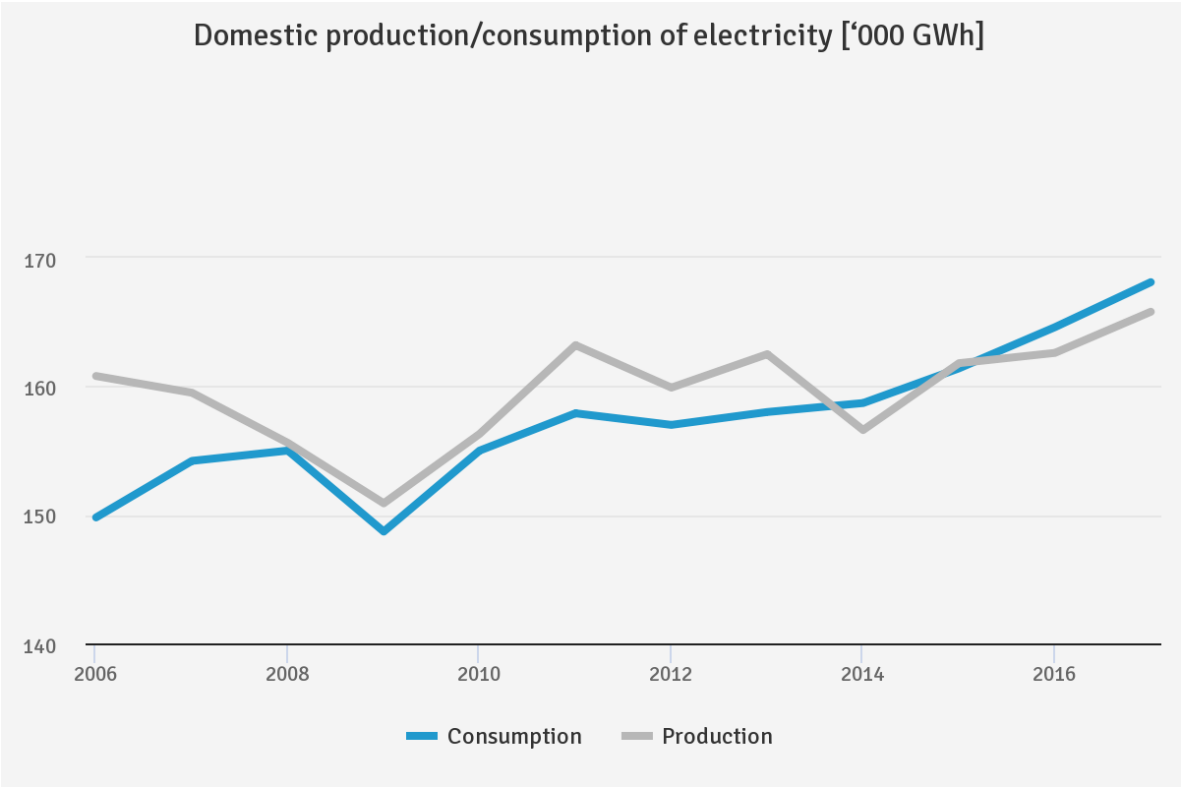
The situation on the electricity market

Production of electricity

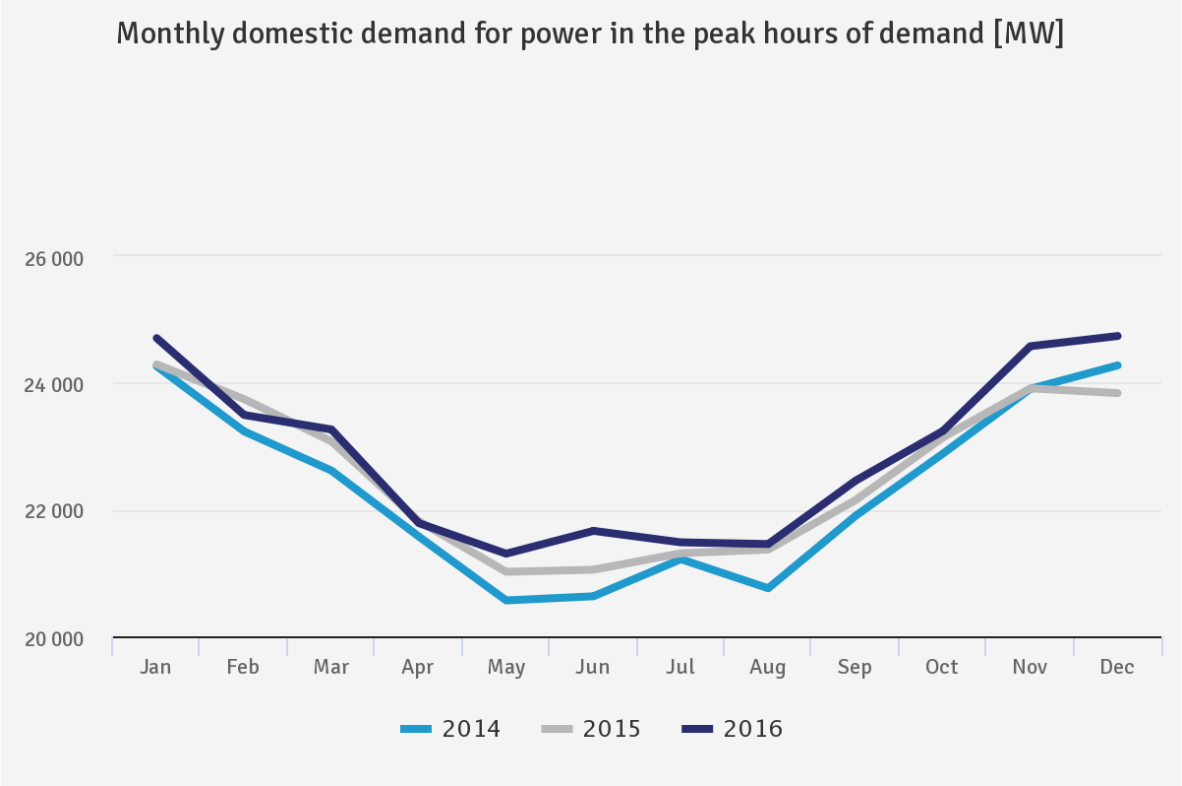
According to the data published by Polskie Sieci Energetyczne, the domestic production of electricity in 2017 was 165 852 thousand GWh.

