

***Management Board's report on activities of  
the Capital Group of  
PGE Polska Grupa Energetyczna S.A.  
for the 6-month period***

***ended June 30, 2019***

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## KEY FINANCIAL RESULTS OF THE PGE CAPITAL GROUP

Key financial data	Unit	Period ended June 30, 2019	Period ended June 30, 2018	% change
Sales revenues*	PLN million	18 236	12 871	42%
<b>EBIT</b>	<b>PLN million</b>	<b>2 446</b>	<b>1 859</b>	<b>32%</b>
<b>EBITDA</b>	<b>PLN million</b>	<b>4 395</b>	<b>3 703</b>	<b>19%</b>
EBITDA margin*	%	24%	29%	
<b>Recurring EBITDA</b>	<b>PLN million</b>	<b>3 299</b>	<b>3 803</b>	<b>-13%</b>
Recurring EBITDA margin*	%	18%	30%	
<b>Net profit</b>	<b>PLN million</b>	<b>1 765</b>	<b>1 296</b>	<b>36%</b>
<b>Capital expenditures</b>	<b>PLN million</b>	<b>2 543</b>	<b>2 244</b>	<b>13%</b>
Net cash from operating activities	PLN million	3 193	2 683	19%
Net cash from investing activities	PLN million	-3 186	-2 905	10%
Net cash from financial activities	PLN million	1	-1 122	-

Key financial data		As at June 30, 2019	As at December 31, 2018	% change
Working capital	PLN million	2 606	-3 395	-
<b>Net debt/ LTM EBITDA**</b>	<b>x</b>	<b>1.55</b>	<b>1.51</b>	

\* With regard to introduction of 100% power exchange obligation (the obligation to publicly sell electricity), the lower share of trading was realised bilaterally within the Capital Group than in the first half of 2018. This change significantly attributed to the growth of sales and purchase of electricity (see p. 4.2 of this report) and as a result - level of consolidated revenues and costs. It had limited impact on actual profitability of PGE Capital Group.

\*\* LTM EBITDA - Last Twelve Months EBITDA.

One-offs affecting EBITDA		As at June 30, 2019	As at June 30, 2018	% change
Additional CO <sub>2</sub> emission rights	PLN million	1 393	0	-
Change in reclamation provision	PLN million	-246	-17	1 347%
Change in actuarial provision	PLN million	-36	0	-
LTC compensations	PLN million	-15	-83	-82%
<b>Total</b>	<b>PLN million</b>	<b>1 096</b>	<b>-100</b>	<b>-</b>

## 1. PGE Capital Group

### 1.1. Characteristics of activities

Capital Group of PGE Polska Grupa Energetyczna S.A. ("PGE Capital Group", the "Capital Group", "PGE Group", the "Group") is the largest vertically integrated producer of electricity and heat in Poland. With a mix of own fuel sources, generation assets and distribution network, PGE Group provides a safe and reliable supply of electricity to more than five million households, businesses and institutions.

The parent company of PGE Capital Group is PGE Polska Grupa Energetyczna S.A. (also "PGE S.A.", "PGE", the "Company", the "Issuer"). PGE Group organizes its activities in six business segments:

#### CONVENTIONAL GENERATION



Core business of the segment includes extraction of lignite, production of electricity and heat from conventional sources.

Rybnik power plant, formally being part of PGE Energia Ciepła S.A. holding, due to character of its operations, has been included in Conventional Generation.

#### DISTRICT HEATING



Core business of the segment includes production of electricity and heat from conventional sources as well as transmission and distribution of heat.

#### RENEWABLES



Core business of the segment includes electricity generation from renewable sources and in pumped-storage power plants and provision of ancillary services.

#### SUPPLY



Core business of the segment includes wholesale trading of electricity on domestic and international market, sale of electricity to final off-takers, trading of CO<sub>2</sub> allowances and energy certificates and fuels and provision of services of the Corporate Centre to companies from the PGE Group.

#### DISTRIBUTION



Core business of the segment includes supply of electricity to final off-takers through the grid and HV, MV and LV infrastructure.

#### OTHER OPERATIONS

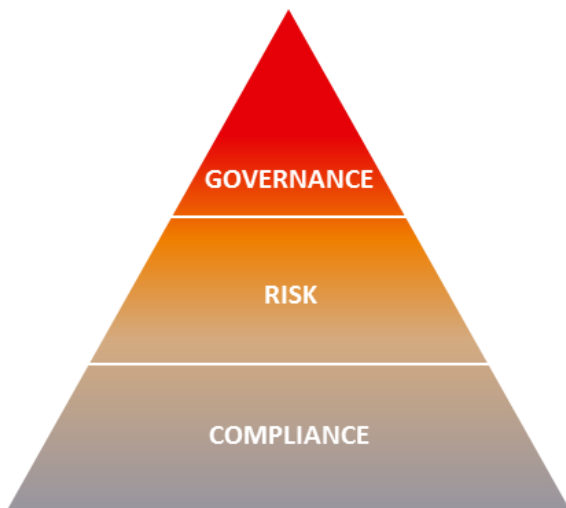
Other operations include provision of services, through the subsidiaries, to PGE Group, which include organisation of capital raising in form of Eurobonds, provision of IT, payroll and HR services, transportation and car sharing services. Its activities also include subsidiaries formed to prepare and implement a project to build a nuclear power plant, to manage investment funds and to invest in start-ups.

The composition of the Capital Group is presented in note 1.3 to the consolidated financial statements.

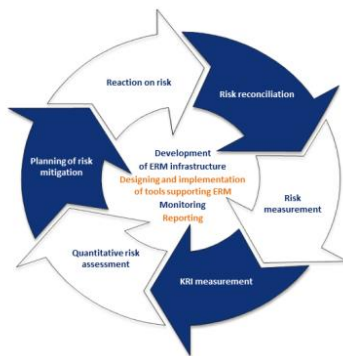
## 2. Risks in the Group's operations

PGE S.A., as the Corporate Centre managing the Group, creates and implements integrated risk management architecture at PGE Group. In particular, it shapes PGE Group's risk management policies, standards and practices, designs and develops internal IT tools to support these processes, specifies global risk appetite and adequate limits as well as monitors these.

PGE Capital Group companies, as well as other entities from the electrical and power sector, are exposed to a number of risks and threats resulting from the specific operating activities and operating in specific market and regulatory environment.















In PGE Group risk management process is pursued based on the GRC (Governance - Risk - Compliance) model. It allows adaptation and integration of each of the operational areas at all levels of management. Having established a top-level Risk Committee, which reports directly to the Management Board, supervision over the effectiveness of risk management in the Group is ensured. Function definition within corporate risk management allows an independent assessment of particular risks, their impact on PGE Group and limiting and controlling major risks using the capital exposed to risk concept via dedicated instruments. Formation of a separate compliance function within the Group guarantees that PGE Group's activities are in line with legal conditions and ensures observance of the adopted internal standards.



























The PGE Capital Group has consequently developed a comprehensive risk management system. We measure and assess risks in the key companies of the Group. Mechanism allowing identification of areas exposed to risk and risk level measurement methods are constantly verified and developed. Thanks to that, the significant risks concerning various areas of operations are identified and kept within the assumed limits by reducing negative effects of such risks and by taking preventive or corrective measures, in accordance with the presented cycle.

## 2.1. Risk factors and mitigating actions









The main risks and threats of PGE S.A. and the PGE Group are presented below along with their assessment and outlook in the horizon of the next year.

Risk level	 low	 medium	 high	Mitigating actions and main tools used for the management of the risk
Risk outlook	 decrease	 growth	 stable	
<b>Low level</b>	Risk does not pose a threat and may be tolerated,			
<b>Medium level</b>	Risk which needs preparation of the proper reaction based on analysis of costs and benefits,			
<b>High level</b>	Intolerable risk, which needs immediate and active reaction, leading simultaneously to limitation of possible consequences and of probability of occurrence thereof.			
<b>Market and product risks</b> Related to prices and volumes of offered products and services	<b>Prices of electricity and related products</b> – resulting from a lack of certainty with regard to the future levels and volatility of commodity prices relative to open contract positions - this particularly concerns electricity and associated products (property rights, CO2 emission allowances).			<b>Actions:</b> <ul style="list-style-type: none"> <li>■ Using consistent guidance in respect of process organisation in the context of commercial strategy and mid-term planning (strategy for hedging key exposures in the area of electricity and related product trading that correspond to the adopted risk appetite in the mid-term).</li> <li>■ Establishing position hedging levels with consideration given to the results of analysing pricing risk in respect of electricity and related products, VaR-based. Target hedging levels are specified taking into consideration the Group's financial standing, including in particular its strategic objectives.</li> <li>■ Research, monitoring and analysing the electricity and related products markets in order to optimally use generation and selling capacities.</li> <li>■ Acquiring new customers - diversification of channels to reach final off-takers and diversification of target groups by maintaining an extensive product portfolio and adapting offering to market.</li> <li>■ Current clients retention - a diversified portfolio of customer loyalty schemes and client-acquisition activities and special offers dedicated to former clients who moved over to the competitors.</li> <li>■ Care for a high level of customer service by developing employees' competences and building relations with business and retail clients.</li> <li>■ Use of tools to supporting customer relations processes allows the Group better sales planning and organisation of sales.</li> </ul>
	<b>Electricity sales volumes</b> – this risk derives from a lack of certainty with regard to the conditions determining the demand and supply of electricity, directly affecting the volume of market sales by PGE Group.			
	<b>Tariffs (regulated prices)</b> – resulting from the requirement to approve rates for distribution services and electricity and heat prices for particular groups of entities.			

<b>Property risks</b> Related to development and maintenance of the assets	<b>Failures</b> – connected with the operation and degradation over time of energy equipment and facilities (maintenance and repair work, diagnostics).			<b>Actions :</b> <ul style="list-style-type: none"> <li>■ Active pursuing of a strategy for building up and modernization of the production capacities.</li> <li>■ Performing maintenance repairs in line with the highest sector standards – PGE Group's plants have the lowest breakdown rates in the country</li> <li>■ Diversification of the current structure of the production sources due to energy generation technology.</li> <li>■ Our main generation assets were insured against failure and damage to property .</li> <li>■ Assets are insured based on an analysis of insurance costs, capabilities of insurance markets for particular risks or for particular types of assets, costs related to asset replacement and potential lost revenue</li> <li>■ The reliability of the power supply to the end users has been systematically improved through modernization of the distribution grid.</li> </ul>
	<b>Damage to property</b> – connected with the physical protection of energy equipment and facilities against destructive external factors (including fire, weather phenomena and intentional damage).			
	<b>Investment and development</b> – connected with strategic plans for expanding the generation, distribution and sales potential as well as on-going investments.			
<b>Operational risks</b> Related to pursuing of ongoing economic processes	<b>Electricity and heat production</b> – connected with production planning and impact of the factors that determine production capacities.			<b>Actions :</b> <ul style="list-style-type: none"> <li>■ Optimisation of costs inter alia through monitoring of fuel prices and reserves and securing supply through long-term contracts with suppliers and through price fixing formulas.</li> <li>■ Sales margins are secured by purchasing deficit CO<sub>2</sub> emission allowances</li> <li>■ Optimisation of equipment lifecycles and the availability of key assets.</li> <li>■ Inspections, repairs and modernisation of the existing assets</li> <li>■ PGE's active participation in internship programmes and cooperation with educational institutions in order to secure a pipeline of qualified personnel</li> <li>■ Assessment and training of personnel in order to make optimal use of it within the Group's structures</li> <li>■ Conducting an intensive and effective dialogue in order to avoid escalation of potential disputes with the social partners and to work out the most favourable solutions with regard to employment and employment costs within PGE Capital Group connected therewith.</li> </ul>
	<b>Fuel management</b> – connected with uncertainty regarding the costs, quality, timeliness and volumes of fuel supply (mainly coal) and production raw material as well as the effectiveness of inventory management processes.			
	<b>Human Resources</b> – pertaining to provision of personnel with the relevant experience, competences and ability to perform specific tasks.			
	<b>Social dialogue</b> – connected with a failure in achieving agreement between the Group's management and employees, what could lead to strikes/collective labour disputes.			

