 licence holders.

5.4.2 Retail market

The 2014 Law changed the term of retail in motor fuels and other fuels on petrol stations. Namely, apart from oil derivatives, the fuels such as biofuels, gas oils and compressed natural gas are included in the term motor fuels. Apart from encompassing road vehicles, the term vehicles also includes small vessels. Since the beginning of 2017, for the fuel supply of small vessels, adequate regulations were not adopted in the field of fire protections. Therefore, there are no registered stations for the supply of this type of vessels in the list of licences. The sale of heating oils on petrol stations is forbidden as of early 2015. There were 370 energy entities licensed for retail by the end of 2011, while there were 470 of them at the end of 2016. The increase in the number entities licensed for the performance of this activity is to a small extent the result of construction of new petrol stations as well as to sporadic transformation of internal stations into public stations, and to a larger extent due to follow-up of a several-year trend of the lease of a greater number of petrol stations from *NIS* and Lukoil system to new leaseholders. Thereby, the number of market players was increased by using practically the same number of petrol stations, i.e. slightly higher number of petrol stations, as well as due to intensified activities of the ministry's control department which is authorized for trade. As a result of an intensified inspection, most of participants in this market applied for the license, even those who used to operate illegally.

There were four energy entities licensed for the trade in compressed natural gas (wholesale and retail) until the end of 2015.

Until the end of 2016, there were eight energy entities licensed for trade in compressed natural gas (both wholesale and retail) and thereby the number of entities dealing in this type of trade was doubled in comparison to last year. The increase in the number of compressed natural gas traders as well as of the number of petrol stations is an indicator of expansion of use of this energy source which substitutes other types of motor fuels. The fact is that this type of motor fuel has not been burdened by excise duties and taxes so far, in contrast to fuels which serve as competitive ones.

There are two energy entities licensed for trade in fuels outside petrol stations and they deal in trade in gaseous energy fuels exclusively.

There is still no energy entity dealing in the trade in motor fuels for sport airplanes.

6. ACTIVITIES OF GENERAL INTEREST AND CUSTOMERS PROTECTION

6.1 Activities of general interest

Legal framework for the performance of activities of general interest, i.e. for the provision of public service in the energy sector of Serbia is set by two main laws: Energy Law and Law on Public Enterprises.

The Law on Public Enterprises ("Official Gazette of RS" No. 15/16) regulates the activities of general interest in several branches of economy, energy being one of them. On the other hand, definition of an activity of general interest in the energy field and the supply of electricity (guaranteed supply) and natural gas (public supply) is regulated by the Energy Law. Electricity production is not an activity of general interest. Guaranteed electricity supply is not a specific activity, but a public service offered by a supplier appointed by the Government of RS in line with the Energy Law. The Law on Public Enterprises defines that an activity of general interest can be performed by a public enterprise. It can also be performed by corporations with a public enterprise, Republic of Serbia, autonomous province or local self-government unit as the only owner. A daughter company with such corporation as the only owner of it may also perform these activities. In addition, in line with the Law on Public Enterprises, these activities may be performed by other corporations or entrepreneurs appointed by the competent body.

The main objective of the establishment and operation of public enterprises is to secure continuous performance and development in performance of activities of general interest and regular compliance with the demand of customers in terms of products and services, secure technical and economic harmonisation of the system and its harmonisation of its development, with adequate profit and gaining any other interest prescribed by the law.

The 2014 Energy Law defines 29 energy activities with 8 of them defined as the activities of general interest. In the field of electricity, they include the following: electricity transmission and transmission system operation, electricity distribution and distribution system operation. In the field of natural gas, they include: natural gas transmission and transmission system operation, natural gas storage and natural gas storage operation, natural gas distribution and distribution system operation and natural gas public supply. In the oil field, they include: oil transport by oil pipelines and oil derivatives transport by product lines.

6.2 Customer protection

The protection of electricity and natural gas customers who use the services of general economic interest is provided more generally by the Law on Customer Protection ("Official Gazette of RS", No. 62/14 and 6/16) which provides protection to customers who are natural persons. In more detail, the protection of all customers is also provided by the Energy Law and bylaws adopted on the basis of this Law which regulate in more detail: general conditions for electricity and natural gas delivery and supply, regulation of price of electricity transmission and distribution, natural gas transmission and distribution and price of regulated supply of households and small customers, as well as the provision of administration-legal protection of customers with administrative procedures related to the connection of facilities to the system and administrative procedure related to the approval of access to the system.

Monitoring enforcement of documents adopted by the Agency

In line with the jurisdiction set by the Energy Law, in 2016, the Agency estimated the regularity of enforcement of methodologies adopted by the Agency and the regularity of setting regulated use-of-system charges and regulated electricity and natural gas prices. It is a precondition for the Agency approval of a legal act on use-of-system charges and legal acts on prices of guaranteed and public supply. When giving approval, the Agency provided for the adoption of prices adopted in line with the Energy Law in compliance with set deadlines so as the rights of final customers could be protected which is set by the law regulating customer protection and the Energy Law. Except for the implementation of general mechanisms for final customers protection, the Agency analysed the regularity of implementation of prescribed tariffs in separate cases, acting upon complaints of customers and system users. In their files submitted to the Agency, they denied the regularity of stating prescribed tariffs in suppliers' and system operators' bills, denied the regularity of classifying customers in defined groups and categories in line with methodologies adopted by the Agency, etc.

6.2.1 Regulation of price of supply of households and small-scale customers

One of the measures of protection of households and small-scale customers is set by the Energy Law, i.e. the supplier to whom such final customers may return (universal service) is provided and the price of such supply is regulated. Electricity and natural gas market in the Republic of Serbia was opened in several stages and only households and small electricity and natural gas customers are entitled to regulated guaranteed/public supply as of 01/01/2015. Guaranteed/public supplier is appointed by the Government of RS in a manner, within a procedure and within deadlines set by the Law.

PE EPS is the guaranteed electricity supplier for the whole territory of Serbia. By mid-2016, guaranteed supply was provided by "EPS Snabdevanje" LLC Belgrade as a daughter company established by PE EPS in March 2013. In June 2015, by the change of status, the company was merged with PE EPS. From that moment, PE EPS continues

supplying households and small-scale customers at regulated prices. PE *EPS* has rights and obligations of the guaranteed supplier until a guaranteed supplier is appointed by the Government of RS. The change of status was registered on 01/06/2016 in the Registry of economic entities.

Natural gas public supply is performed by 33 public suppliers. Each of them is on the territory of the natural gas distribution company which it constitutes the same legal person (natural gas distribution companies have less than 100,000 customers each). In the second half of 2012, the statute of PE *Srbijagas* was amended and a contract on the transfer of activity of natural gas public supply was signed with several companies and enterprises. This enabled the Government of RS to appoint energy entities which may perform this activity. All 33 energy entities complied with the conditions in the end of 2012 and in early 2013 and were licensed by the agency for the performance of natural gas public supply. The number of public suppliers has not changed since.

The prices of guaranteed and public supply are approved by the Agency in line with the Law. Bylaws also regulate the content of the bill for regulated supply.

6.2.2 Rights of final customer to access to data on one's own consumption

The final electricity and natural gas customer is the owner of data on one's own consumption. The system operator to whose system the facility of the customer is connected is responsible for the operation of metering equipment and accuracy of metered data. In the past, the system operator was only obliged to submit the metering data to the customer and to the supplier with whom the customer signed the supply contract (the current supplier). In the open market, the customer is interested to have all potential suppliers have the same basis on his/her consumption in order to prepare their offers. The law prescribes that the customer may authorize any supplier (not only the current one) to ask and receive the data on his/her consumption from the operator.

The decision on the procedure for the exercise of the right of final customer to have access to the data on one's own electricity and natural gas consumption was adopted by the Agency in July 2016 in line with its jurisdiction arising from the Energy Law. A part of this decision includes the templates for indicating data on a final customer's consumption so as interested suppliers could have the same data indicated and in the same way, too.

The operator is obliged to indicate the requested data free of charge within the defined deadline using the same template, in line with the defined template and submit them to the customer and a potential supplier once the customer authorizes him. Final customers are thus enabled to receive comparable offers from potential suppliers since these offers are now prepared on the basis of reliable data on the customer's consumption in the long-run (for the last 24 months). The types of data are standardized as well as their template.

This procedure is expected to be more efficient after more broad implementation of advanced metering systems. Direct access to the data will be available with relevant codes for authorized persons. This is already in function with the electricity Transmission System Operator.

6.2.3 Supplier switch

The Rules on Supplier Switching ("Official Gazette of RS", No. 65/15) which were adopted in 2015 regulate the right to supplier switching, procedure and deadlines in case supply is performed on the basis of a contract on full supply. In 2016, there were several complaints filed with the Agency, either directly by customers who failed to switch their supplier or by new suppliers. The Agency gave instructions for adequate enforcement of the rules in each concrete case and imposed acting in line with the Law and the rules. In 2016, there were two consultations organized by the Agency with energy entities. Based on the results of complaints and consultations, the Agency prepared amendments to the Rules and they entered into force in early 2017. In line with the jurisdiction defined by the Law, the Agency prepared templates for customers instructing them for the enforcement of the rules in terms of the submission of application and more efficient execution of the procedure. New amendments of the rules enabled the initiation and completion of the supplier switching procedure upon customer's request who is left without a supplier within a timeframe which may be even shorter than 21 days. Parties in the procedure are thereby imposed to act urgently when acting in some of the cases. The idea was to reduce the number of customers who would otherwise be exposed to bear higher costs of the supply of the last resort which is limited to 60 days at most. Such amendments to the Rules was also possible since there was significant progress with the system operator made in the registration and organization of data base related to metering points of final customers.