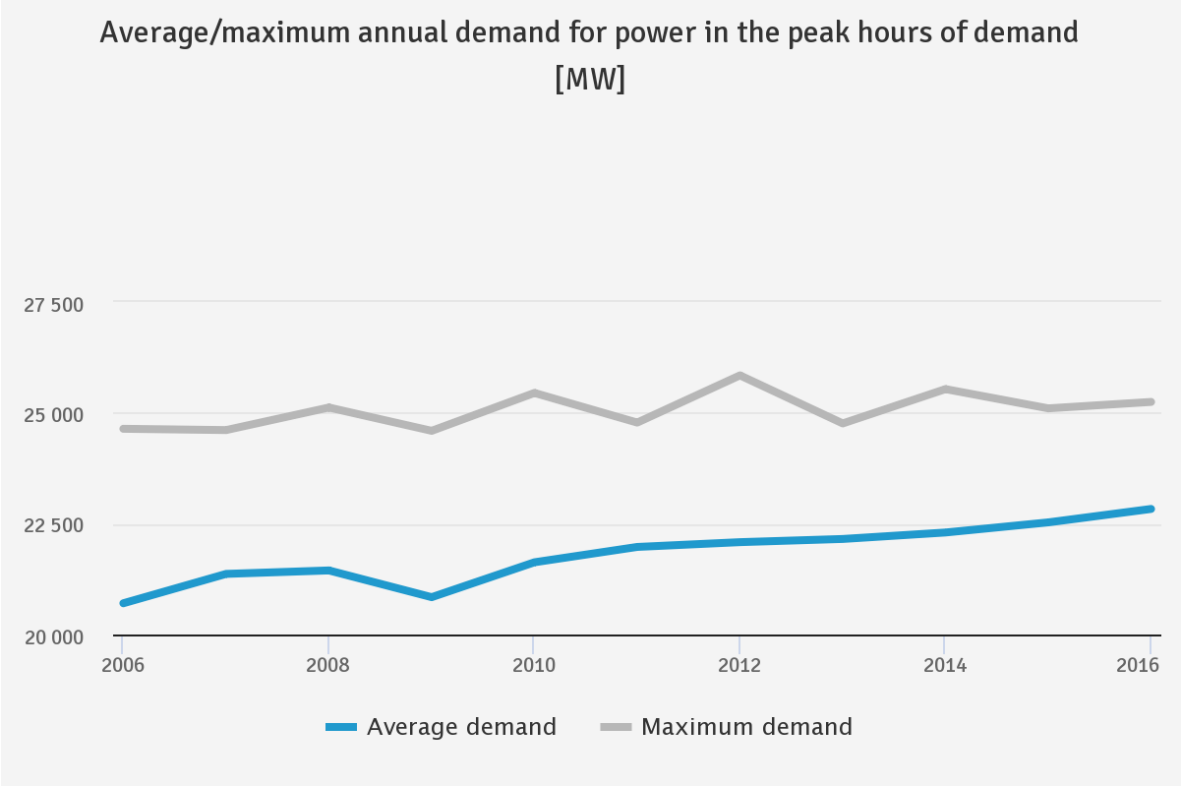


Electricity generation structure [GWh]