<b>Regulatory and legal risks</b> Related to compliance with external and internal legal provisions	<b>Legal changes in support systems</b> – connected with uncertainty as to the future shape of the support system for production of energy.			<ul style="list-style-type: none"> <li>■ Actions:</li> <li>■ Monitoring of the changes being introduced or proposed provides that our operations in key business segments are carried in compliance with the law and that PGE Capital Group has solutions which take into account potential changes in the legal environment</li> <li>■ Active participation of PGE S.A. as the member of the Polish Electricity Committee that opened its office in Brussels. Through the Committee's operations, the Company actively influences proceeding and shaping of EU law and engages a dialogue with the EU institutions.</li> <li>■ Adaptation of internal regulations and practices to make sure that the activities are in compliance with the power sector regulations and binding law.</li> <li>■ Improvement of activities aimed at protecting and improving the state of the environment by implementing technological and organisational solutions ensuring efficient and effective management in this area.</li> <li>■ Monitoring of the process of preparing the license application in the PGE Group companies (development, checking the completeness of data and documentation, internal arrangements), monitoring the terms of the license, monitoring legal changes in terms of license requirements.</li> <li>■ Giving opinions on activities and documentation in terms of compliance with the law and the Compliance Program, appointment of the function of Compliance Inspector (mainly at PGE Dystrybucja).</li> <li>■ Requests for binding tax interpretations and using the services of external tax advisers.</li> </ul>
	<b>Environmental protection</b> – resulting from industry regulations specifying which "environmental" requirements energy installations should meet and what the principles for using the natural environment are. The future environmental regulations and uncertainty concerning their final shape (in particular with regard to the revision of BAT / BREF) may translate into a change in the level of capital expenditures of the PGE Group.			
	<b>Concessions</b> – resulting from the statutory requirement to hold concessions with regard to conducted operations.			
	<b>Discriminatory activities</b> – connected with application by the Group of practices that limit or eliminate competition and infringe on legal regulations or consumer interests.			
	<b>Taxes</b> – related to uncertainty surrounding the future shape of tax regulations and their interpretation.			



<b>Financial risks</b> Related to finance management	<b>Credit risk</b> – connected with the counterparty default, partial and/or late payment of receivables or a different type of breach of contractual conditions (for example failure to deliver/collect goods or failure to pay for any associated damages or contractual penalties).			<b>Actions:</b> <ul style="list-style-type: none"> <li>■ Prior to executing a transaction, a counterparty assessment is carried out and forms a base for applying credit limits, that are regularly updated and monitored. Exposures that exceed established limits are hedged in accordance with the Group's credit risk management policy.</li> <li>■ Applying a central financing model, which assumes – as a rule – that external capital is raised by PGE S.A. PGE Group subsidiaries use a variety of intra-group financing sources and liquidity risk is monitored using periodic planning for operating, investing and financing activities</li> <li>■ As regards currency risk and interest rate risk, PGE Group has implemented internal management procedures. PGE Group companies execute derivative transactions involving interest rate- and/or currency-based instruments (IRS, CCIRS) only in order to hedge identified risk exposures.</li> </ul>
	<b>Liquidity risk</b> – connected with the possibility of losing the ability to meet current liabilities and obtaining financing sources for business operations.			
	<b>Interest rate risk</b> – resulting in particular from the negative impact of changes in market interest rates on PGE Group's cash flows generated by floating-rate financial assets and liabilities.			
	<b>Foreign exchange risk</b> – understood in particular as risk that PGE Group's cash flows denominated in currencies other than the functional currency are exposed to due to negative exchange rate movements.			

## 2.2. Strategic risk

PGE Capital Group identifies, assesses and analyses risks concerning on-going activities as well as risks that may have an impact on the Group's functioning in a longer timeframe. Assessment of impact on the Group's objectives, image and business continuity is performed at the top management level. This allows us to prepare for arising challenges and ensure the Group's development in the long term.

Unlike threats to PGE's day-to-day business and results, strategic risks might have an impact on strategy implementation and the future of the entire organisation. Their identification is the key to ensuring PGE Group's sustainability.

Presented below are the key identified strategic risks along with their assessment.

Impact	▼▼	▼	◄►	▲	▲▲
	very low	low	medium	high	very high
▲					
▲					
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In analysing these risks as threats for PGE, the Company tries at the same time to identify any opportunities that such changes might bring about. Countering risks becomes an opportunity for the Group's development if it manages to adapt to a changing world in advance.

### 3. Electricity market and regulatory and business environment

#### 3.1. Macroeconomic environment

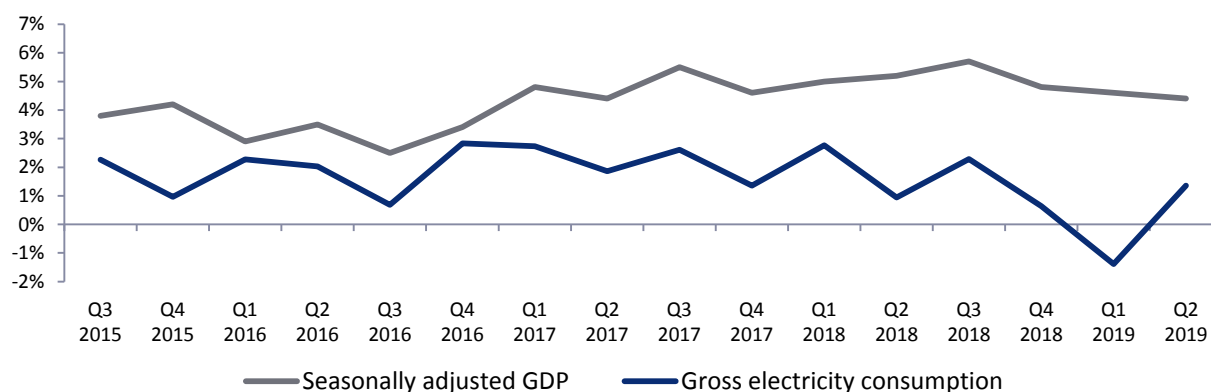
PGE Group's main operating area is Poland, and the domestic macroeconomic backdrop has a substantial impact on Group's results. At the same time, the condition of Poland's economy remains largely tied to the situation across the European Union and in global markets. The Group's financial results are affected by both the situation in specific segments of the economy and the financial markets, which affect the terms of PGE Group's debt financing.

As a rule of thumb, there is a historical correlation between change in electricity demand and change in the rate of economic growth in Poland. Considering PGE Group's position on the Polish power generation market, as well as its substantial share in the electricity sales and distribution market, changes in power and heat demand may have a significant impact on the Group's results.

In the first half of 2019, gross electricity consumption went down by 0.1% y/y. In the analogical period of previous year the electricity consumption increased by 1.9% y/y. The decrease was due to higher temperatures recorded in Poland in the first quarter of 2019. In the first quarter of the average daily temperature reached 2.4°C and was by 3.1°C higher than in the analogical period of the previous year. In the second quarter of 2019 the electricity consumption increased by 1.4% y/y.

Economic trends in the first half of 2019 remained positive in general. According to initial estimates by the Central Statistical Office of Poland gross domestic product (not seasonally adjusted) in the second quarter of 2019 grew by approx. 4.4% y/y (by 0.2 p.p. lower than in the first quarter of 2019) vs 5.2% in the analogical period of 2018.

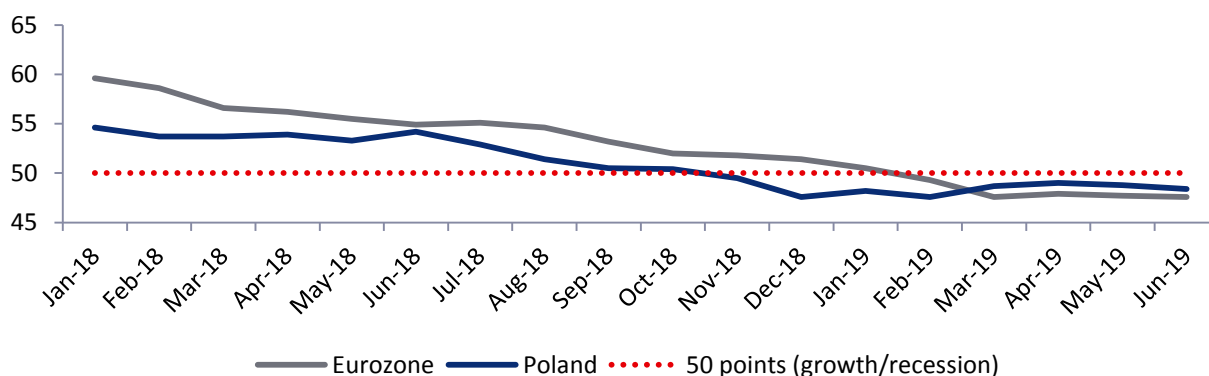
Diagram: Seasonally adjusted GDP change vs. change in domestic gross electricity consumption.



Source: Central Statistical Office of Poland, PSE S.A.

In the first half of 2019, the average Purchasing Managers' Index ("PMI") reading for the industry was 48.5 points (53.9 points in analogical period of 2018), thus remained below the 50 points mark, below which the managers surveyed expect the situation in the sector to worsen. In June 2019, the PMI index recorded a value below the threshold of 50 points for the eighth consecutive month, signaling the longest period of continuous economic downturn in the Polish manufacturing sector in six years. What is more, the main index fell from 48.8 points, noted in May, to the lowest level in four months (48.4 points). The most recent reading of the index has reflected an accelerated production downturn and reduced number of new orders, longer delivery times and a faster increase in inventories of purchased items, partly offset by an increase in employment. The Eurozone PMI averaged 48.4 points in the first half of 2019, while it was 56.9 points in the analogical period of the previous year.

Diagram: Manufacturing PMI in Poland and Eurozone (in points).



Source: Markit Economics

Development in the Polish economy is reflected by inter alia dynamics in overall industrial production. In the first half of 2019 it went up by 5.1% y/y, compared to 6.2% in the first half of 2018. Production in the whole energy sector increased by 1.9% y/y in the first half of 2019 vs 8.4% in the first half of 2018. The mining segment increased by 5.7% y/y in the first half of 2019 versus decrease by 1.6% in the analogical period of 2018. CPI reading in the first half of 2019 amounted to 1.8% y/y.