6.2.4 General terms and quality of delivery and supply

The Decree for Conditions of Electricity Delivery and Supply ("Official Gazette of RS", No. 63/13) and the Decree on Conditions for Natural Gas Delivery and Supply ("Official Gazette of RS", No. 47/06, 3/10, and 48/10) which are adopted by the Government of RS on the basis of the Energy Law serve to define general conditions of delivery and supply in more detail. They also regulate: the content of the contract, rights and obligations of market players (energy customers, suppliers and delivery), content of delivery bill and supply bill, depending on supply conditions, conditions under which some customers cannot be disconnected from the network in case of unsettled liabilities for the withdrawn as well as other elements prescribed by the Law.

The Agency monitors the quality of delivery and supply and the quality of electricity and natural gas in line with the Rules on Monitoring Technical and Commercial Indicators and Regulating Quality of Electricity and Natural Gas Delivery and Supply which was adopted in the beginning of 2014. The Agency collects the relevant data, analyses relevant indicators, works on the improvement of quality of data with energy entities and prepares periodical reports in line with the Law. In the next phase, the following will be prescribed: the method of setting certain quality indicators and requested level, method of estimating achieved results compared to targeted level. All this will be included in the amendments to the Rules, as of 2017, in line with the Law. Achieved indicators are referred to in more detail in subsections 3.6 and 4.6.

6.2.5 Settling complaints and assistance in mediation procedure

The Agency also performs entrusted activities related to administrative-legal protection of customers by settling complaints in line with the Energy Law. In 2016, the Agency settled customers' complaints against documents adopted by system operator. These documents were on denial, i.e. on failure to adopt a decision upon an application for the connection of a facility to the system. The most common complaints were filed due to failure of a competent energy entity to adopt a decision within the first instance procedure (the so-called "administrative silence") but also due to dissatisfaction in terms of defined technical conditions and connection costs. The largest number of complaints were filed against electricity distribution system operator's legal acts. On the other hand, there was a negligible number of complaints against the legal acts of the natural gas distribution system operator.

In 2016, deciding upon filed complaints, the Agency annulled the decisions adopted in the first instance in most cases. It was due to unlawfulness of the legal acts, i.e. due to numerous breaches of procedure and legal regulations by the system operator. Although the number of complaints in 2016 was slightly smaller than in previous years, there is still a trend of annulment of a large number of first-instance decisions due to breach of procedure which indicates the necessity to provide education for the experts working for the system operator.

In addition to their right to file a complaint to the Agency, customers are also entitled to administrative-judicial protection against second-instance decisions of the Agency within the appeal procedure in the field of administrative procedures related to the connection to the system and access to the system. There was a negligible number of filed complaints to the Constitutional Court of RS against decisions of the Agency adopted within the second-instance procedure in 2016. The number was smaller than last year and all complaints against the decisions of the Agency were denied by the Constitutional Court of RS.

Even in 2016, as well as in the previous years, in line with the jurisdiction, the Agency offered all necessary clarifications and issued opinions on the enforcement of the regulations adopted by the Agency. The Agency acted upon complaints of customers who deny the regularity of actions undertaken by energy entities when complying with obligations prescribed by the Energy Law. The Agency also acted upon other customers' and system users' files, regardless of the fact whether natural or legal persons file them.

In addition, in case of dispute between energy entities or between an energy entity and a system user, which is settled pursuant to the law regulating mediation, the Agency offers expertise to dispute parties as well as the available data so as necessary documentation is prepared for the mediation procedure. In 2016, there were no mediation procedures where the Agency participated upon request of any of the parties.

6.2.6 Special modes of protection of most energy-wise vulnerable customers

The Energy Law defines conditions and method of award of special modes of protection of energy-wise vulnerable customers from the household category (conditions for the reduction of monthly bill for final customers within this category) on the basis of criteria set by the Government of RS in detail. Apart from general norms related to the protection of all electricity and natural gas customers, the Law also recognises the category of "energy (-wise) protected" customer which is a broader term than the "energy (-wise) vulnerable customer" since it covers, apart from customers entitled to social care, customers who need not be members of this category but still may have their lives or health endangered in case of electricity or natural gas supply disruption or limitation.

In 2016, the assistance to most energy-wise vulnerable customers in the Republic of Serbia was offered in line with the Decree on Energy-Wise Vulnerable Customer which was adopted by the Government of RS on December 31, 2015 and which entered into force on January 1, 2016. In contrast to the former Decree, the aim of this Decree is to include as high number of customers as possible and to increase the level of protection of vulnerable population categories.

Conditions for the reward of the energy vulnerable customer status

The Decree defines criteria and: conditions for the award of the energy vulnerable customer status, content of the application for the award of the status and evidence accompanying the application, procedure, deadlines, manner of issuance and content of decision on the award of the status, content and scale of right to reduced monthly bill, award of the status due to health condition, method of registration of these customers as well as the method of provision of funds for the protection of energy vulnerable customers.

The funds necessary for customers' protection are provided from the budget of the Republic of Serbia. The protection of the most vulnerable customers from the budget creates conditions for a prompter energy market development.

The Decree on Energy-Wise Vulnerable Customer defined that the status of energy vulnerable customer is awarded to a customer who belongs to household category (individual, family) living in one housing unit with one metering point where electricity, i.e. natural gas is metered. This customer consumes maximum electricity or natural gas quantity in line with this Decree. The status is also awarded to a household with a member who can have his health or life endangered by electricity or natural gas delivery suspension.

Only households which do not own some other housing units, except for the housing unit which corresponds to the needs of the household by its structure and space are entitled to the award of the status of energy vulnerable customer.

The main criteria for obtaining the status of the energy-wise protected customer are the following:

- 1) total monthly income of the household;
- 2) number of household members and
- 3) financial status.

The total monthly income of households represents the condition for the award of the status of energy vulnerable customer ("Official Gazette of RS", No. 88/16). The total monthly income is harmonised twice a year – on April 1 and October 1 of the given year. They are harmonised with the customer price index in the last six months. It is done in line with the data provided by the Serbian Statistical Office. The table below indicates the maximum monthly income which enables the award of the status of energy vulnerable customer until and after November 1, 2016.

Table 6-1: Total monthly income as the condition for the award of the status of energy vulnerable customer in 2016

For a household with the following number of members	Total monthly income up to _ RSD	
	until October 31	as of November 1
1	13,595.68	13,677.15
2-3	19,795.00	19,913.63
4-5	25,990.25	26,146.01
6 and above 6	32,684.20	32,880.08

The Decree on Energy-Wise Vulnerable Customer also prescribes the content of the application for the award of the status of energy vulnerable customer as well as the evidence accompanying the application. If an applicant is a beneficiary of social care allowance and/or children allowance, the customer files a verified copy of the decision awarding him/her one of these rights.

Rights of energy vulnerable customers

Energy vulnerable customer may be awarded with the discount for monthly bill for certain quantities of:

- 1) kWh of electricity for all months and
- 2) m³ of natural gas for the following months: January, February, March, October, November and December

as it is indicated in the table below:

Table 6-2: Maximum rights to discount for monthly bill for consumed quantities

For a household with the following number of members	Maximum rights to discount for monthly bill for consumed quantities (MPU)	
	Electricity for all months	Natural gas for: January, February, March, October, November and December
	kWh	m ³
1	120	35
2-3	160	45
4-5	200	60
6 and above 6	250	75

The rights to discount for monthly bill also depends on realized monthly consumption reduced to 30 days in comparison to the quantity for which a certain household has maximum right for discount (MPU) in Table 6-2 in the following manner:

Table 6-3: Right to discount for monthly bill depending on consumption

ELECTRICITY		NATURAL GAS	
Realized monthly consumption given for 30 days OMP	Bill discount based on quantity	Monthly consumption given for 30 days	Bill discount based on quantity
$OMP \leq 4 * MPU$	MPU ¹⁷	$OMP \leq 2 * MPU$	MPU
$4 < OMP \leq 6.5 * MPU$	$0.5 * MPU$	$2 < OMP \leq 2.5 * MPU$	$0.5 * MPU$
$OMP > 6.5 * MPU$	0	$OMP > 2.5 * MPU$	0

Energy vulnerable customer is entitled to monthly bill discount for the RSD amount:

- 1) for electricity – multiplying quantities in kWh for which the customer is entitled to have discount by higher daily tariff from the green zone for customers from category “Mass consumption with two-tariff metering” increased by 10% from the price list on regulated electricity price for the supply of households and small scale customers to which the Council of the Energy Agency of the Republic of Serbia gave approval and which is valid at the moment.
- 2) for natural gas – multiplying quantities in m³ for which the customer is entitled to have discount by the tariff “energy source” for customers from the category of households which are supplied by PE *Srbijagas* increased by 5% from the public supply price list of PE *Srbijagas* to which the Council of the Energy Agency of the Republic of Serbia gave approval and which is valid at the moment.

If monthly bill is lower than the calculated discount of monthly bill from this Decree, the discount will be calculated to the level of real monthly bill.

One of new provisions of the Decree includes the introduction of the status of energy-wise vulnerable customer due to health condition. The status of energy vulnerable customer to whom health or life may be endangered because of his health condition if electricity in case of electricity delivery suspension is awarded by submitting relevant medical documentation to the self-government units. The electricity distribution system operator cannot suspend electricity delivery if a member of a household which is energy-wise vulnerable customer uses medical equipment necessary for health preservation which requires electricity supply.