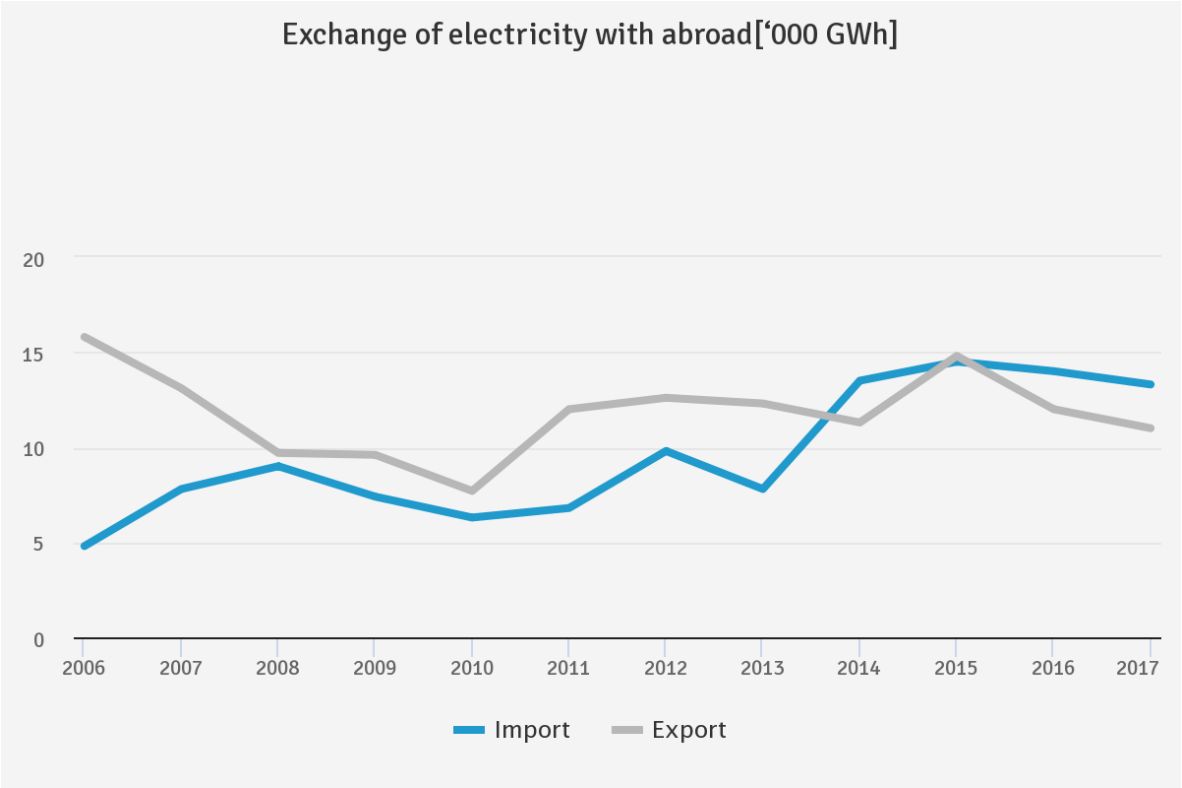
Types of power plants	2014	2015	2016	2016
Commercial on bituminous coal	80 284	81 883	81 348	79 868
Commercial on lignite	54 212	53 564	51 204	51 983
Industrial	9 020	9 757	10 130	10 057
Commercial on gas	3 274	4 193	5 776	7 172
Commercial hydroelectric	2 520	2 261	2 399	2 767
Wind and other renewable	7 256	10 114	11 769	14 005

Źródło: https://www.pse.pl/mapa-raportow





Intersystemic exchange



Market prices of coal in 2017

In 2017 global prices of coal continued to grow and were reached high quotation levels – in the average range of 80-100 USD/t. A clear market slowdown in April or November resulted from one-off events such as Herbie hurricane in Australia or typical market mechanisms, such as saturation of the market.

The factors influencing the global dynamics of the spot price quotations included low supply with increased demand from Asia-Pacific countries, which due to the need for cheap electricity in the South-East Asia region will remain the main driving force behind the global coal demand till 2040, according to the IEA . The demand for coal will remain high at least until RES energy production becomes competitive or the ability to store energy increases. .

The inverse and strongly anti-coal trend, in turn, dominates in the Atlantic area. In European coal terminals, however, the price of spot coal followed the growths from the Asian market, although the promotion of low-emission energy production and RES sources means that the correlation of global indices is weakening.