### 3.2. Market environment

#### SITUATION IN NPS

Table: Domestic electricity consumption (GWh).

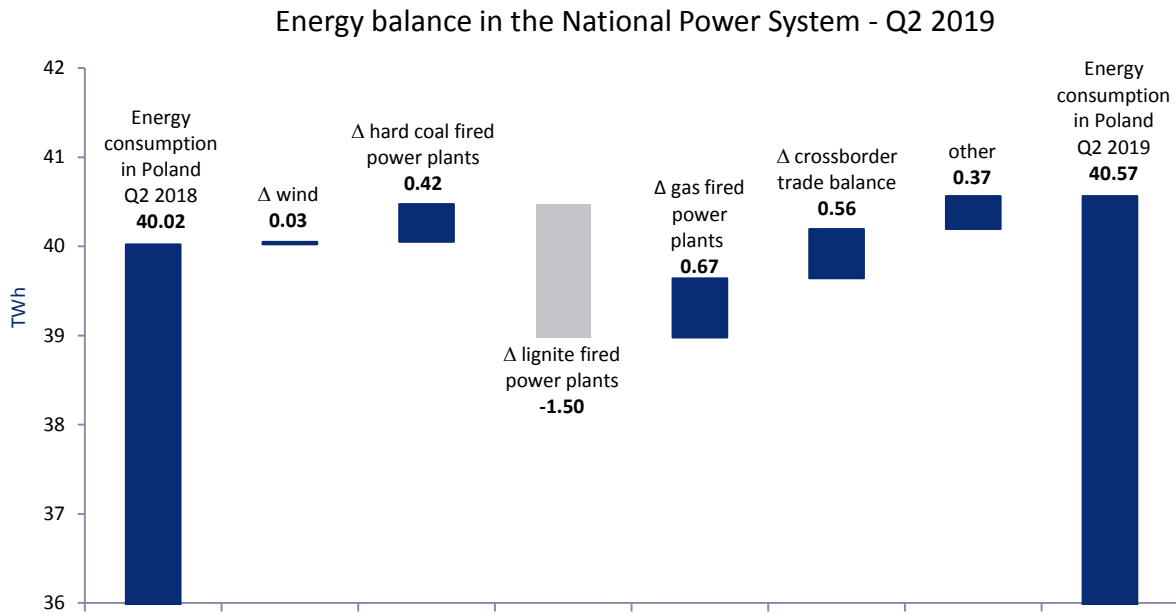
	Q2 2019	Q2 2018	Change	H1 2019	H1 2018	Change
<b>Domestic electricity consumption</b>	<b>40 565</b>	<b>40 022</b>	<b>1%</b>	<b>85 028</b>	<b>85 110</b>	<b>0%</b>
Wind farms	2 691	2 662	1%	7 343	5 830	26%
Industrial thermal hard-coal fired power plants	18 542	18 118	2%	39 110	39 957	-2%
Industrial thermal lignite fired power plants	10 418	11 917	-13%	21 431	24 194	-11%
Industrial gas-fired power plants	2 857	2 192	30%	5 673	4 789	18%
International trading balance	2 841	2 286	24%	4 592	3 839	20%
Other (industrial plants, hydro power plants, other RES)	3 216	2 847	13%	6 879	6 501	6%

Source: data from PSE S.A.

#### Second quarter of 2019

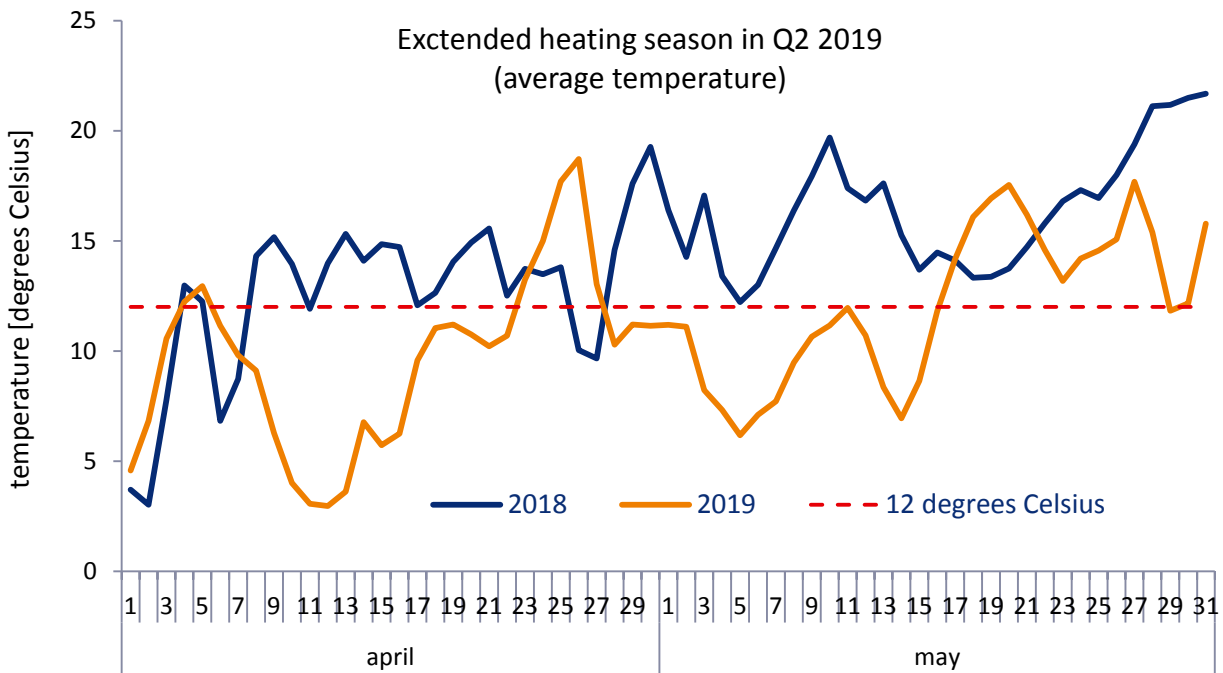
In the second quarter of 2019, there was a decrease in electricity production from lignite. Lower generation by centrally dispatched generating units (CDGU) was linked to higher supply from non-CDGUs, while the y/y demand remained similar. Higher supply from non-CDGUs resulted from the extended heating season (due to low temperatures at the beginning of May 2019). Other factor that decreased the generation by CDGUs was higher y/y import volumes. The increase in production from hard coal was influenced by the launch of units 5 and 6 in the Opole Power Plant. The launch is connected with the continuous operation of new units – including outside peak hours – which results in lower utilisation of lignite power plants. Lower generation in lignite power plants was also connected with longer maintenance downtimes in the Bełchatów Power Plant (units 2 and 12), as well as the Turów Power Plant (unit 12).

Chart: Energy balance in the National Power System in the second quarter of 2019 y/y (TWh).



Source: own work based on data from PSE S.A.

Chart: Extended heating season in April-May 2019 (average temperature in °C).

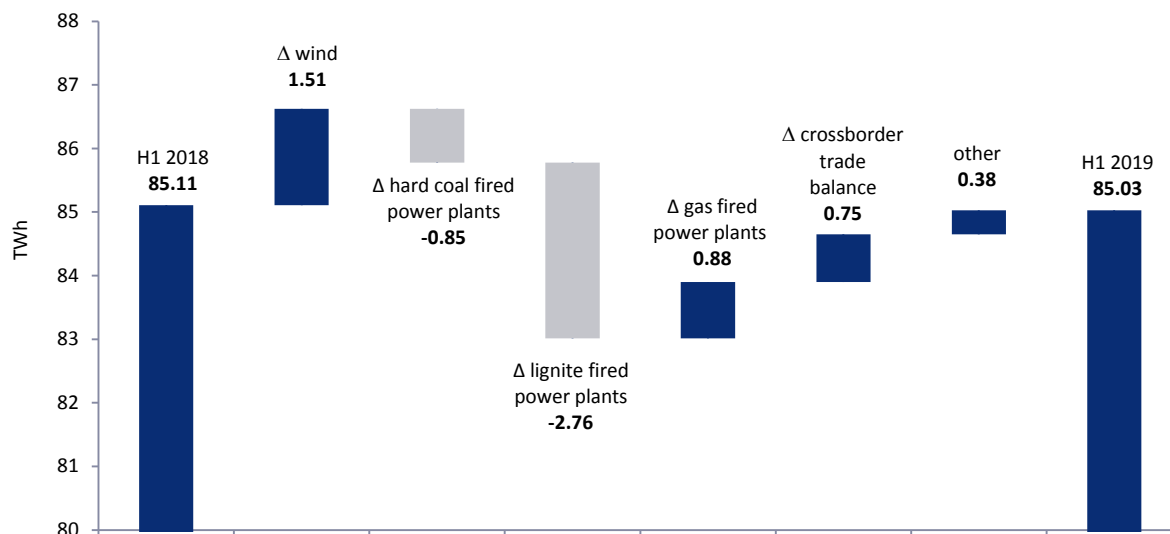


Source: proprietary computations based on data from IMGW - The Institute of Meteorology and Water Management (average readings for selected stations).

First half of 2019

Domestic energy demand has not changed compared to the base year. Due to strong winds (in the first quarter of 2019), wind generation increased by 1.51 TWh y/y – which meant a decreased need for energy production in thermal power stations in order to balance the energy system.

Chart: Energy balance in the National Power System in the first half of 2019 y/y (TWh).



Source: own work based on data from PSE S.A.