Number of energy vulnerable customers in 2016 and realized bill discounts

Based on the data provided by competent departments of the Ministry of Mining and Energy, the number of energy vulnerable customers who exercised their right to bill discount in 2016 was the following:

Table 6-4: Exercised right to bill discount in 2016

	Customers entitled to reduction	
	Number of customers	Annual amount 000 RSD
Electricity	68,067	762,575
Natural gas	96	575
Total	68,163	763,150

The enforcement of the Decree on Energy Vulnerable Customer started in January 2016. By the decision of the Constitutional Court defining that households exercise their right as a vulnerable customer within administrative procedure, bill discount could no longer be exercised on the basis of Ministry of Labour, Employment and Social Issues and certificates. All households were obliged to submit an application with local self-administration as of January 1 in order to be awarded with vulnerable customer status. The application is reviewed within the administrative procedure and the status is approved by the issuance of a decision. This is why the number of customers who were exercising their right to bill discount for delivered electricity and natural gas grew constantly month by month in 2016. In the field of electricity, the number was between 4,548 in January and 68,067 in December.

¹⁷ MPU = Maximum electricity consumption pursuant to the Decree

In the period of Decree enforcement from January till December 2016, there were oscillations depending on the season which indicate that some customers use electricity for heating purposes. For example, in December 2016, 88% of these customers who were awarded with the vulnerable customer status met the condition for 100% reduction. Additional 8% were entitled to 50%, while 4% of households exceeded the consumption limit and were not entitled to bill discount. During summer months, the statistics is much better (data for July 2016) since 96.5% of all households who were entitled to the vulnerable customer status met the condition for 100% of discount, 2.3% were entitled to 50%, while only 1.2% were not entitled to discount due to consumption exceeding the limit.

The number of electricity vulnerable customers in 2016 who were awarded with the right to have discount to the bill is lower than the expected one. According to the data from the EU statistics on income and life conditions (SILC), in 2016, in Serbia, every fourth citizen above 18 years old was exposed to poverty risk. The analyses show that a large number of households is exposed to energy poverty risk. Around 15.2% of total population cannot provide adequate heating temperature in their apartments. If one bears in mind that the average number of household members amounts to 2.7, one may conclude that over 400,000 households are not in a position to provide the heat to their homes adequately. In addition, there is a highlighted problem of undue electricity bill settlement. Delay in public utility liability settlement is present with 34.8% of the total population. In addition, 23.4% of the total population lives in life space with leaking roof, damp walls or floor or with rotten window frames. Based on all these three indicators and bearing in mind the mentioned average number of household members, one may conclude that between 550 and 600,000 households are facing the energy poverty risk.

The exposure to poverty risk is not the same as the poverty itself (the so-called absolute poverty). According to the records of the competent ministry on the number of families who are beneficiaries of social care allowance and beneficiaries of children allowance in July 2016 (there are no major changes in data in the beginning of 2017), the number amounts to around 250,000 households¹⁸ which we can refer to as to energy vulnerable ones. However, if one adds people with the lowest pensions, single breadwinners, beneficiaries of custodial care and assistance as categories who are in most cases and to the greatest extent exposed to energy poverty risk to this number, the number of individuals and families would be much higher. Based on some reviews and data analyses from previous years, one could say that the number is between 300 – 400,000 households¹⁹.

Table 6-5: Review of beneficiaries of social care allowance in 2016

Number of family members	Number of families	Persons in total	Amount 000 RSD
1	40,394	40,394	312,244
2	22,509	45,018	223,901
3	13,402	40,206	156,295
4	15,030	60,120	203,888
5	7,417	37,085	116,144
6 and above 6	5,349	32,094	96,286
Total	104,101	254,917	1,108,758

Table 6-6: Review of beneficiaries of children allowance in 2016

For a child		Number	Amount 000 RSD
First-born		152,375	434,428
Second-born		130,760	367,336
Third-born		51,970	146,501
Fourth-born		15,858	44,944
Total	children	350,963	993,209
	families - beneficiaries	185,851	

¹⁸ This number bears in mind that there is an overlap of families who are beneficiaries of both allowances.

¹⁹ In 2016, in Serbia, there were 1,727,629 pensioner with average monthly pension of RSD 23,642. Out of the number, there are 196,000 pensioners who used to work in agriculture with average pension of RSD 10,480.

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7. AGENCY ANNUAL REPORT

7.1 Basic data about the Agency

7.1.1 Establishment of and the scope of work of the Agency

The Energy Agency of the Republic of Serbia (Agency) was established pursuant to the 2004 Energy Law, which provided for the harmonisation of our legislation with the EU regulations at that time.

The Agency was registered at the Commercial Court in Belgrade on June 16, 2005 and started working on August 1, 2005 when the conditions for financing its work were met.

Pursuant to the 2011 and 2014 Energy Law, the Agency continued its work of a regulatory body, established so as to improve and guide energy and natural gas market development based on principles of non-discrimination and efficient competition, through the establishment of a stable regulatory framework, as well as so as to perform other activities stipulated by the law.

By the adoption of the 2014 Energy Law, national legislation in the energy field was harmonized with the 3rd energy package of regulations on internal energy market and the *acquis* of the EU. The role of the Agency was strengthened significantly and its jurisdiction was expanded.

The most important Energy Agency jurisdiction areas divided in groups include the following:

Certification and licencing

- certification of the transmission/transport system operator and
- licence issuance and withdrawal, keeping a licence registry and adoption of a regulation on the level of costs of licence issuance.

Price regulation

- adoption of methodologies for setting:
 - energy network use-of-system charges;
 - prices of regulated electricity and natural gas supply;
 - prices connection to network systems and
 - methodologies for billing electricity which was consumed without authorisation;
- approval of regulated prices;
- setting price of regulated ancillary services;
- monitoring the enforcement of methodologies and approved regulated prices;
- setting the level of compensation paid to a customer due to deviation from the prescribed quality of electricity and natural gas delivery and supply and
- drafting a report on the necessity of having further:
 - price regulation in the field of electricity supply of households and small customers;
 - price regulation of capacity reserve for system services – secondary and tertiary control and
 - necessity to maintain supply of the last resort.

Energy market monitoring

- adoption of rules and other documents:
 - supplier switching rules;
 - rules on quality of electricity and natural gas delivery and supply;
 - regulation on the level of costs of energy licence issuance;
 - regulation on the method of procedure for imposing measures; keeping a registry of imposed measures;
 - regulation on exception for new interconnector overhead lines and gas infrastructure;
 - procedure of customers' entitlement to access the data on one's own consumption;
 - instructions, recommendations and guidelines for the enforcement of the regulations within the Agency jurisdiction;;
- approval of rules:
 - electricity transmission and distribution network code;
 - natural gas transmission and distribution network code and natural gas storage code;
 - electricity market rules;
 - on cross-border capacity allocation;
 - on publication of key market data;
- approval of other regulations:
 - multi-year development plans of transmission, distribution and transport system;

- procedure for the connection to the transmission system;
- harmonisation programmes for non-discriminatory behaviour of the system operator;
- plans for the transfer of metering devices to distribution system operators;
- regulation of a transmission system operator on the level of fee for the guarantee of origin;
- regulation of the system operator on the non-standard service prices;
- giving opinion on plans for implementation of smart metering systems;
- monitoring compliance of licenced energy entities with obligations and monitoring market functioning and
- contribution to harmonisation of procedure of the exchange of data relevant for the most important market processes in the region.

Deciding upon appeals and customer protection

- deciding upon appeals:
 - against denial of the access to the system and
 - against a decision of the system operator upon an connection application or against failure to adopt a decision on it;
- considering files submitted against the system operators' and suppliers' failure to comply with obligations;
- providing professional support and data to applicants who settle their disputes via mediation;
- imposing measures and keeping a registry of imposed measures;
- launching offence procedures and economic offence procedures;
- examining circumstances and launching procedures with competent bodies in case of competition offence and market limitation offence and
- taking measures so as to make the list of practical data on their rights available to system users and customers.

International cooperation

- The Agency cooperates with regulatory authorities from other countries, as well as with other international bodies and organisations in line with the law and ratified international agreements and the decisions of the Council aiming at:
 - development of the regional and Pan-European electricity and natural gas market;
 - encouraging operational agreements ensuring optimal network operation;
 - achievement of equal conditions for all market participants;
 - promoting coupling of organised electricity markets;
 - common cross-border transmission capacity allocation;
 - creating conditions for an adequate level of cross-border capacities in the region and among regions;
 - coordinated implementation of network codes and congestion management rules;
 - contribution to the compatibility of data exchange procedures and
 - improvement of its operations in line with positive international experience and standards.

The Agency provides non-discriminatory access to the systems through effective competition and efficient operations of electricity and natural gas markets.

Within its scope of work, the Agency monitors:

- efficient accounts unbundling in licenced energy entities;
- existence of cross-subsidising among energy entities which deal in different energy activities within the same energy entity;
- compliance with energy entities' obligations prescribed by the Law;
- application of the rules for cross-border transmission capacity allocation in cooperation with regulatory bodies from other states;
- publishing the data on cross-border transmission capacities and on system use by transmission and transport system operator;
- enforcement of mechanisms for the removal of congestions in the transmission or transport system;
- conditions and costs for the connection of new electricity producers to the transmission or distribution system, so as objectivity, transparency and non-discrimination could be guaranteed, in particular having in mind the costs and benefits from different technologies for electricity generation from renewable energy sources and combined electricity and heat energy production;
- the time necessary for system operators to connect a facility to the system, i.e. the time necessary to remove breakdown in case of delivery disruption;
- the way reserves are used within the system;

- transparency and competition level, in cooperation with the bodies authorised for competition issues;
- functioning of an organised electricity market as well as the organised market operator's compliance with the principles of transparency and non-discrimination;
- the level of market openness and its efficiency and competence in wholesale (among suppliers) and retail (final customers supply);
- the conditions for access to the storage, linepack and use of other ancillary services in the natural gas sector;
- compliance with customer protection measures defined by this law and
- realisation of development plans.