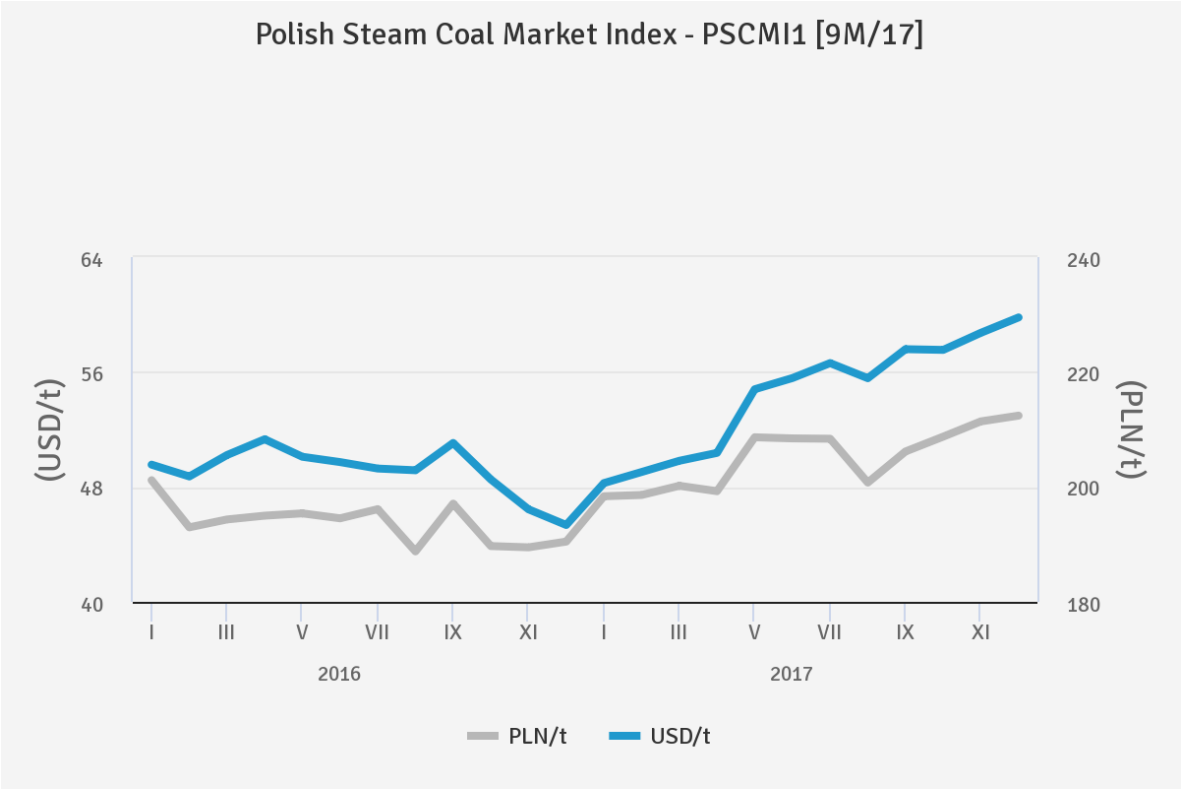
In 2017, the average spot price of coal from Newcastle, which is a determinant for energy coal prices on the Asian market, increased by 34.5% y/y and amounted to 88.95 USD/t. On average, 30% more was paid for 1 ton of South African coal, i.e. 83.95 USD. At coal terminals in the ARA area, the average annual coal price increased by about 40.1% and amounted to 84.14 USD/t. Despite advanced efforts of the EU and legislative restrictions on the limitation of coal production, in many countries it is not possible to immediately abandon this energy carrier on an overnight basis.

High prices at the end of 2017 on the global coal market are described as unstable.

In 2018, a downward trend to USD 86-75 is expected, sources say.

The structural problems of the Polish coal market in 2017 resulted, among other things, in the occurrence of a supply gap necessitating the increased imports of energy coal by 59.8% y/y to the level of 9.729 million tonnes. Russia (82%) and Colombia (11%) remained the dominant directions of import of raw material. Lower extraction of energy coal by 7.3% y/y at 53 million tonnes translated into a regular increase in its prices visible from the beginning of 2017. In addition, problems occurring on the rail transport market involving untimely deliveries and numerous repairs of the railway infrastructure resulted in a significant increase in the risk of defaults on minimum levels of coal reserves by generation units across the country.

In 2017, there was an upward trend in prices of coal on the Polish market. The average annual index of PSCMI1 increased by 5.4% y/y and amounted to PLN 9.22 / GJ, which is about 54.3 USD per 1 tonne of coal at the average annual exchange rate of 3.78 USD/PLN. In 2017, the price of fine coal for the professional power industry also increased, on average 3% more for 1 ton of the raw material, i.e. PLN 9.12 / GJ.



Wholesale electricity prices

The average price on the SPOT market in 2017 was lower by 1.0% in comparison with the same period of 2016. In particular, the prices fell in the period between April and June. The prices were affected by the following factors:

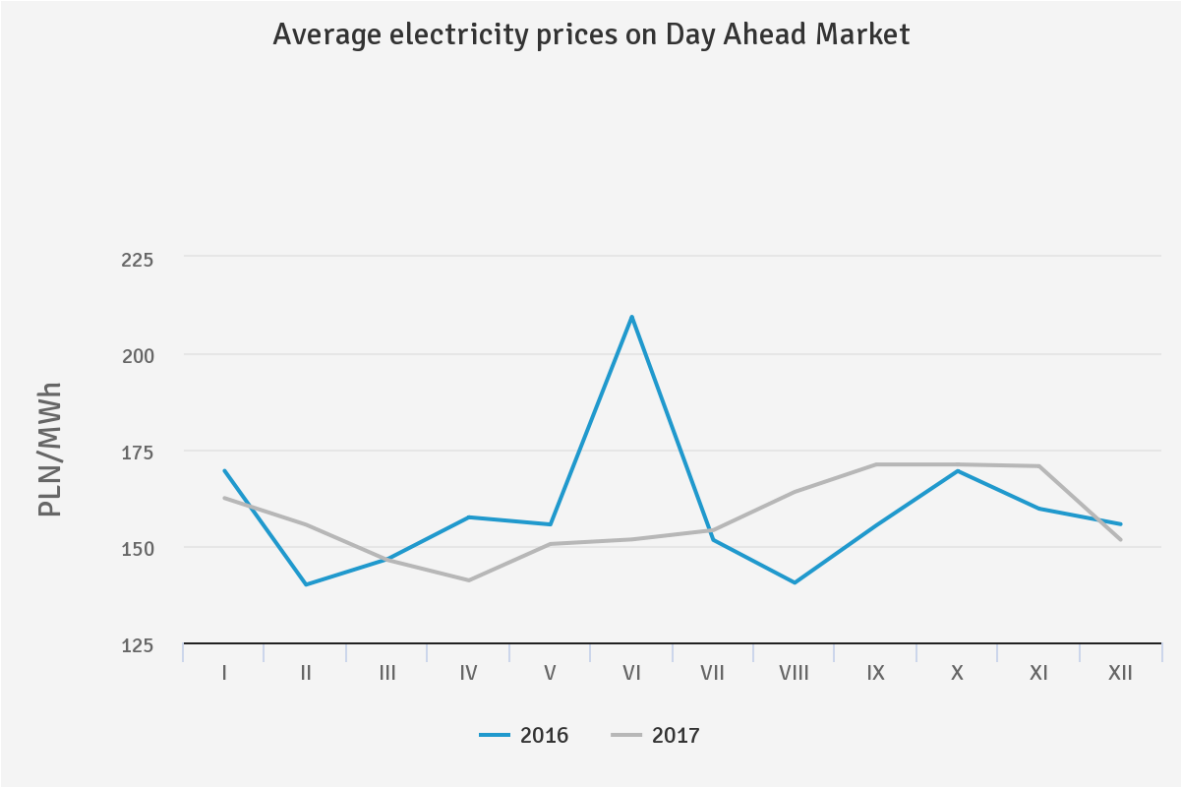
- high capacity available in PPE system
- high use of wind generation
- relatively mild weather

- growth in imports of electricity

Table 1. Average prices on SPOT market (PPE Day Ahead Market)

Period	Average Price[PLN/MWh]	Zmiana [%]
2016	159.20	-
2017	157.57	-1.0%

Source: Own development based on PPE data.



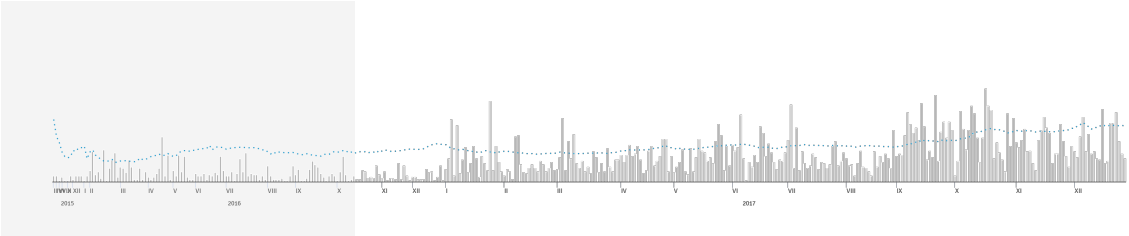
Increases in electricity prices on the forward market were observed. During the reporting period, the price of BASE Y-18 rose from 164.50 PLN/MWh at the beginning of January to 177.65 PLN/MWh at the end of 2017.

Table 2. Prices on the forward market

Product	Price at the end of quotations [PLN/MWh]	Change y-o-y [%]	Average price from quotations [PLN/MWh]	Change y-o-y [%]
BASE Y-15	177.00	-	168.13	-
BASE Y-16	167.50	-5.4%	166.49	-1.0%
BASE Y-17	162.0	-3.3%	159.31	-4.3%

Product	Price at the end of quotations [PLN/MWh]	Change y-o-y [%]	Average price from quotations [PLN/MWh]	Change y-o-y [%]
BASE Y-18	177.65	9.7%	167.00	4.8%

Source: Own development based on PPE and TFS data.



On the PPE forward market in 2017, comparable liquidity as in the preceding year could be observed (increase by 1.0% compared to 2016). When the trading for 2015, 2016 and 2017 is compared, then the decrease in the volume of trading e.g. for a BASE_Y product is approx. 50%. This may result mainly from the extinction of the so-called 100% exchange obligation related to contracts under to the KDT Act.