## ELECTRICITY PRICES – DOMESTIC MARKET

### Day-ahead market (RDN)

Market/measure	Unit	Q2 2019	Q2 2018	% change	H1 2019	H1 2018	% change
RDN – average price	PLN/MWh	239	210	14%	229	197	16%
RDN – trading volume	TWh	7.01	5.43	29%	14.33	11.49	25%

### Analysis – selected price factors affecting RDN quotations

Factor	Unit	Q2 2019	Q2 2018	% change	H1 2019	H1 2018	% change
CO <sub>2</sub> emission rights	EUR/t	25.57	14.49	76%	23.59	12.57	88%
Polish Steam Coal Market Index PSCMI1	PLN/GJ	11.97	10.76	11%	11.93	10.65	12%
Wind generation NPS	TWh	2.69	2.66	1%	7.34	5.83	26%
International trading balance	TWh	2.84	2.29	24%	4.59	3.84	20%
Ratio: wind generation/NPS consumption	%	6.6%	6.7%		8.6%	6.8%	
Ratio: international trading/ NPS consumption	%	7.0%	5.7%		5.4%	4.5%	

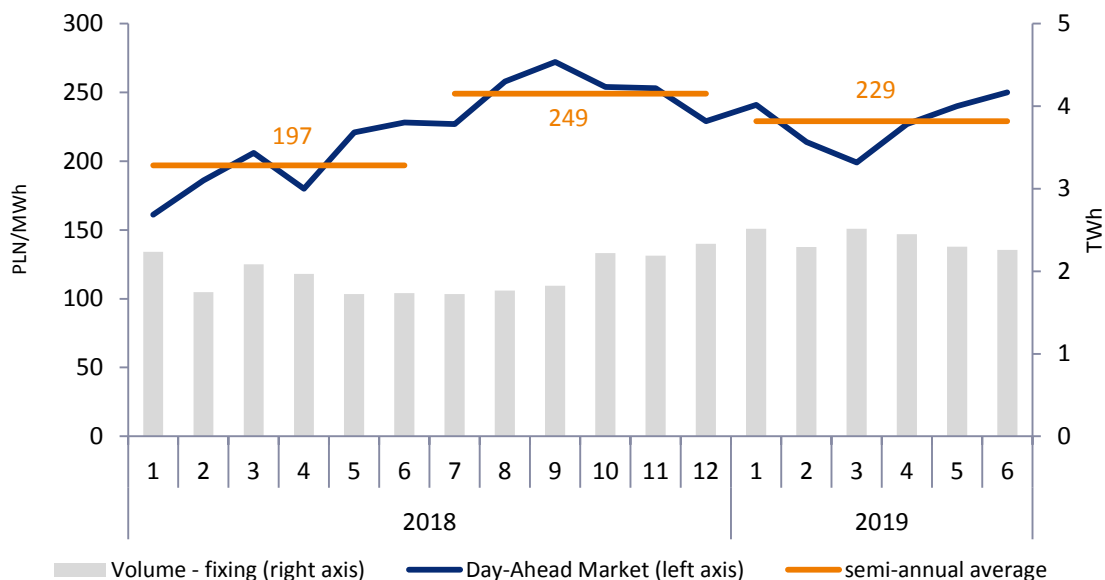
In the second quarter of 2019, the average electricity price on the day-ahead market<sup>1</sup> was PLN 239/MWh, i.e. 14% higher than the average price (PLN 210/MWh) in same period in the preceding year. The increased electricity price (y/y) was a result of the situation on the related markets: in the second quarter of 2019, prices for CO<sub>2</sub> emission rights were by 76% higher than in the same period in the base year. An increase was also observed with regard to coal prices, as the average PSCMI1 was PLN 11.97/GJ in the second quarter of 2019, i.e. 11% higher than in the same period in the preceding year (PLN 10.76/GJ). The wind generation was at the level similar to the one in the previous year. The increase of prices on RDN market was partly mitigated by larger net (+0.6 TWh y/y).

Cumulatively, in the first half of 2019 the average electricity price on the day-ahead market was at PLN 229/MWh, i.e. 16% higher than the average price (PLN 197/MWh) in the first half of 2018. The increase of prices on RDN market was related to cost

<sup>1</sup> Statistics calculated on the basis of fixings data.

pressure and situation on related markets. In the first half of 2019, prices for CO<sub>2</sub> emission rights were higher by 88% y/y. The average PSCMI1 was PLN 11.93/GJ in the first half of 2019 – by 12% higher than in the same period in the preceding year (PLN 10.65/GJ). Factors easing the dynamics of the increasing electricity prices were: wind generation higher by 1.5 TWh y/y and net import higher by 0.8 TWh y/y.

Chart: Average monthly prices at the day-ahead market in 2018–2019 (TGE).\*

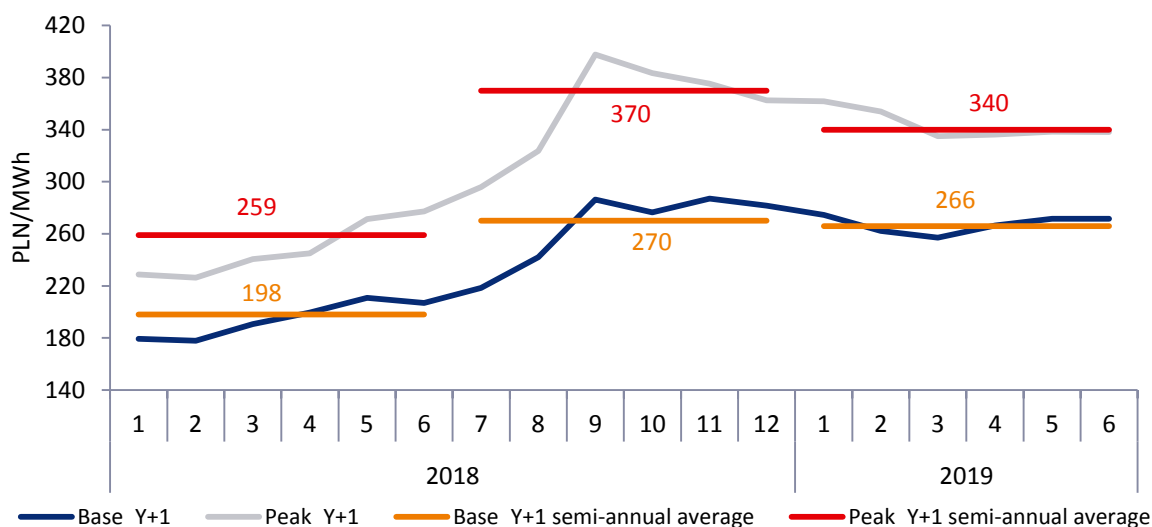


\* Average monthly price of RDN index calculated on the base of hourly quotations (fixing), weighted by the trading volume.

### Forward market

Market/measure	Unit	Q2 2019	Q2 2018	% change	H1 2019	H1 2018	% change
BASE Y+1 – average price	PLN/MWh	270	206	31%	266	198	34%
BASE Y+1 – trading volume	TWh	28.16	29.24	-4%	49.37	47.31	4%
PEAK5 Y+1 – average price	PLN/MWh	337	270	25%	340	259	31%
PEAK5 Y+1 – trading volume	TWh	3.48	1.45	140%	5.66	2.02	180%

Chart: Average monthly prices on the forward market in 2018–2019 (TGE)\*.

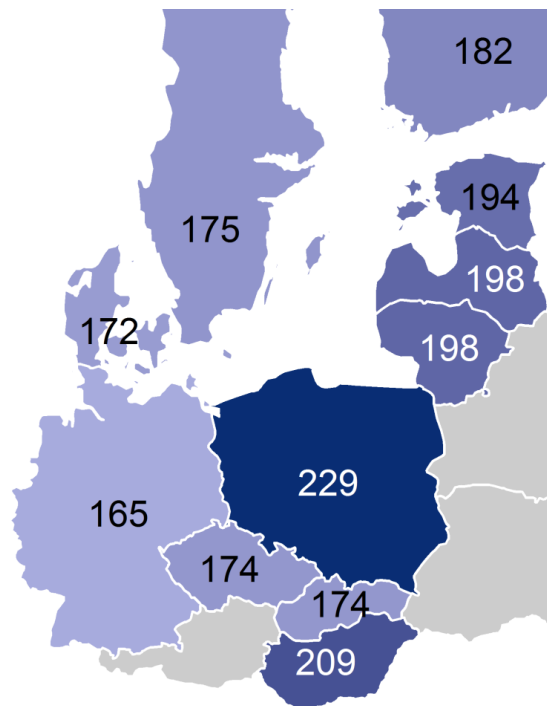


\* Monthly average index level for forward contracts for the next year (Y+1), baseload and peak, weighted by the trading volume.

INTERNATIONAL MARKET

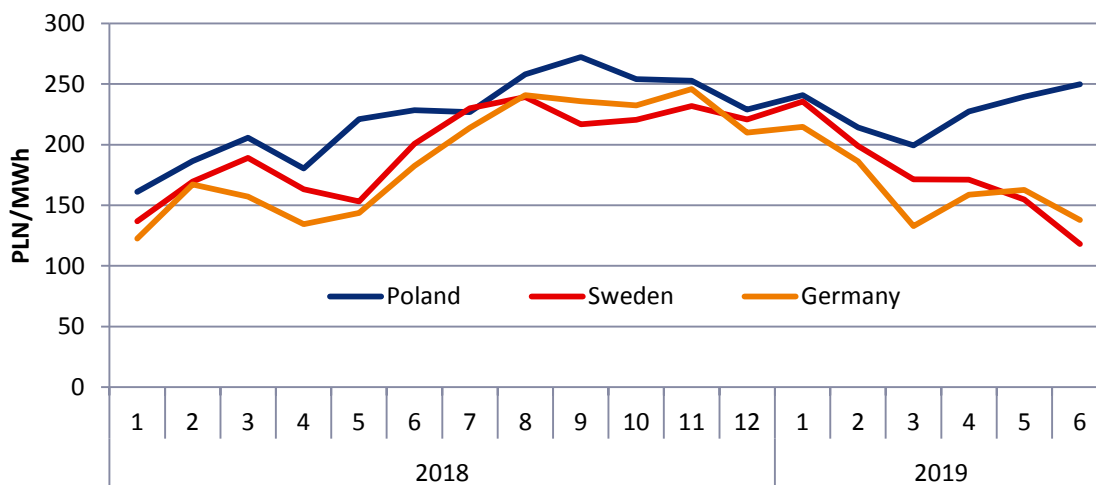
Wholesale market (comparison of day-ahead markets)

Chart: Comparison of average electricity prices on Polish market and on selected European markets in the first half of 2019 (prices in PLN/MWh, average exchange rate EUR/PLN 4.29).



Source: TGE, EEX, Nordpool.

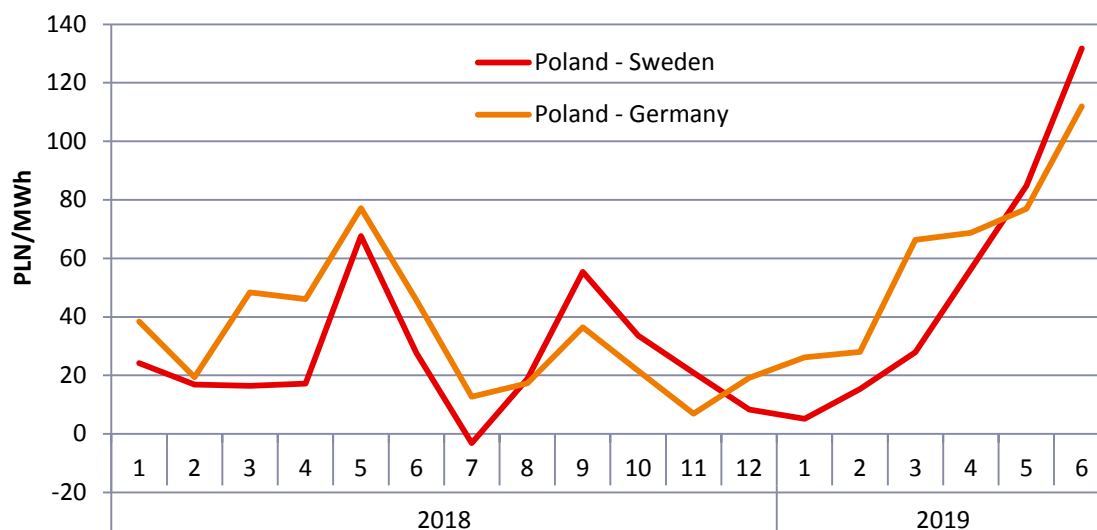
Chart: Evolution of spot market prices.



Source: TGE, EEX, Nordpool.



Chart: Price difference on spot market.