7.1.2 Organisation of the Agency

The Energy Agency of the Republic of Serbia is independent in performing organisational activities and other activities which enable the performance of the activities stipulated by the law. Pursuant to the Law, the Council of the Energy Agency (hereafter: the Council) adopts all the decisions on the issues under the jurisdiction of the Agency by majority of votes among Council members, except if it is otherwise stipulated by this law or Statute.

Within the Council, there is the President and four members. The Council President stands on behalf of the Agency and represents it, decides on the issues within the scope of work of the Agency as defined in Article 54 of the Law, organises the activities of the Agency and manages the activities of the Agency, proposes decisions and other acts adopted by the Council and monitors their implementation, has the director's authority in activities related to exercising rights and obligations of the personnel and performs other activities in line with the law, Statute and Council authorisation.

The Council adopts the Statute which regulated internal Agency organisation and procedures, Rules of Procedure and other general acts pursuant to the law. Agency Statute is approved by the National Assembly of the Republic of Serbia.

Organisational structure of the Agency was established based on elaborate made by the consulting house KPMG and approved by the Ministry of Mining and Energy. Organisation of the Agency is set so as to comply with the requirements in terms of efficiency and rationality in its work. To that end, Agency operates through four departments with a defined scope of work, with necessary level of coordination during the performance of complex duties for which more than one department is responsible.

Basic organisational units include:

- Energy and Technical Department;
- Economics and Finance Department;
- Legal Department and
- Organisational and General Affairs Department.

7.1.3 Independence and responsibility

In the performance of its activities, the Agency is an autonomous legal entity and it is independent from the executive authorities, other state bodies and organisations and legal and natural persons dealing in energy activities. The independence of the Agency does not prejudice its cooperation between the Agency and other national bodies, the implementation of the general policy adopted by the Government in issues which are not related to the jurisdiction and responsibilities of the Agency.

The Council President and members are responsible for their work to the National Assembly. At least once a year, they submit the financial report and the report on the energy sector to the Assembly. The annual report includes the data on the Agency's work during the previous year, its financial operations and the situation in the energy sector of the Republic of Serbia which is within the Agency's competence.

The independence of the Agency from the executive authorities is also reflected in the fact that, in line with the Law, the president and members of the Council of the Agency are selected by the National Assembly based on a public invitation and the fact that they are selected from a group of prominent experts in the energy field. The president and members of the Council may only be persons who are citizens of the Republic of Serbia, with university degree in technical, legal or economic area and with at least 10 years of working experience in the energy field. The following list of persons shall not be selected as the president and member of the Council: MPs of the National Assembly, MPs of the Assembly of the Autonomous Province, elected members of city councils, other elected and appointed persons, as well as political party officials; owners or co-owners of energy entities, as well as persons whose spouses, children or relatives in straight line regardless of the degree of kinship, or relatives in lateral line ending with the second degree of kinship, are owners or co-owners of energy entities; persons lawfully convicted for criminal offences against official duty, corruption, fraud or other criminal offences making them unfit to perform the functions they are elected.

The Agency has its own financing sources, defined by the Law, separate from the state budget.

The Agency is financed from the revenue arising on the basis of regulation activities from the part of regulated revenues from the system access set by the methodologies adopted by the Agency, on the basis of energy license issuance, as well as from other revenues from the activities within its jurisdiction in line with the law. The Agency may also raise funds from grants, except from the grants from energy entities or persons connected to those entities.

Pursuant to the Article 61 of the Law, the Agency adopts a financial plan defining total revenue and expenditure, including contingency funds and elements for full insight into the compensation and employment policy which provide adequate professional personnel. The financial plan is approved by the National Assembly. The financial plan is submitted to the National Assembly at the latest by the end of October of the current year for the following year. Upon the approval of the National Assembly, it is published in the "Official Gazette of the Republic of Serbia". The Agency submits annual financial plan to the National Assembly within the d

The Agency submits its annual financial plan to the National Assembly regularly and within the timeframe prescribed by the law. However, the Assembly reviews the report with huge delay. The 2015 plan was the last one reviewed and approved in December 2015. The 2016 financial plan was submitted to the National Assembly in late October 2015 and the Assembly did not review it until the end of 2016.

Annual calculations of revenue and expenditure of the Agency are audited by an authorised auditor. The auditor's report is also submitted to the National Assembly. If one determines that the annual revenue of the Agency exceeds total expenditure, the discrepancy amount is transferred into the financial plan as revenue for the following year. However, the sources and the amount of revenue for the following year are harmonised with realistic expenditure of the Agency for that year approved by the National Assembly.

Full independence of the regulatory authority is also one of obligations on the accession of the Republic of Serbia to the European Union and it is subject to the European Commission in the process of accession to the European Union. Criteria of independence of the Energy Agency as regards compliance with obligations arising from the Treaty establishing the Energy Community ("Official Gazette of RS", No. 62/06), Berlin Process and CESEC Initiative is also monitored by the Energy Community Secretariat. The position and the role of the Energy Agency within the legal system of the Republic of Serbia are defined by the Energy Law which also transposes the provisions of the European energy law (the so-called 3rd package of regulations on internal EU energy market) which regulate functional, personal and financial independence of the regulatory authority. These provisions are being limited in practice by other national regulations on salaries and employment process.

INDICATORS OF INDEPENDENCE OF ENERGY REGULATORY AUTHORITIES

The reasons for the transfer of some of jurisdiction related to economic regulation in the electricity and natural gas sectors from state bodies to independent regulatory authorities may differ, but the common idea behind this is to strive to remove the risks arising from market imperfections (natural and/or factual monopoly in the sector), to remove noted weaknesses of the centralized (state) management of the energy sector (stimulating competition) and to strengthen the credibility of the sector in the eyes of potential investors. Therefore, the objective of most energy regulators is to protect customers and investors, while the main mechanisms to achieve that is to regulate prices, prescribe rules and monitor the actions market participants.

There is mutual link between Agency goals, functions and activities with those of the EU electricity and natural gas regulatory authorities since the EU *acquis communautaire* (directives and regulations) have been implemented in the energy sector. The 2014 Energy Law also transposed the provisions strictly prescribing the regulator's independence into the legal system of the Republic of Serbia, i.e.:

- functional independence;
- personal independence and
- financial independence.

Functional independence

An independent regulatory body has to be free in the selection of instruments used to perform the duties in its jurisdiction. The regulator is not allowed to accept instructions from state institutions or energy entities (companies) and regulator's decisions cannot be subject to approval or annulment by executive authorities.

Personal independence

Personal independence of a regulatory authority is provided by:

- setting strict criteria for the appointment (expertise, lack of conflict of interest) and dismissal (e.g. legally-binding conviction for criminal act, offence against rules on the conflict of interest) of management body members (in Serbia: Council of the Agency);
- establishment of rotation between management body members, by not having all management members' mandate ending at the same time, thus providing the separation between processes of the selection of regulator's management and election cycles on political level and
- autonomy in the human resources recruiting - issues related to organisation and human resources have to be within exclusive jurisdiction of the regulator. Regulatory authority has to have autonomy in making decisions on the engagement and dismissal of employees, as well as on the number of them.

Financial independence

Financial independence of the regulatory authority is provided by:

- full independence from the state budget (as prescribed by the Energy Law) or clear independence of the regulator's budget from other budget beneficiaries within the state budget;
- autonomy in the allocation of approved funds. It implies that the regulatory authority has the exclusive right to make decisions on how the approved budget will be spent, i.e. the regulator may neither ask nor accept instructions on its budget. Namely, procedure prescribed in the Energy Law implying that the National Assembly approves the Financial Plan of the Agency does not contradict the principles of regulatory authority independence. In the opinion of the European Commission expert departments, the role of the legislature authorities (parliament) is to approve general financial allocation (not individual budgetary *itEMS*) in order to enable the regulatory authority to perform the duties entrusted to it by the law in an efficient and effective way.

7.2 Activities of the Agency in 2016

In 2016, the Agency Council which manages the Agency held 40 sessions during which decisions, approvals, certificates and other acts in the fields of: licensing, price regulation, electricity and natural gas market establishment and monitoring, internal organisation of the Agency and other issues within the jurisdiction of the Council were adopted.

7.2.1 Licensing energy entities

Activities which the Agency performs as entrusted ones, related to licensing of energy entities for energy activities are administrative-legal procedures which include:

- issuing licences for energy activities;
- amendments to issued licences;
- withdrawal, revoking and adoption of decision on withdrawal of the licence by virtue of law;
- monitoring the fulfillment of prescribed requirement by energy entities during the validity period of the licence and
- keeping registry of issued and withdrawn licences.

Requirements for issuance and withdrawal of licenses and keeping registry of issued licenses are prescribed by the Law and the Rulebook regulating the conditions for issuing licenses for energy entities and certification and which are adopted by the ministry in charge of energy issues. These are the main regulations the Agency implements within the licensing procedure. The rulebook on energy licence and certification ("Official Gazette of RS", No. 87/15)

is available with prescribed forms and proofs which are necessary to be submitted along with the application for energy license on the Agency website.

The registry of issued licenses is a public document and it is both available in the written form and kept in the Agency registry and in the electronic form available on the website of the Agency (www.aers.rs).

In order to perform these duties, in line with its legal jurisdiction, the Agency adopts a regulation on the level of costs for the issuance of energy licences. The act is approved by the Ministry of Finance and published in the "Official Gazette of RS". The act defines the cost of the Agency while assessing the compliance with the conditions for the performance of energy activities for each energy activity separately. The costs are borne by licence applicants. This act is available on the Agency website.

The Council of the Agency adopts a decision on the issuance of a licence for the performance of an energy activity within the administrative procedure. Once the decision enters into force, the Agency includes that licence in the registry of licences.