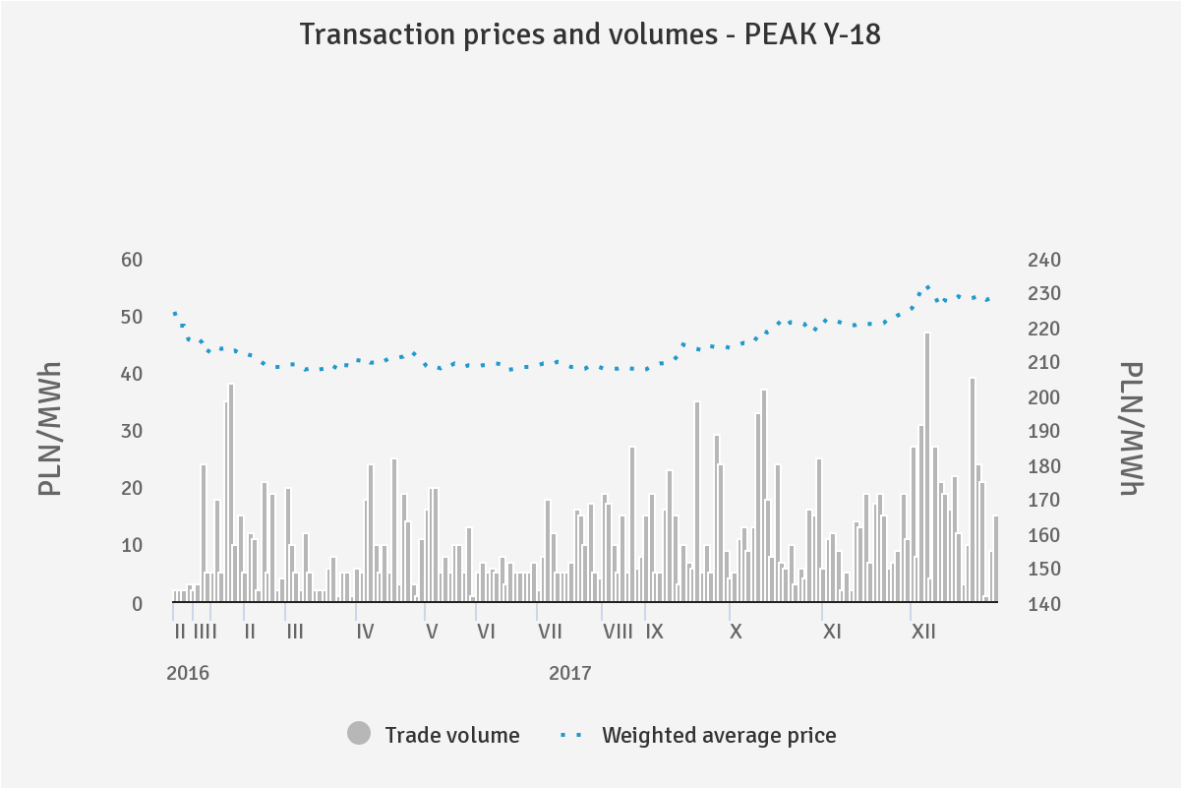
As in the case of BASE Y-18, the prices of PEAK Y-18 also changed. At the beginning of January, the market valuation of this product was PLN 214.00/ MWh, and at the end of 2017 at PLN 227.50/ MWh

In the course of 2017, we observed a slow increase in prices on the forward electricity market. It was linked, among other things, with the high volatility of CO_2 > emission allowance prices (spread between max and min price – EUR 3.57 / t). The market situation was significantly influenced by the trading volume of BASE Y-18 on the PPE substantially reduced as compared to the volumes of BASE Y-17 in the corresponding period of the previous year.

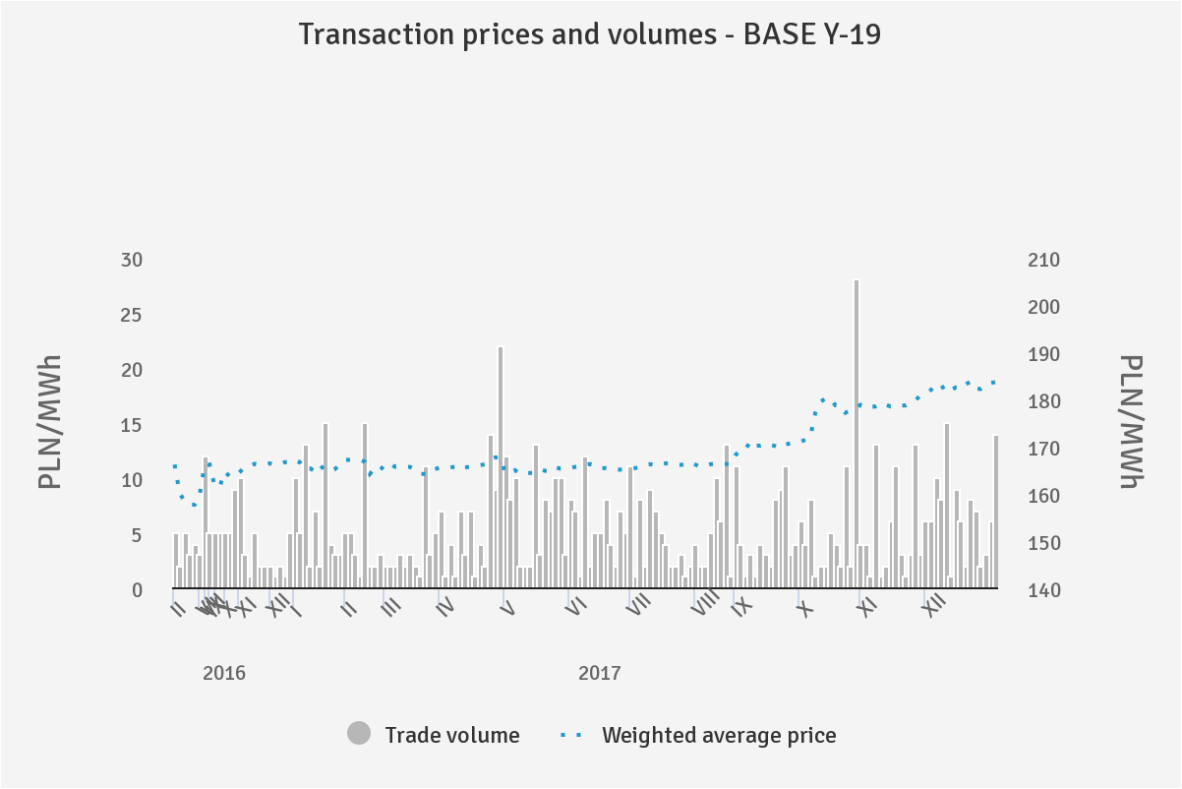
The uncertainty factors still include:

- the question of the exit of the United Kingdom from the European Union, which may translate into possible long-term changes in the Community Emissions Trading System and the prices of CO_2 allowances (EUA)
- the direction of changes in the system and the introduction of new solutions (e.g. the power market) in the scope of providing appropriate power levels in the National Power System

Therefore, possible increases in prices of moderate strength cannot be ruled out.



In 2017, transactions were also concluded for BASE Y-19; however, due to the remote delivery horizon, the trading volume was much lower than in the case of BASE Y-18.



Obligations involved in obtaining energy certificates

Pursuant to the effective regulations, energy companies selling electricity to end users in 2017 are obliged to obtain and redeem the following types of certificates of origin:

- for energy generated in renewable sources, the so-called "green" certificates – the obligation at the level of 15.4% of sales to end users
- for energy generated from agricultural biogas, new certificates established by the amendment to the Act on Renewable Energy Sources dated 20 February 2015 – an obligation at the level of 0.60% of sales to end users
- for energy generated in methane cogeneration – "violet" certificates – at 1.8% of sales to end users
- for energy generated in gas cogeneration units or with a total installed capacity of up to 1 MW, the so-called "yellow" certificates – the obligation at the level of 7.0%
- for energy generated in other cogeneration sources, the so-called "red" certificates – the obligation at the level of 23.2%
- for energy efficiency certificates, the so-called "white" certificates – the obligation at the level of 1.5%

The following slide presents the pricing structure of contracts on the PPE session market for individual property rights in the period January – December 2017. „Green" Property Rights (PMOZE) were omitted in the analysis due to the lack of trading and their complete replacement by PMOZE_A.

Table 3. Prices on the certificates of origin market (PPE's session market)

		Average price Q1-4 2017	Change in relations to Q1-4 2016 .		Minimum price	Cena minimalna
			%	PLN/MWh	PLN/MWh	PLN/MWh
OZEX_A („green" property rights)		38.83	-47.3	-34.8	31.00	21.75
OZEX_BIO („light blue" property rights")		333.97	-	-	470.00	300.03
KGMX („yellow" property rights)	2016	123.30	1.8	2.17	126.00	70.00
	2017	116.48	-	-	117.25	115.20
KECX („red" property rights)	2016	10.59	-0.9	-0.09	10.95	9.00
	2017	9.72	-	-	9.80	9.59
KMETX („violet" property rights)	2016	62.19	0.8	0.47	62.90	55.00
	2017	54.81	-	-	55.30	54.00
EFX („white" property rights)[1)]		693.36	-29.1	-283.98	1 270.00	290.00

[1)]Values in PLN/toe

Source: Own development based on PPE data.

Limits and market prices of carbon dioxide emissions allowances

Late 2016 was characterised by a significant increase in the prices of EUA (European Union Allowance Unit). The reason behind this increase could be the rising coal and energy prices, high prices achieved at auctions and the news about the UK's willingness to remain a member of the EU ETS system after Brexit. Another significant pro-growth factor was the agreement on modifying the EU ETS system after 2020, stipulating, among others, the withdrawal from market of 24% instead of 12% of allowances during at least 4 years of MSR operation, the redemption of 800 million of allowances withdrawn from the market under backloading, and the increase in the line reduction ratio to 2.4% (from 1.74%). The rapid rise in prices in the second half of December 2016 was followed by a correction.

The decrease in prices of CO_2 emissions in early January 2017 was caused by: an increase in the volume at auctions (with backloading no longer being in effect, volume increased from EUA 3.7m to EUA 4.3m), and lower prices of German energy.

The European Commission suggested the continuation of the obligation resulting from the greenhouse gas emissions by aviation until final decisions are made regarding the global market mechanism. On 15 February 2017, at the plenary session, the European Parliament approved the package of amendments to draft EU ETS Directive which were adopted by the Environmental Council in late February 2017. The EU Member States began distribution of free allowances for 2017.