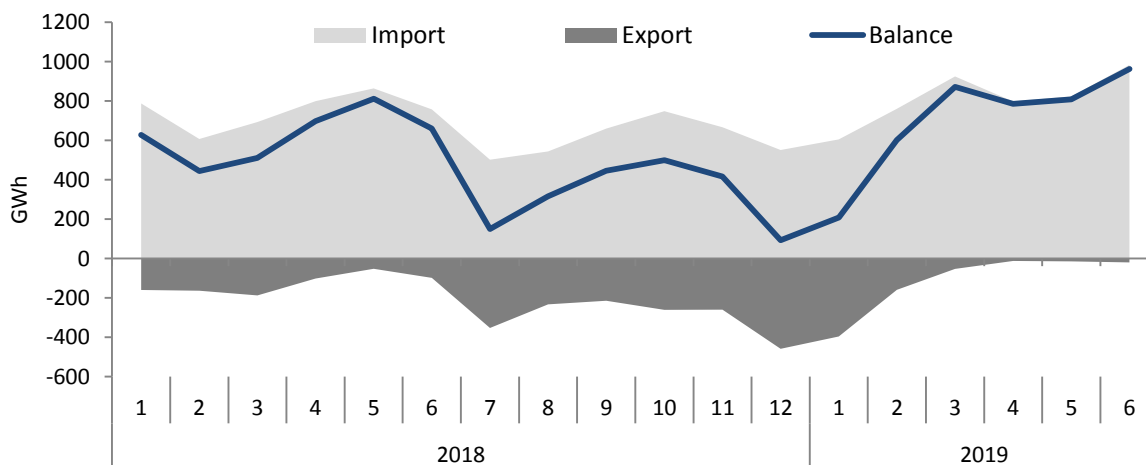


Source: TGE, EEX, Nordpool.

In the first half of 2019, growth in wholesale electricity prices in neighbouring countries was in the range of PLN 6-18/MWh y/y (i.e. by 4-11%). The price growth in Poland by PLN 31/MWh (i.e. by 16%) was higher than in the neighbouring countries due to differences in the fuel and technological mix. The price differential between Poland and its neighbours increased. In the first half of 2019 the average price of electricity in Poland was higher than in Germany (by PLN 63/MWh), Czech Republic (by PLN 55/MWh) and in Sweden (by PLN 54/MWh).

### International trading

Chart: Monthly imports, exports and cross-border exchange balance in 2018-2019 (in GWh).



Source: own work based on PSE S.A. data.

In the first half of 2019, Poland remained a net importer of electricity: trading balance reached 4.24 TWh (import 4.89 TWh, export 0.66 TWh). In the analogical period of 2018 the balance amounted to 3,76 TWh (import 4.52 TWh, export 0.76 TWh). The surplus of imports over exports has been constant since March 2017. The leading sources of net imports were: Sweden (balance 1.45 TWh), Lithuania (balance 0.90 TWh), Germany (balance 0.80 TWh) and Ukraine (net import growth to 0.67 TWh). Net import from Czech Republic increased to 0.47 TWh .

Diagram: Geographical structure of commercial exchange in the first half of 2019 (in GWh).

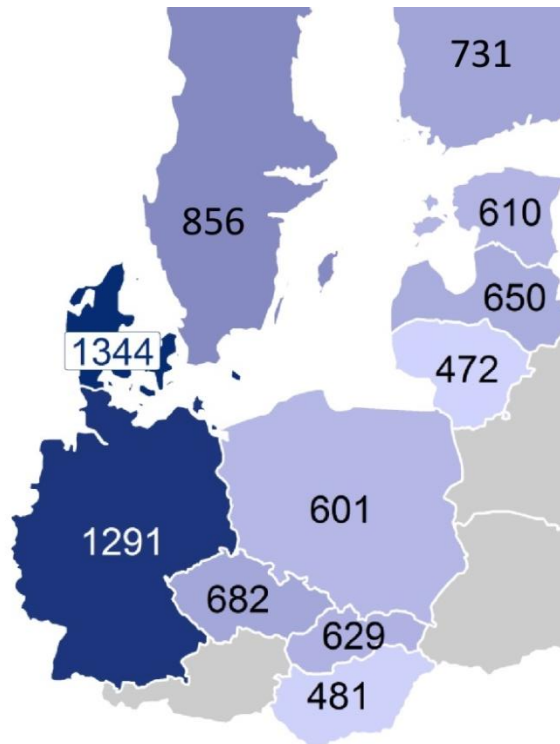


Source: own work based on PSE S.A. data.

Retail market

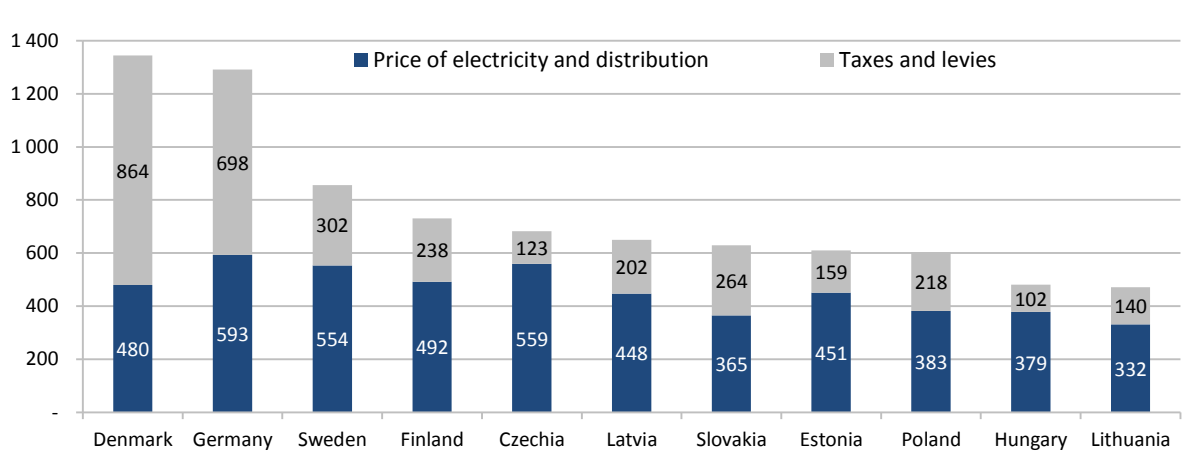
The diversity of electricity prices for retail customers in the European Union depends both on the level of the wholesale prices of electricity and fiscal system, regulatory mechanism and support schemes in particular. In Poland in the second half of 2018<sup>2</sup> an additional burden (over sale price and cost of electricity distribution) for individual customers accounted for 36% of the electricity price and in comparison to EU average of 31%. In Denmark and Germany the proportion of additional charges in the price of electricity exceeded 50%.

Chart: Comparison of average prices for individual customers in selected EU countries in the second half of 2018 (prices in PLN/MWh, average exchange rate EUR/PLN 4.30).



Source: own work based on Eurostat data.

Diagram: The share of additional charges in electricity prices for the individual customers in selected EU countries in the second half of 2018 (prices in PLN/MWh, average exchange rate EUR/PLN 4.30).



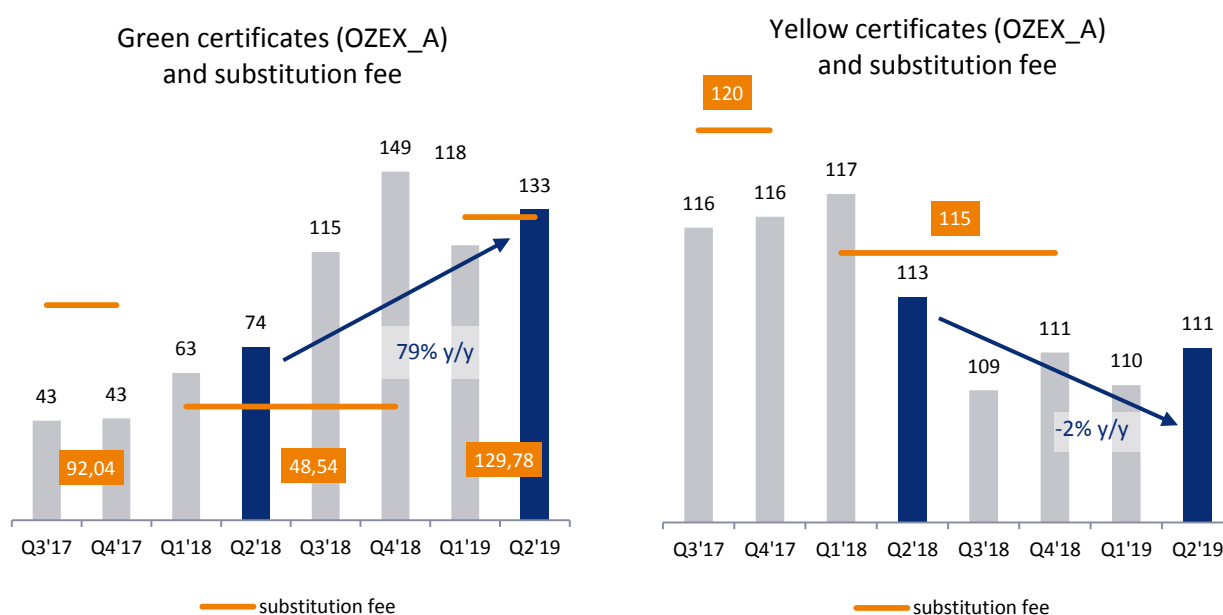
Source: own work based on Eurostat data.

<sup>2</sup> Eurostat data are published in semi-annual intervals (during preparation of this report, the data for the first half of 2019 were not yet available).

### 3.3. Prices of certificates

In the second quarter of 2019 the average price of green certificates (index OZEX\_A) reached PLN 133 PLN/MWh and was higher by 79% compared to the analogical period of the previous year. An obligation to redeem green certificates increased from 17.5% in 2018 to 18.5% in 2019 – as a result the demand for the certificates increased. The wind generation in NPS in the second quarter of 2019 was at the similar level as in the previous year. The prices of certificates were affected by the awareness of limited supply thereof in future connected with the closure of a certification system for new units and the upcoming end of a 15-year support period for first installations that had entered the system in 2005. The average price for green certificates in the second quarter of 2019 was slightly above the substitute fee, which is PLN 129.78/MWh in 2019.

Chart: Average quarterly prices of certificates (PLN/MWh).



Source: Own work based on TGE quotations.