The 2014 Energy Law defines 25 energy activities. In 2016, licences were issued for 14 energy activities according to energy entities' applications. In 2016, the Agency received 225 applications for licence. If we sum up that number with the number of applications in the period 2006-2016, i.e. with 1,856 applications, the number of received applications reaches 2,081. In 2016, unorderly applications from previous years and applications submitted in the previous years were processed. By the end of the year, 192 new licenses were issued. 115 files ended in permanent withdrawal of license, its annulment, and suspension by virtue of law, denial or dismissal of incomplete (unorderly) application. At the end of 2016, there were 1041 ruling licenses in total.

In most cases, the applications did not include all the necessary documents and therefore, they were amended by energy entities upon the Agency's request. With some of those applications, amendments were made several times. After noticed inadequacies were removed and application files completed, applications were reassessed in order to check if the conditions for licence issuance are met. For the given reasons, there are more than 70 applications being considered at the end of the year.

As of 2008, there was a great number of applications for the amendments of the decisions on issuance of energy licenses, especially in the oil sector – for energy activity: trade in motor fuels and other types of fuels on petrol station. Most applications were submitted due to the change of facilities where energy activity is performed. In 2016, the Agency adopted 118 decisions on amendments on decisions for the issuance of license for this activity.

The Agency is not responsible for energy entities that did not comply with the conditions for issuing licence. In 2016, not one report of a competent inspector was submitted to the Agency that could be the ground for filing an economic offence against a legal person performing energy activity without a licence.

The number of submitted applications and of licences issued in 2016 (some applications are from 2015 and licences issued in 2016) for each activity are given in Table 7-1.

Table 7-1: Submitted applications and approved licenses in 2016 per each activity

No.	Activity	No. of applications	No. of approved licences
1.	Power production	6	5
2.	Combined power and heat production	3	2
3.	Electricity transmission and transmission system operation	0	0
4.	Electricity distribution and distribution system operation	1	0
5.	Electricity distribution and closed system operation	0	0
6.	Electricity supply	51	53
7.	Electricity wholesale supply	29	33
8.	Organised electricity market operation	0	0
9.	Natural gas transmission and transmission system operation	2	0
10.	Natural gas storage and storage operation	0	0
11.	Natural gas distribution and distribution system operation	9	0
12.	Natural gas supply	12	12
13.	Natural gas public supply	1	0
14.	Oil derivatives production	1	2

15.	Oil transport through oil pipelines	1	1
16.	Oil derivatives transport through product lines	0	0
17.	Storage of oil, oil derivatives and biofuels	3	0
18.	Trade in oil, oil derivatives, biofuels and compressed natural gas	14	12
19.	Trade in fuels outside petrol stations	5	2
20.	Filling vessels for liquid petroleum gas, compressed and liquified natural gas	10	3
21.	Trade in motor fuels and other fuels on petrol stations	73	63
22.	Trade in fuels meant for vessels	0	0
23.	Biofuels production	1	1
24.	Bio liquids production	1	1
25.	Blending biofuels with fuels of oil origin	2	2
	Total	225	192

The updated register of licensed energy entities for each energy activity is available on the Agency's website (www.aers.rs).

7.2.2 Price regulation

In 2016, in the field of price regulation, the Council of the Agency:

- 1) adopted methodologies for setting:
 - costs of connection to natural gas transmission and distribution and
 - natural gas distribution use-of-system charges.
- 2) adopted amendments to methodologies for setting price/charge
 - in the field of electricity:
 - electricity distribution use-of-system charges;
 - electricity transmission use-of-system charges;
 - electricity for guaranteed supply;
 - in the field of natural gas:
 - natural gas transmission use-of-system charges;
 - natural gas for public supply;
 - natural gas use-of-storage charge;
 - in the field of oil transport via oil pipelines and oil derivatives via product lines:
 - oil pipeline transport use-of-system charge and oil derivatives transport use-of-system charge.
- 3) adopted decisions on price of capacity reserve for system services, i.e. secondary and tertiary control and price of ancillary services
 - in January 2016 for 2016 and
 - in December 2016 for 2017.
- 4) approved decisions on prices/charges
 - in the field of electricity:
 - electricity distribution use-of-system charges;
 - electricity for supply of households and small-scale customers and
 - non-standard services of "EPS Distribucija" Belgrade.
 - in the field of natural gas:
 - natural gas distribution use-of-system charges, approvals to 3 distribution system operators (DSOs);
 - natural gas price for public supply, several applications of public suppliers during the year: 2 in February; 33 in March; 33 in May; 3 in June; 2 in September; 2 in November and 1 approval in December.
 - in the field of oil transport via oil pipelines and oil derivatives transport via product lines:
 - oil pipeline transport use-of-system charge of PE "Transnafta", Pančevo.

All the approved documents are available on the Agency website.

Permanent activities of the Agency related to price regulation include:

- Provision of professional assistance to energy entities as regards the enforcement of methodologies for setting prices and monitoring their adequate implementation;
- Monitoring the enforcement of methodologies for setting costs of connection to electricity transmission and distribution system, i.e. to natural gas transmission and distribution and deciding upon customers' appeals which provides adequate level of customer protection and directly contributes to appropriate implementation of methodologies in practice;
- Provision of professional support to energy entities as regards unbundling their funds and costs into different activities, as well as the control over unbundling;
- Monitoring and analysis of data submitted by energy entities as regards realised costs and regulated prices;
- Half-yearly monitoring and comparison of actual electricity and natural gas prices in the region and in Europe;
- Monitoring costs of apartment heating and comparing prices of different energy sources used for heating during a heating season;
- Analysis of solutions and solution proposals as regards price regulation and drafting amendments and improvement of existing legislation.

7.2.3 Monitoring electricity and natural gas market

So as to create conditions for proper market functioning, the Law stipulates the adoption, i.e. harmonisation with the new Law of all the rules prescribed by the Law and the Council of the Agency acted accordingly. Formerly adopted Supplier Switching Rules and the Rules for Monitoring Technical and Commercial Indicators and Regulation of Quality of Electricity Supply were harmonised with the Law by the Council and the Council monitored their application in 2016. In March 2016, the Council adopted the Rulebook on Method of Procedure and Imposing Measures and Keeping Registry of Imposed Measures which is applied to those market players who do not comply with their obligations prescribed by the Law. In July, a Decision on Procedure of Exercising Right of Final Customer to Access Data on One's Own Electricity and Natural Gas Consumption.

Pursuant to the Law, the remaining rules are adopted by energy companies, upon the Agency's approval.

In 2016, the Council of the Agency approved the following rules:

- Rules for Cross-Border Transmission Capacity Allocation;
- Electricity Market Rules;
- Rules on Publication of Key Market Data;
- Rules for Cross-Border Transmission Capacity Allocation on Serbian – Hungarian Border for 2017 (“Agreement between Transmission System Operators of the Republic of Hungary – MAVIR ZRt. Hungarian Independent Transmission Operator Company Ltd. and the Transmission System Operator of the Republic of Serbia – EMS JSC Belgrade on the Procedure and Manner of Allocation of Rights to Cross-Border Capacities and Access to Cross-Border Transmission Capacities for 2017”);
- Rules for Cross-Border Transmission Capacity Allocation on Serbian – Romanian Border for 2017 (“Agreement between Transmission System Operators of the Republic of Romania C.N.T.E.E. TRANSELECTRICA – S.A.–. and the Transmission System Operator of the Republic of Serbia –EMS JSC Belgrade on the Procedure and Manner of Allocation of Rights to Cross-Border Capacities and Access to Cross-Border Transmission Capacities for 2017”);
- Rules for Cross-Border Transmission Capacity Allocation on Serbian-Bulgarian Border for 2017 (“Agreement between the Transmission System Operator of the Republic of Bulgaria – Elektroenergien Sistem operator EAD and the Transmission System Operator of the Republic of Serbia – EMS JSC Belgrade on the Procedure and Manner of Allocation of Rights to Cross-Border Capacities and Access to Cross-Border Transmission Capacities for 2017”);
- Rules for Cross-Border Transmission Capacity Allocation on Serbian-Croatian Border for 2017 (“Agreement between the Transmission System Operator of the Republic of Croatia – Croatian Transmission System Operator HOPS and the Transmission System Operator of the Republic of Serbia – EMS JSC Belgrade on the Procedure and Manner of Allocation of Rights to Cross-Border Capacities and Access to Cross-Border Transmission Capacities for 2017”);
- Rules for Cross-Border Transmission Capacity Allocation on the Border between Serbia and Bosnia and Herzegovina for 2017 („Agreement between the Independent Transmission System Operator in Bosnia and Herzegovina - NOS BiH and the Transmission System Operator of the Republic of Serbia – EMS JSC Belgrade on the Procedure and Manner of Allocation of Rights to Cross-Border Capacities and Access to Cross-Border Transmission Capacities for 2017”) and
- Rules for Cross-Border Transmission Capacity Allocation on Serbian-Macedonian Border for 2017 (“Agreement between the Transmission System Operator of the Republic of Macedonia – Macedonian

Elektromrešnik sistem operator JSC and the Transmission System Operator of the Republic of Serbia – EMS JSC Belgrade on the Procedure and Manner of Allocation of Rights to Cross-Border Capacities and Access to Cross-Border Transmission Capacities for 2017“).

In 2016, the Agency monitored the enforcement of adopted rules by analysing needs and initiatives for amendments of these rules also by participating in the work of commissions appointed to monitor their enforcement.

In the field of electricity, the following commissions for monitoring enforcement of the rules are the following:

- In EMS JSC for Transmission Network Code and Market Rules,
- In PE EPS for Distribution Network Code.

In the field of natural gas, such commissions have not been established. In line with the rules, they will be appointed.

One representative of the Agency participates in all the commissions which have been established so far.