As it follows from the most recent data on the number of allowances issued for 2017, as published by the European Commission, the countries with the highest number of unissued allowances are: Italy, Romania, and United Kingdom, whereas Malta is the only country which has already issued all allowances. Pursuant to April publication of the EC, the value of verified emissions for 2016 dropped by 2.7% when compared to 2015.

In addition, EC published the data on the number of allowances redeemed. Nearly all plants recorded in the EU ETS system kept the time limit for redemption of emissions for 2016. Moreover, EC published the update of the data on the transmission of free allocations from NER (new entry reserves). The aggregate number of CO_2 emissions allowances sent from the beginning of stage III, i.e., from 2013, until today is 139.9 million, of which as much as EUA 25.8m were sent after January 2017. Next update is to be published in January 2018.

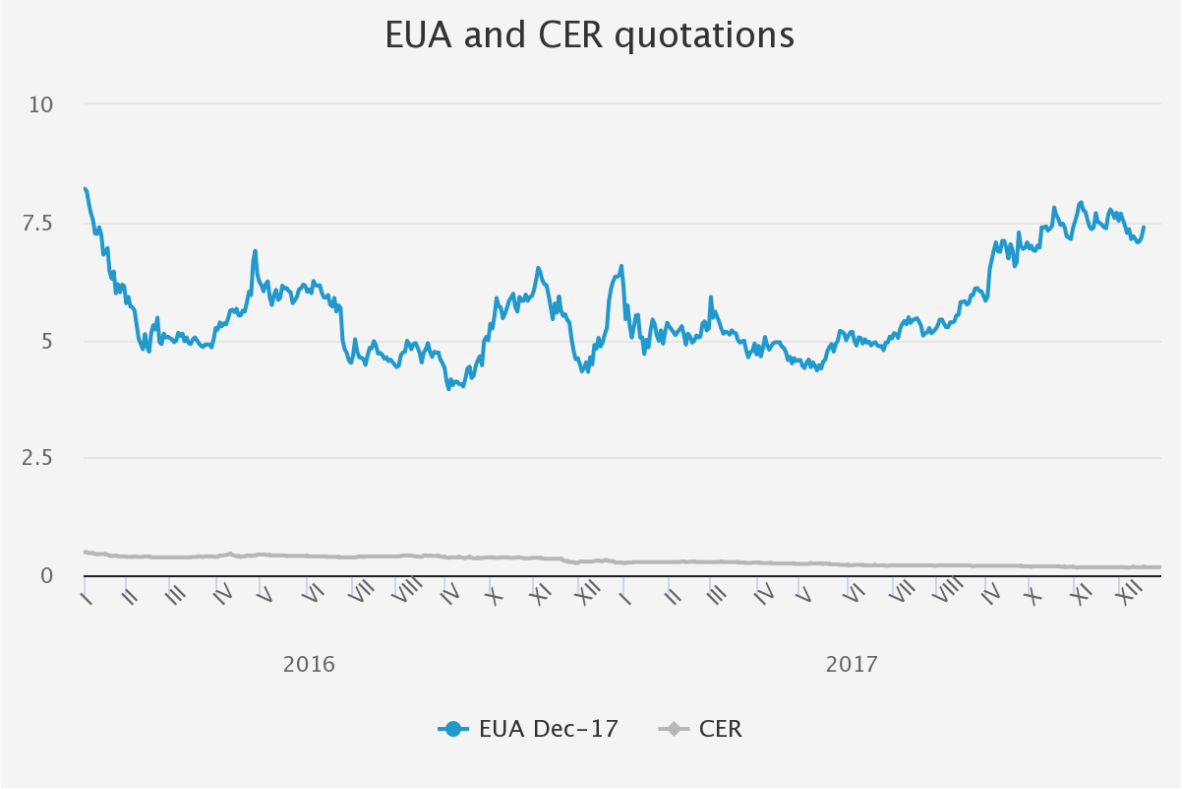
On 17 August, the new stricter BAT conclusions were published in the Official Journal of the EU, setting the nitrogen oxides, sulphur dioxide, lead and suspended dust emissions standards applicable, among others, to large coal fired power plants (4 years for adjustment) at the level much higher than that effective hitherto.

Another Climate Change Conference, COP23, was held in Bonn. Among the most important results of the meeting is the progress in determining the schedule of works over the Paris Agreement implementation. On 22 November, EU adopted the plan of reform of trading in CO_2 emissions allowances under the formula which was developed during the tripartite meeting on 8 November. The main assumptions of the reform include increasing the reduction ratio from 1.74% to 2.2% starting from 2021 and increasing the stabilisation reserve (24%).

Table 4. EUA and CER price change

Product	Price [EUR/t]		% change
	Beginning of January 2017	End of December 2017	
EUA Spot	6.11	8.14	33.2%
CER Spot	0.26	0.17	-34.6%
EUA Dec-17	6.14	7.39	20.4%
CER Dec-17	0.27	0.18	-33.3%

Source: Own development based on ICE data.



Source: Own development based on BlueNext and ICE data.