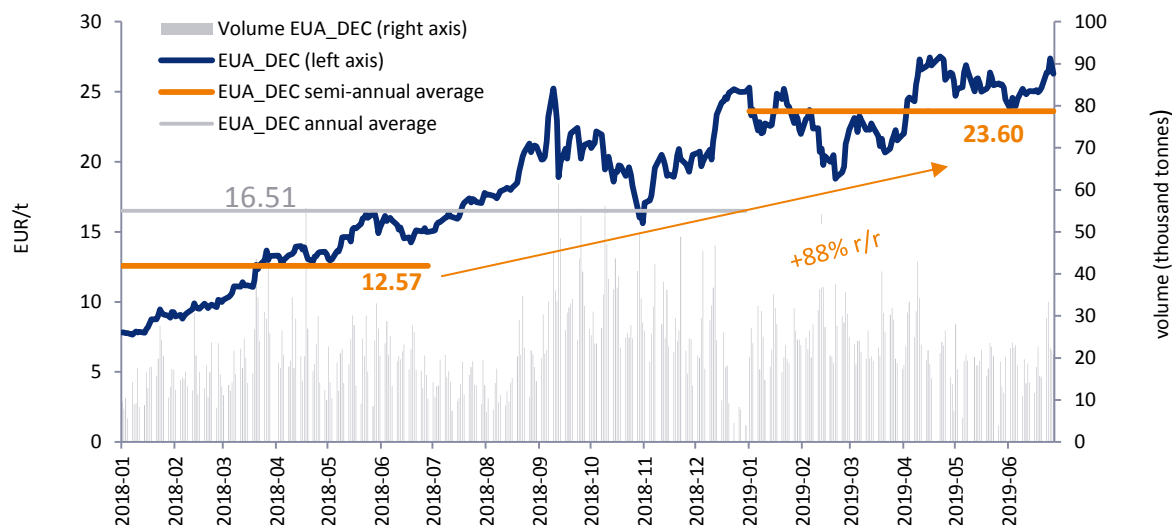
### 3.4. Prices of CO2 emission rights

EUA (European Union Allowances) prices are one of the key factors determining wholesale energy prices and PGE Group's financial results. Installations emitting CO<sub>2</sub> in the process of electricity or heat production bear the expenses for purchasing EUA allowances to cover the deficit (i.e. the difference between CO<sub>2</sub> emissions at PGE Group's generating units and the free-of-charge allowances received under derogation in accordance with the National Investment Plan). Wherein, last allocations granted free of charge are planned for realisation of investment tasks for 2019. It means that the free allocations in accordance with the currently used method will end in 2020.

In the second quarter of 2019, the weighted average price of EUA DEC 19 reached EUR 25.57/t and was 76% y/y higher than the average price for EUA DEC 18 (EUR 14.49/t) in the similar period of 2018. In the whole first half of 2019 the weighted average price of EUA DEC 19 reached EUR 23.60/t and was by 88% y/y higher than the average price of EUR 12.57/t of EUA DEC 18 in the analogical period of the previous year.

The increase in CO<sub>2</sub> emission prices, lasting from 2017, is a result of market perception of the EU ETS reform.

Chart: Prices of CO<sub>2</sub> emission rights.



Source: own work based on ICE quotations.

## EMISSION RIGHTS GRANTED FREE OF CHARGE FOR YEARS 2013-2020

PGE's installations accounts were credited with free allowances for heat and energy for 2018, while free allowances for electricity for 2019 will be received by the Group by the end of April 2020, after verification of reports from investments submitted to the National Investment Plan.

At the same time, redemption of emission rights resulting from CO<sub>2</sub> emissions in 2018 was completed in April 2019.

Table: Emission of CO<sub>2</sub> broken down into electricity and heat production in relation to allocation of CO<sub>2</sub> emission rights for 2019 (in tonnes).

Product	CO <sub>2</sub> emissions in H1 2019*	Allocation of CO <sub>2</sub> emission rights for 2019**
Electricity	28 194 365	10 623 187
Heat	2 747 609	1 265 990
<b>TOTAL</b>	<b>30 941 974</b>	<b>11 889 177</b>



\* Estimates, emissions not verified - the data will be settled and certified by the authorised verifier of CO<sub>2</sub> emission on the ground of yearly reports of volume of CO<sub>2</sub> emissions.





\*\* Amount of granted CO<sub>2</sub> emission rights were confirmed in the Regulation of the Council of Ministers in the first quarter of 2020.

### 3.5. Regulatory environment

#### DOMESTIC REGULATORY ENVIRONMENT

PGE Group operates in an environment with a significant impact of domestic and foreign regulations. Below we present a summary of the most significant decisions, which took place in the first half of 2019 and which could have an impact on PGE's operations in the coming years.




Segments	Regulation	Regulation objectives	Latest conclusions	Next stage	Impact on PGE Group
	Act on promoting of electricity produced in highly-efficient cogeneration.	This act intends to <b>support units producing electricity in highly-efficient cogeneration</b> in as far as the costs of such production exceed the market price of energy: <ul style="list-style-type: none"> <li>units &lt;50MW - existing and modernised: guaranteed bonus, the level of which is set by the Minister of Energy; new and significantly modernised: bonus set in auctions,</li> <li>units &gt;50MW - existing and modernised: guaranteed bonus, the level of which is set annually by the ERO President; new and significantly modernised: bonus set in selection.</li> </ul>	The law was voted through in <b>December 2018</b> . It entered into force on January 1, 2019. On April 15, 2019, the European Commission approved the support mechanism resulting from the Act.  <b>On August 21, 2019</b> , three ordinances to the Act were published.	Three other ordinances are the subject of work at the Ministry of Energy.	This will secure stable revenue (for up to 15 years) covering the costs of substantial modernisations of existing cogeneration units and the construction of new ones.
	Amendment to the act on renewable energy sources.	<ul style="list-style-type: none"> <li>Indication of volumes for auctions in 2019 – allowing auction organisation in 2019.</li> <li>Change in the method of settling the support - limitation of positive balance reimbursement only to the amount of repaid negative balance.</li> <li>Broadening of the category of prosumer entitled to make settlements with discounts on introduction into the grid of generated and unused energy also to entrepreneurs .</li> <li>Broadening of the beneficiaries of the support in the form of premiums obtained outside of an auction to producers of energy from biomass and biogas in units with the capacity of up to 2.5 MW .</li> <li>Extension of the age of devices that can be installed in units applying for support and the time of first generation of energy and its introduction into the grid from the date of obtaining support.</li> <li>Extension of the connection agreements until the end of May 2021 for grid connection agreements which can be terminated based on Article 191 of the Energy law Act or which were concluded prior to May 4, 2015 and were not covered by the mode of procedure specified in Article 192 paragraph 1 of the Energy Law Act.</li> </ul>	The draft amendment was adopted by the Council of Ministers and submitted to Parliament on July 9, 2019.  The amended law was voted through by the parliament on July 19, 2019 and signed by the President of Poland on <b>August 9, 2019</b> . It entered into force on <b>August 29, 2019</b> .		The designed solutions affect the PGE CG. <ul style="list-style-type: none"> <li>The organisation of auctions for large volumes will enable participation of the PGE CG's projects, but also increase the RES capacity and can worsen the economics of operation of the PGE Group's conventional assets</li> <li>The broadening of using discounts for prosumers to entrepreneurs introducing into the grid the energy unused by them will increase the loss of the Supply segment of PGE Group's on providing service to those entities.</li> </ul>



Segments	Regulation	Regulation objectives	Latest conclusions	Next stage	Impact on PGE Group
		<ul style="list-style-type: none"> <li>Determination of the value of the duty to redeem certificates of origin of energy from renewable energy sources for 2020 to 19.50% (PM OZE A) and 0.50% (PM OZE BIO).</li> </ul>			
	Updated energy law - exchange obligation.	<ul style="list-style-type: none"> <li>Introduction of a <b>100% exchange obligation</b> while maintaining the existing exemptions from the exchange commitment (e.g. renewable energy, cogeneration).</li> <li><b>Regulation of reserve sales.</b></li> </ul>	Voted through in November 2018, <b>entered into force on January 1, 2019.</b>	-	The need to adapt trading strategy to new level of power exchange obligation.
	Act regulating electricity prices in 2019.	<ul style="list-style-type: none"> <li>Reduction in excise duty rates for electricity.</li> <li>Reduction in transition fee rates.</li> <li>Introduction of maximum sale prices for electricity in 2019 (in both trade and distribution) and introduction of compensation for trading companies.</li> <li>The amendment introduced various conditions of using allowances for the lowered price in the first and second half of 2019.</li> <li>In the first half of 2019, end recipients will be entitled for compensation, whereas in the second half – the selected end recipients will be entitled to request price lowering i.e. households, hospitals, one-man businesses, micro- and small enterprises.</li> <li>Large and medium enterprises can apply for compensation as part of <i>de minimis</i> support.</li> </ul>	<p>Voted through in November 2018, <b>entered into force on January 1, 2019, significantly amended in February 2019 and in June 2019. The latest amendment entered into force on June 29, 2019.</b></p> <p><b>On August 14, 2019,</b> the executive regulations to the aforementioned Act entered into force, i.e. ordinance of the Minister of Energy on the method of calculating the difference in price and financial compensation as well as the method of specifying the reference price.</p>	-	The act has an impact on Supply segment companies due to the obligation to specify electricity sales prices in 2019 at the level from 2018 (specific method of determining the prices for particular cases is provided in the Act and ordinance). Enterprises were obliged to adapt to the Act's regulations no later than within 30 days from the date entry into force of the ordinance of the minister of Energy on compensations (i.e. by September 13, 2019), effective January 1, 2019. Supply segment companies will be entitled to claim compensation.
	Regulation of the Minister of Energy amending regulation on detailed rules for determining and calculating tariffs and settlements in trade of electricity.	<p>The amendments concern:</p> <ul style="list-style-type: none"> <li>Rules for granting discounts <b>for failure to meet electricity quality parameters</b> and customer service quality standards.</li> <li>Introduction of possibility to <b>create separate tariff group</b> for off-takers who use electricity for needs of public road transport.</li> <li>Provisions were removed with regard to <b>ceased support scheme</b> for highly efficient co-generation in form of certificates.</li> </ul>	The regulation was published on March 15, 2019 and entered into force on March 16, 2019.	-	Changes in the rules for granting discounts to electricity consumers specify in what circumstances the company must automatically (and not at the request of the off-taker) grant him an appropriate discount.
	Regulation on the Low-Carbon Transport Fund.	<p>The drafts set forth detailed rules for the functioning of the Low-Carbon Transport Fund established under the Act on Biocomponents and Liquid Biofuels.</p> <p>The draft regulation on the <b>detailed conditions for the granting and settlement of support granted under the</b></p>	<b>In February 2019,</b> the public consultations on the draft regulations were ended.	<p><b>The regulations are expected to enter into force in Q3 2019.</b></p> <p>The ME expects the first applications to be filed</p>	The support granted under the Fund can be used, in particular, for the construction of the infrastructure for charging electrical vehicles and for the production of biomethane used in

Segments	Regulation	Regulation objectives	Latest conclusions	Next stage	Impact on PGE Group
		<p><b>Fund</b> determines, in particular, the maximum amount of support, the list of eligible costs and the intensity of support.</p> <p>The draft regulation on <b>the detailed criteria for selection of projects to be granted support under the Fund</b>, specifies the following key criteria: (i) significance of the project for purposes of market development, (ii) appropriateness and relevance of the activities planned and their implementation, (iii) assessment of the planned costs of the project in relation to the scope of works, (iv) organisational capacities of the applicant to complete the project and institutional arrangements for its implementation.</p>		in Q4 2019.	transport.