Programmes for non-discriminatory treatment, which, in line with the law, distribution system operators which are a part of a vertically-integrated company are supposed to adopt are extremely important for energy market monitoring. These programmes are approved by the Agency. In June 2016, the Council of the Agency approved the Compliance Programme for Non-Discriminatory Behaviour of Distribution System EPS Distribucija LLC Belgrade. The Council also approved conditions for the appointment and duration of term of the distribution system operator compliance officer.

7.2.4 Deciding upon appeals

Pursuant to the Law, deciding upon appeals (second instance administrative procedure) which is performed as entrusted activities includes deciding upon the following appeals against:

- operator's acts upon an application for connection to the system, i.e. if the system operator does not adopt a decision upon application for connection to the system;
- operator's acts on dismissal of access to the system;
- acts of energy entities dealing in oil transport through oil pipelines or energy entity dealing in oil derivatives transport through product lines on dismissal of access to the system.

Within the procedure of deciding upon appeals of customers, i.e. system users, a necessary level of customer protection is provided. In addition, there is direct contribution to adequate implementation of methodologies and other regulations.

In 2016, there were 318 files submitted and they mainly dealt with the activities and behaviour of energy entities in different areas of their operations. 184 of them are appeals settled by the Agency in the administrative procedure as entrusted activities, while 134 of them are different petitions and complaints submitted by natural and legal persons or requests related to the issuance of opinion on the enforcement of regulations within the competence of the Agency.

The Agency processed all the submitted complaints and submitted responses to the applicants while forwarding the issues to responsible state bodies for further procedure, when necessary.

As far as the appeals for which the Agency is responsible within the second instance procedure are concerned, all 184 appeals submitted for reasons stipulated by the Law were processed in 2016. The appeals were submitted:

- against failure of a responsible energy entity within the first instance procedure upon application on connection of the facility of the customer or producer to electricity or natural gas distribution system (the so called “administrative silence”);
- against decision of electricity or natural gas distribution system operator dismissing application on connection to the system and
- against electricity distribution system operator's decision approving connection to the system, but customers complain against connection costs, technical conditions for connection, or against procedural decision of energy entities dealing in electricity distribution on suspension of procedure or dismissal of application.

The greatest number of appeals was filed against decisions of electricity distribution companies – 182 appeals, while there was only two of them filed against a decision adopted by natural gas distribution system operator.

So as to reduce the number of appeals and harmonise the practice of electricity distribution system operators in procedures implying applications on connection of facilities of both legal and natural persons to the power grid, the Agency made an analysis of all appeals submitted to it and of the most common reasons for annulment of decisions on connection within the procedure related to the appeal. In 2016, so as to reduce the number of unlawful decisions adopted by electricity distribution companies, upon Agency's request, meetings with competent energy entities were held. During these meetings, the Agency identified the most common breaches of procedural and material-legal regulations which lead to adoption of unlawful decisions and stressed legally binding commitments of energy entities within connection procedure.

The appeals number growth trend slightly decelerated in 2016 and the Agency will continue working with experts employed with electricity and natural gas distribution operators and who decide on applications on connection to the system will be continued in the years to come.

Since the establishment of the Agency, with 2016 inclusive, there were 60 appeals to the Administrative Court of RS against the decisions of the Agency within the second-instance procedure (Table 7-2):

Table 7-2: Number of appeals submitted to the Supreme/Administrative Court of RS against the Agency's decisions adopted within the second-instance procedure

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
Number of appeals	1	4	2	9	12	7	4	8	7	6	60

All filed appeals ended either with denial or discharge.

7.2.5 International activities

Pursuant to the Energy Law, ratified international agreements and Council decisions, the Agency cooperates with regulatory authorities from other countries, as well as with other international bodies and organisations.

7.2.5.1 The Athens process and the Energy Community Regulatory Board (ECRB)

Signing and ratifying the "Treaty establishing the Energy Community" on October 25, 2005 in Athens which entered into force on July 1, 2006, the Southeast Europe countries (and UNMIK for APKM) and the EU initiated the process of creation of the EnC aiming at the expansion of the common EU energy market to the Southeast Europe region. The Treaty was signed for a period of 10 years, while the Ministerial Council decision of October 24, 2013 extended its validity period until 2026. In addition, based on Ministerial Council decisions, via the implementation of the 3rd Energy Package in the Law, certain competences of the EnC Secretariat were introduced in the regulation of the national energy sector.

The Treaty establishing the EnC also defined the institutional framework for EnC functioning: Ministerial Council, Permanent High Level Group, Energy Community Regulatory Board, EnC Secretariat, Electricity Forum and Gas Forum. Subsequently, Oil Forum and Social Forum were founded.



Figure 7-1: Energy Community institutions

Pursuant to the commitments arising from the Treaty establishing the EnC, the Agency participates actively in the work of EnC institutions, at the same time taking into account customer interests protection, as well as the position and goals of both power and gas economy of the Republic of Serbia. Cooperation is developed in coordination with state bodies within the Agency's competence defined by the Law. The Agency participates in the work of the EnC Regulatory Board (which is an advisory body to the Energy Community Ministerial Council with possible executive functions), as well as of the Electricity Forum, Gas Forum and Social Forum.

The Agency has considerably contributed to the development of organisation and procedures for the functioning of regional and Pan-European electricity and natural gas markets through an active participation in the work of EnC institutions and their expert teams. An Agency representative has been the chairman of the EnC Regulatory Board Working Group for Electricity (ECRB WG-E) since the beginning of 2007, while several representatives of the Agency chair some ECRB sub-groups. The efficiency of the work of these bodies could be improved by more prompt preparation and more timely submission of material for their sessions.

In 2016, the Agency participated in the following activities of the EnC Regulatory Board (ECRB):

Strategic and joint activities

- contribution to WB6 and CESEC initiatives: preparation of coordinated positions of ECRB on documents, proposals and measures which are reviewed within these initiatives which relate to regulatory agenda and which are of regional character and

- cooperation with associations of regulatory bodies in the energy field - Agency for Cooperation of Energy Regulators - ACER, Council of European Energy Regulators - CEER, Energy Regulators Regional Association – ERRA and Mediterranean Regulators - MedReg.

Electricity

- analysis of balancing mechanisms in the Southeastern Europe region and considering options for their improvement;
- support to and monitoring Regional Action Plan for Electricity Market Integration in the Southeastern Europe and its Functional Integration into PanEuropean Electricity Market; the integral part of these activities also include: drafting quarterly reports on the most important developments in the power sector; drafting semi-annual reports on mechanisms for capacity allocation on interconnectors; drafting semi-annual reports on the realisation of the Regional Action Plan for Integration of Electricity Market in Southeastern Europe; drafting common recommendations of ECRB to national regulatory bodies for the adoption of auction rules of the Coordinated Auction Office for transmission capacity allocation on interconnectors (SEE CAO) and monitoring compliance with transparency rules, in line with the requirements of the European Commission Regulations 714/2009 and 543/2013;
- Review of the state-of-play of the development of electricity wholesale markets in line with the EU practice (using ACER indicators for the assessment of situation in electricity wholesale market); identification of obstacles for market functioning and drafting proposals for its improvement;
- Monitoring cross-border electricity trade in the Southeastern Europe in line with Guidelines for Southeastern Europe Market Monitoring²⁰, using the data base for market monitoring and web interface.

Natural gas

- review of harmonisation with requirements of the European Commission Regulation No. 2015/703 on interoperability and data exchange;
- comparative analysis of regulatory treatment of technical and commercial losses in gas networks in the Energy Community and
- participation in the work of the Gas Regional Initiative South South-East; GRI SS of the European Union. In the end of 2016, AERS became the co-chairman regulatory body of this regional initiative.

Retail electricity and natural gas market and protection of socially vulnerable customers

- review of conditions for entry into national retail electricity and natural gas markets and drafting a leaflet informing new suppliers on the conditions for entry into the market;
- Review of mechanisms for alternative dispute settlement in the Energy Community (completion of an activity started in 2015); drafting guidelines for monitoring and classification of appeals in accordance with the best European practice; drafting a leaflet in order to inform customers on available mechanisms for alternative dispute settlement;
- comparative analysis of the quality of electricity delivery and supply in cooperation with the Council of European Energy Regulators (CEER) and
- review of indicators for monitoring the functioning of electricity and natural gas retail markets, assessment of applicability of indicators which are used in the EU (CEER) in the Energy Community.

7.2.5.2 Berlin Process – initiative “Western Balkans 6” (WB6)

Activities related to the energy sector regarding financing priority regional infrastructure projects through IPA multi-beneficiary program, as well as the implementation of reform measures (so-called “soft measures”) which stimulate the development of the regional electricity market represent a constituent part of the so-called Berlin Process, initiated on the Western Balkans Summit in August 2014. The most important reform targets of this initiative is the integration of daily (spot) electricity markets (the so-called “market coupling”), integration of balancing markets and maximization of benefits of the existing coordinated auction office (transmission capacities on interconnectors) of the Southeastern Europe.

Within its jurisdiction, the Energy Agency contributes to the realization of the activities defined by this initiative such as: functional unbundling of the distribution system operators, certification of transmission system operators, cooperation with the Agency for Cooperation of Energy Regulators (ACER), coupling daily (spot) electricity markets (“market coupling”) with neighbouring markets, etc.

²⁰ This project was supported by USAID by financing consultancy assistance

By signing the “Memorandum of Understanding on Electricity Market Development in the Western Balkans and Establishment of Framework for Further Cooperation on April 26, 2016, ministries, regulatory bodies, transmission system operators and power exchanges from the region agreed to couple daily markets with at least one neighbor until July 1, 2018. I.e. they agreed to establish cooperation in the cross-border exchange of balancing services until December 31, 2018. They agreed to perform this via drafting and enforcement of the Programme for Daily Electricity Market Coupling and Programme for Cross-Border Cooperation in Field of Balancing. According to the provisions of the Memorandum WB6 (Annex 1), in September 2016, the PSC DAMI- Project Steering Committee for Day-ahead Market Integration was appointed. Its role is programme (project) management of electricity daily market coupling in the region and beyond.