## INTERNATIONAL REGULATORY ENVIRONMENT


Segments	Regulation	Regulation objectives	Latest conclusions	Next stage	Impact on PGE Group
<b>Regulations determining within the power sector the methods to achieve greenhouse gas emission reduction targets by 2030</b>					
	EU ETS directive and implementing and delegated acts, decision on MSR	Combating climate change and performance of obligations resulting from the Paris Agreement. Development of investment incentives through a CO <sub>2</sub> price signal to develop low-emission sources.	<p>On March 19, 2018, Directive (EU) 2018/410 of the European Parliament and of the Council amending Directive 2003/87/EC to enhance cost-effective emission reductions and low-carbon investments, and Decision (EU) 2015/1814, was published in the EU's Official Journal, in connection with which the EU ETS and MSR amendment entered into force on April 8, 2018.</p> <p>On December 19, 2018 a delegated act was adopted, on harmonised free allocation of emission allowances pursuant to Article 10a of the EU ETS Directive, including district heating.</p> <p>On February 26, 2019 a delegated act was adopted on the Innovation Fund.</p>	<p>Transposition date for most of the directive's provisions into national law - <b>October 9, 2019</b>.</p> <p>Adoption of the <b>implementing act</b> on the functioning of the Modernisation Fund expected <b>before the end of 2020</b>, and the first draft of the implementing act is expected to appear in the second half of 2019.</p>	<p>Improvement in the competitiveness of renewable and gas sources to the detriment of generation assets using fuels emitting CO<sub>2</sub>.</p> <p>Increase in operating costs for conventional generation of electricity.</p> <p>Option to obtain direct investment support from 2021 from the Modernisation Fund or Innovation Fund.</p>
<b>„Clean energy for all Europeans”</b>					
	RED II Directive	Promoting the development of renewable energy sources in the power, district heating and transport sectors, intended for the EU to reach the <b>32% renewables target</b> in overall consumption by <b>2030</b> .	The directive was published in the EU's Official Journal on <b>December 21, 2018</b> and entered into force on <b>December 24, 2018</b> .	Mandatory transposition of the directive to national law - <b>by June 30, 2021</b> .	<p>Increase in share of renewables with zero variable cost will cause a change in conventional units' operation profile. Impact on investment programme in generation segment (including renewables) and district heating by necessity to take into account development of renewables units. Impact on Supply segment through development of prosumer segment, constituting an alternative for end users to buying energy.</p>
	EED Directive	Promoting improvements in energy efficiency as regards both primary energy consumption and final energy consumption, intended for the EU to reach its target <b>32.5% improvement in energy efficiency</b> by 2030.	The directive was published in the EU's Official Journal on <b>December 21, 2018</b> and entered into force on <b>December 24, 2018</b> .	Mandatory transposition of the directive to national law - <b>by June 25, 2020</b> .	<p>Impact on all segments, i.e. reduction of growth in energy consumption by taking energy efficiency actions.</p> <p>Impact on Supply segment resulting from costs of white certificate system.</p>

Segments	Regulation	Regulation objectives	Latest conclusions	Next stage	Impact on PGE Group
	Governance regulation	Introduction of framework for implementation of the EU's energy and climate targets by establishing a system for setting and monitoring targets by member states.	The regulation was published in the EU's Official Journal on <b>December 21, 2018</b> , and provisions of importance to the electricity sector went into force on <b>January 10, 2019</b> .	<p>A draft Integrated National Plan for Energy and Climate has been <b>submitted by Poland</b> to the European Commission.</p> <p>The European Commission expressed its concerns to the draft plan on <b>June 18, 2019</b>. The European Commission postulates, among others, an increase in the declared contribution to the Union's RES objective until 2030 from 21% to 25%.</p> <p>Deadline for final version of the plan - by <b>December 31, 2019</b>.</p>	<p>Regulation's impact is the same as Directives RED II and EED. This results from the fact that the regulation's key provisions introduce mechanisms intended to achieve the EU's targets specified in these directives, collectively by EU member states.</p> <p>The most important duty resulting from the Ordinance is the duty of developing and submitting to the EC of a National Energy and Climate Plan – a document with the scope similar to the energy policy. The Plan must include declaration on the issues concerning, among others, emissivity limitation and national contributions to the EU objectives on energy effectiveness and RES resulting respectively from: the amended EE Directive and the new RED II Directive.</p>
	EMR regulation	Establishment of legal framework for further integration of internal electricity market.	The regulation was officially adopted by the European Parliament on <b>March 26, 2019</b> . Then, on May 22, 2019, the Directive was formally adopted by the Council. The Directive was published in the EU Official Journal on <b>June 14, 2019</b> and <b>after 20 days it entered into force on July 4, 2019</b> .	The majority of the provisions of the regulation will be effective from <b>January 1, 2020</b> .	<p>Capacity contracts executed by PGE Group in auctions won on the capacity market in 2018 and 2019 will have vested rights protected throughout their entire term.</p> <p>New units which exceed the emissions standard 550 g CO<sub>2</sub>/kWh (EPS 550) will not be eligible to receive any payments from the capacity market from the entry into force of the regulation (July 4, 2019), except for those which will have concluded contracts by the end of 2019. Existing coal units that exceed the emissions standard 550 g CO<sub>2</sub>/kWh (EPS 550) and 350 kg CO<sub>2</sub>/kW/year will not participate in the capacity market from July 1, 2025.</p> <p>Need to include lack of support for existing generating assets after 2025 in assessments of capacity sufficiency. A potential drop in volume of and price for electricity sold on the wholesale market by domestic units.</p> <p>Further business consequences will also result from the way in which the solutions included in the Regulation are implemented wherever there is room to act by national authorities.</p>

Segments	Regulation	Regulation objectives	Latest conclusions	Next stage	Impact on PGE Group
 	EMD directive	<p>Key goals of EMD directive revision:</p> <ul style="list-style-type: none"> <li>▪ Strengthen the consumer's role on the electricity market.</li> <li>▪ Protect sensitive customers.</li> <li>▪ New solutions in the scope of, among others, electrical car charging, energy storage and demand activation.</li> </ul>	<p>The directive was officially adopted by the European Parliament on March 26, 2019. Then, May 22, 2019, the Directive was formally adopted by the Council. The Directive was published in the EU Official Journal on <b>June 14, 2019</b> and <b>after 20 days it entered into force on July 4, 2019</b>.</p>	<p>Mandatory transposition of the directive to national law - <b>by December 31, 2020</b>.</p>	<p>Impact on the Distribution segment, especially as regards restricting activity related to energy storage and operating EV charging stations and development of flexibility services as well as realisation of obligation to implement intelligent metering.</p> <p>Impact on Supply segment, mainly through imposition of additional information requirements for consumers, reduction of time to replace seller, no fees for switching sellers, development of contracts with dynamic pricing.</p>


#### The regulations concerning the EU's Multiannual Financial Framework and financing for sustainable economic growth

	EU's Multiannual Financial Framework	EU's financial framework (income and expenditures) established for 2021-2027.	<p><b>In March 2019</b>, the European Parliament adopted its position on the regulation on the European Regional Development Fund and the Cohesion Fund, and <b>in February 2019</b> it adopted its position on the regulation on common rules for European funds. At the same time, <b>in February 2019</b>, the Council adopted a general approach on the both aforementioned regulations.</p> <p>Some key issues that are included in the aforementioned positions and approach, respectively, of the European Parliament and the Council, are as follows:</p> <ul style="list-style-type: none"> <li>▪ <b>Exclude the following</b> from this funding: <ul style="list-style-type: none"> <li>▪ investments in emission reductions at units subject to EU ETS,</li> <li>▪ investments in generation, processing, transport, distribution, storage and combustion of fossil fuels,</li> <li>▪ funding for the construction of nuclear power plants and scrapping costs.</li> </ul> </li> <li>▪ <b>Funds are not available</b> under these funds for any investments in renewables unless the national renewables target for 2020 has been achieved. Once the target is achieved, the funds are available.</li> </ul>	<p><b>Trilogues</b> regarding the regulation on the European Regional Development Fund and the Cohesion Fund and the regulation on common rules for European funds – <b>H2 2019</b>.</p> <p>Work at the Council on adoption of a general approach to financial issues of MFF and the related specific legislative acts – <b>H2 2019/2020</b>.</p>	Impact of regulation on decrease in funding that can be secured by PGE Group companies for investments.
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Segments	Regulation	Regulation objectives	Latest conclusions	Next stage	Impact on PGE Group
	EU package for funding sustainable economic growth	Implementation of regulations intended to <b>facilitate funding</b> for sustainable economic growth in EU.	<p><b>In February and March 2019</b>, dialogues were concluded regarding the regulation on reporting duties and the regulation on benchmarks.</p> <p><b>In March 2019</b>, the European Parliament adopted its position on the regulation on criteria for assessment of economic activities in terms of their environmental sustainability.</p> <p>Key issues referred to the aforementioned position are as follows:</p> <ul style="list-style-type: none"> <li>■ Recognition as environmentally sustainable of activities aimed at minimising anthropogenic emissions of greenhouse gasses (without indicating their source).</li> <li>■ Exclusion from environmentally sustainable activities of any activities aimed at improving energy efficiency of electricity generation with the use of solid fossil fuels.</li> <li>■ Introduction of the obligation for the EC to determine technical conditions for verification in what circumstances a given activity can be recognised as environmentally sustainable. These requirements are to ensure that the following activities will not be recognised as sustainable: <ul style="list-style-type: none"> <li>■ Activities involving generation of electricity with the use of solid fossil fuels,</li> <li>■ Activities involving generation of electricity which leads to production of non-renewable waste.</li> </ul> </li> </ul> <p><b>In June 2019</b>, the Technical Expert Group, as part of support for the EC's work, published the report concerning technical screening criteria applied to the evaluation of economic activity to determine whether the given activity is conducted in an environmentally-sustainable manner.</p> <p>According to the Group's proposal, an economic activity related to gas- and nuclear energy-based generation sources will not be deemed as environmentally-sustainable. At the same time, investments in the transmission and distribution grid to/from these sources will not be deemed as environmentally-sustainable.</p>	<p>Entry into force of the regulation on reporting duties and the regulation on benchmarks – <b>H2 2019</b>.</p> <p>Expected adoption of the general approach by the Council regarding the regulation for criteria based on which economic activities will be assessed to determine whether they are environmentally sustainable - the <b>second half of 2019</b>.</p> <p>The Technical Expert Group commenced public consulting concerning the report on the technical screening criteria – PGE S.A. submitted comments on time i.e. in the <b>middle of September 2019</b>.</p>	Possible impact of regulation on availability and cost of funding obtained by PGE Group companies for investments.