7.2.5.3 CESEC (Central and South Eastern Europe Gas Connectivity) Initiative

CESEC Initiative was launched by signing a Memorandum of Understanding between the countries of the Western Balkans (Albania, Bosnia and Herzegovina, Macedonia and Serbia), Black Sea region (Moldova and Ukraine) and the EU (Austria, Bulgaria, Croatia, Greece, Hungary, Italy, Romania, Slovak Republic and Slovenia) so as to coordinate support to cross-border trans-European infrastructure projects which provide for the diversification of the natural gas supply in the region and for the harmonisation of the relevant legislation.

The activities of CESEC are steered by CESEC High Level Group, HLG, which aims at the acceleration of the completion of the projects on the construction of interconnection lines which are facing difficulties in realization, identification and support to the construction of a limited number of infrastructure projects in central and southeastern Europe, identification of obstacles in the realization of these projects (e.g. obstacles of regulatory nature, permit issuance regime, technical and financial obstacles) as well as the realization of the action plan which includes project-specific technical, financial and regulatory measures in order to remove those obstacles.

Within its competence, the Agency contributes to the realization of the activities defined within this initiative such as: certification of transmission system operator, operationalisation of mechanisms for capacity allocation on interconnection points and congestion management mechanisms, cooperation with the Agency for Cooperation of Energy Regulators (ACER), regional gas market integration, etc.

7.2.5.4 Energy Regulators Regional Association (ERRA)

The Agency is a full member of ERRA (Energy Regulators Regional Association), an expert association of regulators aiming at the improvement of cooperation, exchange of experience and capacity building in member states. ERRA links the regulators from Southeast and East Europe, from former USSR, NARUC – USA regulators association, as well as the regulators of certain countries in Asia and Africa. So as to identify the best regulatory mechanisms in several fields of regulation theory and practice (price regulation, competition and energy market, licensing, etc.), insight into options for their implementation in Serbia and capacity building in the Agency. In 2016, the representatives of the Agency participated in the following ERRA activities:

- Licensing and Competition Committee
 - smart metering systems, cost-benefit analysis and results of pilot projects;
 - security of supply in power and gas sector – operation of critical infrastructure under extreme weather conditions;
 - regulatory support to electricity market liberalization; electricity retail market; effective unbundling of distribution companies; procedure of setting supplier of the last resort; E-mobility;
 - analysis of possibility to simplify the procedure of licensing wholesale electricity and natural gas traders;
 - regulatory supervision over network companies and suppliers; methodologies, the best practice and recommendations;
 - effects of intermittent producers from renewable energy on system balancing;
 - “benchmarking” analysis – system services and balancing markets; market models, responsibilities and regulatory aspects;
- Tariff/Pricing Committee
 - incentive mechanisms of price regulation (setting X-factor);
 - liberalization of electricity market;
 - regulatory aspects of introduction of EU network codes in the field of natural gas;
 - regulatory “benchmarking” of distribution companies;
 - tariff elements as a barrier for cross-border trade;
 - comparative review of “feed-in” tariffs in ERRA countries and new incentive mechanisms for renewable energy sources;
 - changes in the practice of price regulation caused by market liberalization – allocation of costs between network activities and elements of costs related to energy;

- tariffs for electricity and natural gas transmission;
- investment costs for new networks for natural gas transmission and distribution;
- calculation of average weighted price of capital and
- experience in the reform of the power sector.

7.2.5.5 European integration

The representatives of the Agency participated in the work of the Board for the implementation of the Stabilisation and Association Agreement – sub board for transport, energy, environment protection, climate changes and regional development where they presented the level of implementation of commitments within its competence, related to regulatory issues in the energy sector and regional integration.

Within the subgroup for energy of the Expert group of the coordination body for the preparation and negotiations on Serbia's accession to the European Union (SG 15 – Energy).

8. AGENCY'S FINANCIAL REPORT

Financial operations of the Agency in 2016 were in line with the 2016 financial plan as well as with the formerly approved plan of the Agency which was approved by the National Assembly. The plan defines total revenues and expenditures of the Agency and contingency reserves as well as the elements for comprehensive insight into the income and employment policy. In line with the obligations arising from the Law, the Agency submitted its 2016 Financial Plan to the National Assembly for approval in October 2015 and it has not been reviewed by the Assembly yet.

This report illustrates planned and actual utilisation of funds per each purpose from the revenue which, in line with the Energy Law and Financial Plan arises from the license fee, part of use-of-system charge – regulatory fee, grants and reimbursements and financial revenues and other revenues.

Table 8-1: Total Agency's revenues in 2016

No.	Revenues	Realised 2015	Plan 2016	RSD
				Realised 2016
1	Revenue from licenses	27,692,880	19,140,800	39,851,740
2	Revenue from regulatory fee	142,405,799	144,293,020	144,904,460
3	Transferred extra revenue from last year	0	38,880,413	0
4	Revenue from grants and reimbursements	1,701,659	1,627,041	1,939,032
5	Financial revenues	860,682	672,755	206,878
6	Other revenues – Collected corrected liabilities	25,834,725	21,731,489	22,381,248
	TOTAL REVENUE	198,495,745	226,345,518	193,551,428

Notes on revenues:

In 2016, **the revenue from licence fee** was calculated in line with the Decision on the Level of Costs for Energy Licence Issuance which was approved by the Ministry of Finance ("Official Gazette of RS", No. 13/16). In line with this Decision, the level of fee for the issuance of licence for some energy activities was set. This fee is set one-off and it is valid for the whole period of licence validity of 10 years. It is charged when the application is filed.

In line with this, the revenues arising from the licence fee for 2016 were calculated in the total amount of RSD 39,851,740. In 2016, out of the total number, one part of the revenue which refers to 189 adopted decisions for the performance of an activity or amendments to adopted decisions formerly amounts to RSD 30,546,740. Another part of the total revenue arising from licence fee for 2016 amounts to RSD 9,305,000 refers to payments related to 84 energy entities' files until the end of 2016 which are being reviewed in 2017.

The revenue from the regulatory fee in 2016, i.e. from the part of tariff for access to and use of electricity and natural gas transmission system amounting to RSD 144,904,460 which amounts to 75% of the total revenue of the Agency. It is calculated quarterly and it depends on the amount of maximum allowed revenue of energy entities and the date when approved energy entities' decisions on prices are enforced. There was an increase of the amount of this fee in the 3rd and 4th quarter of 2016 for PE Transnafta in the total amount of RSD 611,444. This is why there was a variation of 0.4% in comparison to the amount planned for 2016.

The revenues from grants and reimbursements amount to expenditures. In this case, they are as follows: reimbursements of a part of expenses for business trips abroad from the EnC Secretariat (pursuant to the Treaty establishing the EnC, which covers accommodation and travel costs for the participants of certain meetings of this institution) in the amount of RSD 1, 897.292, as well as the proportional amount to the value of costs of depreciation of some equipment financed from grant funds for 2016, in the amount of RSD 41,740 which debits purchase value of equipment obtained from the EU grant in 2005 and 2006. Since the grant funds are mostly depreciated, the share of depreciation of these funds in revenues is on the minimum level and has been reduced year by year. On the other hand, due to more frequent participation of the employees in the activities of the EnC working groups, Euro modification trend and effect of foreign currency – RSD calculation caused slightly higher revenues than expected in the Plan.

Financial revenues include revenues arising from a vista interest rates which are charged by the bank and attributed to RSD business account, positive foreign currency differences calculated in RSD recalculation on foreign currency account, effect of currency clause in the lease contract, as well as other non-operational and extraordinary revenues which amounted to RSD 206,878.

Other revenues presented in 2016 include collected corrected liabilities from 2015 from PE *Srbijagas* for the regulatory fee amounting to RSD 22,381,248.

In 2016, extra revenue in comparison to expenditure was presented amounting to total RSD 15,731,930. This revenue is not allocated but transferred to 2017 as unallocated profit.

Table 8-2: Total Agency expenditure in 2016

No.	Expenditure	Planned and approved 2015	RSD	
			Planned 2016	Realised 2016
1	Material, fuel and energy costs	3,843,799	4,011,263	3,529,102
1.1	- material (operating cost)	1,621,103	1,653,412	1,505,233
1.2	- fuel and energy	2,222,696	2,357,850	2,023,869
2	Salaries and allowances	122,697,914	136,846,671	112,727,071
2.1	- salaries and allowances (gross)	95,130,296	102,981,520	87,489,347
2.2	- levies paid by employer	17,028,323	18,773,174	15,679,337
2.3	- fees in line with other contracts	70,574	1,423,849	1,457,463
2.4	- other personal expenditure and fees	10,468,721	13,668,128	8,100,924
3	Production services	23,966,284	27,304,352	25,879,446
3.1	- transport	1,966,959	1,992,388	1,686,195
3.2	- maintenance	1,931,170	2,127,313	1,585,541
3.3	- lease	16,839,216	19,522,000	19,493,034
3.4	- marketing and advertising material	165,000	170,000	161,976
3.5	- other services	3,063,939	3,492,652	2,952,700
4	Depreciation and reserves	4,458,429	3,698,730	3,557,879
5	Non-material expenditure	23,739,213	29,676,983	14,063,490
5.1	- non-production services	9,394,874	13,608,144	2,882,685
5.2	- costs of representation	279,746	279,605	278,720
5.3	- insurance premium	423,572	423,807	339,422
5.4	- payment operations	257,683	244,127	204,339
5.5	- membership	425,000	937,500	429,896
5.6	- taxes and fees	377,599	409,791	402,899
5.7	- other non-material expenditure (10% reduction of salaries)	12,580,739	13,774,009	9,525,530
6	Financial expenditure and other expenditure	20,087,546	24,807,518	33,794,439
	TOTAL EXPENDITURE	198,793,185	226,345,518	193,551,428
7	Financial result – extra revenues	-26,638,713	0	15,731,930
	TOTAL EXPENDITURES = REVENUES	198,793,185	226,345,518	193,551,428

Note on expenditure:

In 2016, calculated expenditure amounts to total RSD 193,551,428 and they are lower than the planned expenditure by 14.5%. All main *itEMS* of expenditure are either on the same level or below the level of planned expenditure for 2016, except for financial and other expenditure which are higher than the planned and realized levels due to the effect of correction of liability level.

Costs of material and of energy are lower by 12% in comparison to plan for 2016 and by 8% lower in comparison to the 2015 Agency plan which was the latest one to be approved. It was due to use of underconsumed stock of material purchased in the past as well as because of extremely rational use and saving.

Costs of calculated salaries, allowances, other contracts and other personal expenditure of employees are by 18% lower in total than the ones planned for 2016. It was primarily due to low personal expenditure in comparison to the planned ones as well as due to failure to realize the plan to hire new employees in 2016.

In comparison to the 2015 plan which was the latest one to be approved, realized costs of salaries, allowances, other contracts and other personal expenditure of employees were lower by 8% in 2016.

Based on the reduction of net salaries of employees, in line with the Law on Temporary Reduction of Basic Salary Rate of Public Sector Employees, there was RSD 9,282,760.04 in total of reduction in employees' income and the amount was transferred to the budget of RS.

One of the biggest problems the Agency has been facing for several years is the "brain drain" of highly-qualified personnel (in total, ten employees have left the Agency since its establishment which represents almost 30% of the total number of employees in expert departments) and hindered new employment procedures which are crucial. For certain, this is due to multiannual fairly slow salaries growth in the Agency in comparison to the public and private sector in the energy field. This fact, along with the limited employment procedures, also has a negative effect to the dynamics of activities within the competence of the Agency. In 2016, there were 4 new experts hired. Therefore, in the end of 2016, there were 42 employees in total in the Agency, members of the Council included. 88% of employees hold university degree.

Table 8-3: Qualification structure of employees

Professional qualification	31/12/2015		Plan 2016		31/12/2016	
	No.	Share in %	No.	Share in %	No.	Share in %
PhD (A Doctor of Philosophy)	1	2,6	1	2.0	3	7.1
Master	2	5,3	2	3.9	2	4.8
BSc/BA (Bachelor of Science/Arts)	30	78,9	43	84.3	32	76.2
College degree	0	0,0	0	0.0	0	0.0
Secondary school degree	4	10,5	4	7.8	4	9.5
Primary school degree	1	2,6	1	2.0	1	2.4
Total	38	100,0	51	100.0	42	100.0

In addition, there is high average age of employees in the Agency since 50% of employees have over 20 years of length of service. Such age structure of employees is expected, bearing in mind highly-specialised activities of the Agency as well as the relevant experience requirements when a vacancy is announced.

Table 8-4: Structure of employees in terms of length of service

Length of service	31/12/2015		Plan 2016		31/12/2016	
	No.	Share in %	No.	Share in %	No.	Share in %
up to 5 yrs	0	0.00	4	7.84	1	2.38
from 6 - 10 yrs	4	10.53	5	9.80	2	4.76
from 11 - 15 yrs	5	13.16	8	15.69	7	16.67
from 16 - 20 yrs	13	34.21	10	19.61	11	26.19
from 21 - 25 yrs	3	7.89	5	9.80	6	14.29
from 26 - 30 yrs	4	10.53	9	17.65	4	9.52
from 31 - 35 yrs	6	15.79	7	13.73	8	19.05
> 35 yrs	3	7.89	3	5.88	3	7.14
Total	38	100.00	51	100.00	42	100.00

Costs of production services were in total below than the planned ones for 2016 by 5% but they grew by 8% in comparison to 2015 due to expansion of office space and increased costs of office space lease, hire of new employees in 2016 and contracted currency clause for lease. As early as in 2006, the Agency asked to be provided

with the office space in some of buildings owned by the state. The Agency has asked for office space several times since. However, no results were achieved in this area. Therefore, the Agency has been trying to find more favourable office space in the market. However, these attempts were unsuccessful since lower price of lease implied either higher level of investments into office space adaptation or moving to locations which were much more distant from the institutions the Agency communicated regularly. Therefore, the main activity in this area was directed towards the reduction of price of existing office space in line with the market trend. Therefore, the former price of 19 €/m² was reduced to slightly less than 11 €/m² which is comparable to market price taking into consideration the location and additional services available to the Agency at the moment (part of maintenance costs, garage space, security, additional use of meeting room for events, etc.). The Agency will try to find a permanent solution for the office space.

Non-material expenditures were on the level of 47% in comparison to the planned ones. It was due to the fact that although it was planned to engage consultants, this was not realized in 2016 either, as the Agency tended to complete all the activities by using its own sources. In addition to unrealised planned costs for consultancy services, the costs of regular health examinations, professional training and official notification were lower than the planned ones. It affected the lower total level of all costs.

Financial expenditure and other expenditure for 2016 were higher than the planned ones by 36%. The main reason for this is the correction of unsettled liabilities in terms of licenses and regulatory fee (unsettled liabilities for more than 60 days) amounting to RSD 33,571,872 as well as the correction of liabilities amounting to RSD 68,200 in terms of licenses which was due to reduced solvency of energy entities.

The **amount of unsettled liabilities** for licences and regulatory fee was **corrected** on December 31, 2016 for RSD 33,640,072 in line with the Rulebook on Accounting and Accounting Policies. This correction includes correction of 18% of the calculated revenue arising from license fee and regulatory fee. This datum indicates that there is always a risk in collecting liabilities due to non-stop changes in the operations of energy entities and this is also what happened in the past and what one can expect that this will be the case in the future as well. Therefore, so as to provide for unhindered and reliable operations of the Agency, accumulated extra revenues from the previous period present an adequate reserve which serve not only for the replacement of fixed assets but to provide for additional safeguard basis for Agency's activities when there are no other financing sources to be provided within legal framework in the Agency's operations.

The Agency procured equipment from its own funds in the period 2007 – 2016 as indicated in Table 8-5. In addition, procurements were realised in 2016, always in line with the procurement plan and the public procurement plan. This was done mainly so as to replace a part of fixed assets which were written down, first of all computer equipment.

Table 8-5: Purchase of fixed assets of the Agency

Procurement	RSD					
	2007-2011	2012	2013	2014	2015	2016
Cars	4,913,209	2,126,167	0	0	0	0
Computer equipment, software, network	11,655,537	2,544,052	2,478,749	2,387,880	2,877,402	3,636,630
Office furniture and equipment	2,152,575	392,217	239,964	444,800	0	887,342
Telephone devices, telephone switchboard, access control	880,011	120,694	137,525	446,060	287,172	399,968
Video surveillance, network	1,060,207	0	0	0	0	0
Total	20,661,539	5,183,130	2,856,238	3,278,740	3,164,574	4,923,940

The value of assets which were not written down until December 31, 2016, amounts to RSD 10,805,348, i.e. 24% of gross purchase value of assets, which indicates a high level of write-down and need to regular procurement of equipment that is to replace the existing equipment.

In line with legal requirements, the 2016 annual financial report was audited by an authorized auditor. In the auditor's opinion, "the financial report indicates true and objective financial position of the Energy Agency of the Republic of Serbia in all issues of material importance on December 31, 2016 as well as indicating the result of operation and cash flow for the year ended on that date, in line with ruling accounting regulations in the Republic of Serbia."

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Abbreviations and foreign phrases

ACER	Agency for the Cooperation of Energy Regulators
APKM	Autonomous Province of Kosovo and Metohija
Benchmarking	Comparative analysis of similar (indicators, companies, activities, etc.)
CEER	Council of European Energy Regulators
BiH	Bosnia and Herzegovina
DAMAS	Information system in PE EMS
DS	Distribution system
EnC	Energy Community
ECRB	EnC Regulatory Board
ECRB WG	EnC Regulatory Board - Working Groups
HHI	Herfindahl-Hirschman Index – indicator of market concentration level
ITC Agreement	Multi-year Pan-European agreement between transmission system operators on compensation of costs for the utilisation of neighbouring transmission networks
SEE	South-eastern Europe
EMS JSC	<i>Elektromreža Srbije</i> , Joint Stock Company
PE EPS	Public Enterprise <i>Elektroprivreda Srbije</i> (Electric Power Industry of Serbia)
mtoe	Million tons of equivalent oil
NTC	Net Transfer Capacities
REMIT	Regulation on wholesale energy market integrity and transparency, No. 1227/2011, adopted by the European Parliament and the European Council of Ministers
Smart Grid	“Smart” power grid with digital meters, remote collection and distribution of data and information on the behaviour of all system users and with management system, so as to improve system reliability and efficiency
MRE	Ministry of Mining and Energy
NIS	<i>Naftna industrija Srbije</i> (Petroleum Industry of Serbia), JSC
DC	Daughter Company
RS	Republic of Serbia
RST	Russian – Serbian Trading Company
UNMIK	United Nations Interim Administration Mission in Kosovo, established by the Security Council by Resolution 1244 (1999)

Conversion factors for energy equivalents

	kJ	kcal	kWh	kg oe*
1 kJ	1	0.2388	0.000278	0.000024
1 kcal	4,1868	1	0.001163	0.0001
1 kWh	3,600	860	1	0.086
1 kg oe	41,868	10,000	11.63	1

* kilograms of equivalent oil



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