## ADDITIONAL INFORMATION WITH REGARD TO INTERNATIONAL REGULATORY ENVIRONMENT

### ACTION BROUGHT AGAINST THE EUROPEAN COMMISSION'S DECISION NOT TO RAISE OBJECTIONS TO THE POLISH CAPACITY MARKET

Segments	Proceeding	Objective of the action	Key events	Next stage	Impact on PGE Group
<b>Action brought against the European Commission's decision not to raise objections to the Polish capacity market (SA. 46100), case file no. T-167/19</b>					
	<p>Proceedings brought by Tempus Energy Germany and T Energy Sweden against the European Commission (case file no. T-167/19)</p>	<p>The objective of the action is to annul the European Commission's Decision not to raise objections to the Polish capacity market (SA. 46100)</p>	<ul style="list-style-type: none"> <li>■ On February 7, 2018 the European Commission issued a decision not to raise objections to the Polish capacity market (case file no. VI 46100). The declassified text was published on the website of the European Commission on April 18, 2018 and the decision was published in the Official Journal only on December 21, 2018.</li> <li>■ On November 15, 2018 the General Court of the EU in its judgement on the case Tempus Energy and Tempus Energy Technology versus the European Commission (case T-793/14) annulled the decision C (2014) 5083 final of July 23, 2014 not to raise objections to the aid scheme for the capacity market proposed by the UK.</li> <li>■ On March 14, 2019 Tempus Energy Germany and T Energy Sweden brought an action against the EC decision concerning the Polish capacity market (case T-167/19). The summary of main reproaches and arguments brought up in the complaint was published in the EU Official Journal on May 6, 2019. From the published abstract it results, that in their action brought they argue that the EC failed, in particular, to initiate formal investigation proceedings (the second stage of the capacity evaluation mechanism) and that the demand side response (DSR) suffered alleged discriminatory treatment within the Polish capacity market.</li> </ul>	<p>It is difficult to estimate the duration of the proceedings before the General Court of the EU, but the British experience shows that they may even take several years.</p> <p>The proceedings pending before the European Court of Justice concerning the appeal in the case Tempus Energy and Tempus Energy Technology versus the EC (case file no. C-57/19 P) may have an impact on the action brought.</p>	<p>Depending on the outcome of the dispute, the case may have an impact on the conditions for the performance of capacity contracts.</p>

## 4. Activities of PGE Capital Group

### 4.1. Business segments

					
	<b>Conventional Generation</b>	<b>District Heating</b>	<b>Renewables</b>	<b>Distribution</b>	<b>Supply</b>
<b>Key assets of the segment</b>	5 conventional power plants 2 CHP plants 2 lignite mines	14 CHP plants	14 wind farms 1 photovoltaic power plant 29 run-of-river hydro power plants 4 pumped-storage power plants, including 2 with natural flow	291 908 km of distribution lines	-
<b>Electricity volumes</b>	Net electricity generation 23.71 TWh	Net electricity generation 4.52 TWh	Net electricity generation 1.28 TWh	Electricity distribution 18.13 TWh	Sales to final off-takers 21.34 TWh
<b>Heat volumes</b>	Heat production 3.28 PJ	Heat production 26.12 PJ			
<b>Market position</b>	PGE Group is the leader of lignite mining in Poland (approx. 90%)  PGE Group is also a national leader in electricity and heat generation		PGE Group is the largest electricity producer from RES with market share of approx. 8% (including biomass co- combustion)	Second domestic electricity distributor with regard to number of customers	One of the leaders in wholesale and retail trading in Poland

## 4.2. PGE Group's key financial results

The best way to measure the profitability of energy companies is EBITDA. This is a result before depreciation, amortization, income tax and financial operations, including interest from drawn debt. It approximately reflects cash flows from operating activities and makes it possible to compare the results of companies regardless of the value of their assets, level of debt and existing income tax rates.

PGE Group's consolidated results are composed of the financial results of each of its operating segments. The Conventional Generation segment and Distribution segment made the largest contribution to the Group's result, participating respectively in 48% and 28% of the Group's EBITDA. District Heating segment accounts for 18% of EBITDA, Supply segment 11%, the Renewables segments contributed 7% to the Group's EBITDA.

### EBITDA of the Capital Group by segments (PLN million)

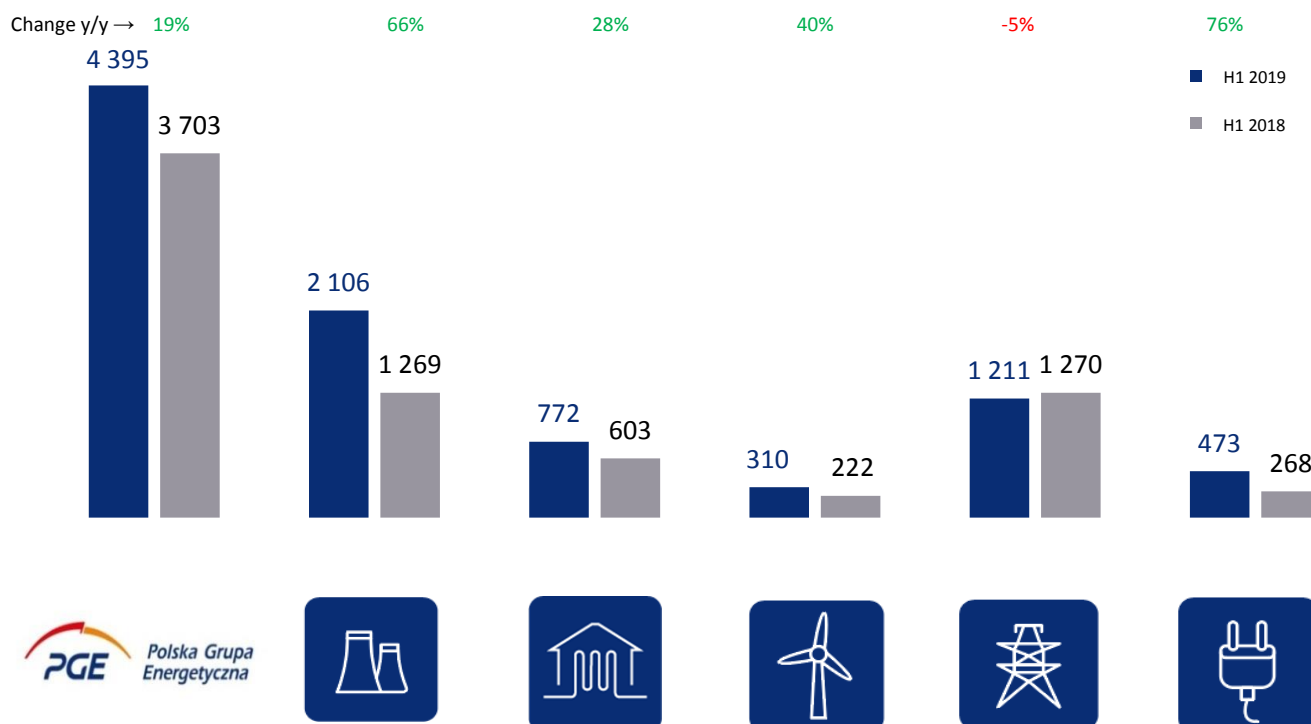
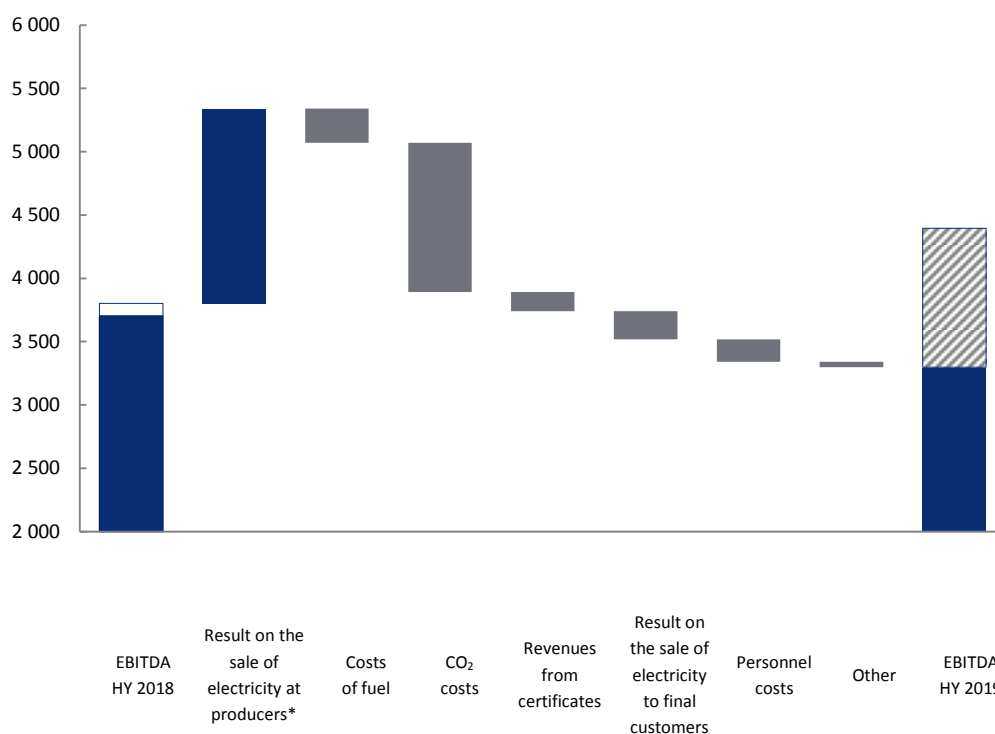




Chart: Key factors affecting recurring EBITDA in PGE Capital Group (in PLN million) – managerial perspective.



Change	1 538	-269	-1 180	-151	-223	-176	-43	
Reported EBITDA HY 2018	<b>3 703</b>							
One-offs HY 2018	<b>-100</b>							
Recurring EBITDA HY 2018	<b>3 803</b>	5 710	1 833	644	272	249	2 467	
Recurring EBITDA HY 2019		7 248	2 102	1 824	121	26	2 643	<b>3 299</b>
One-offs HY 2019								<b>1 096</b>
Reported EBITDA HY 2019								<b>4 395</b>

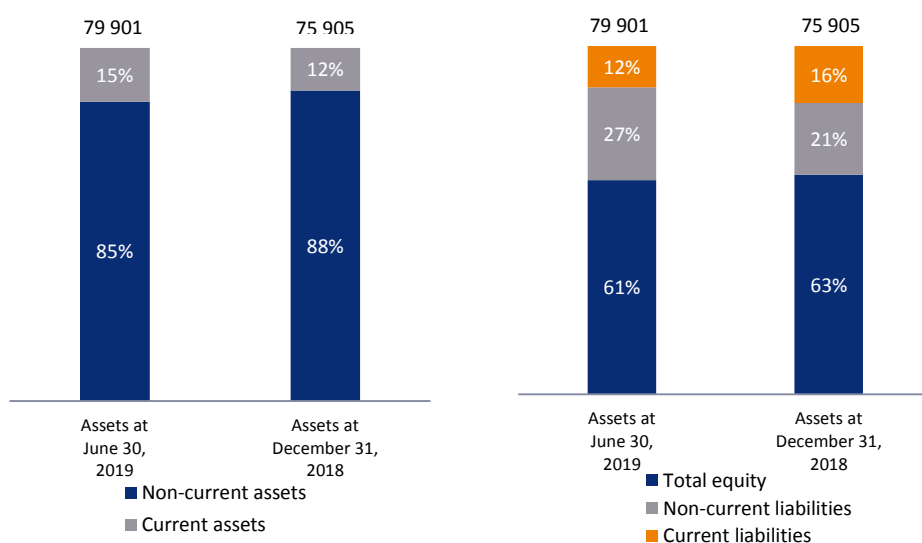
-  Reversal of impact of total one-offs reducing the reported result
-  Reversal of impact of total one-offs increasing the reported result

\* Revenue from the sale of electricity reduced by the purchase cost of electricity.



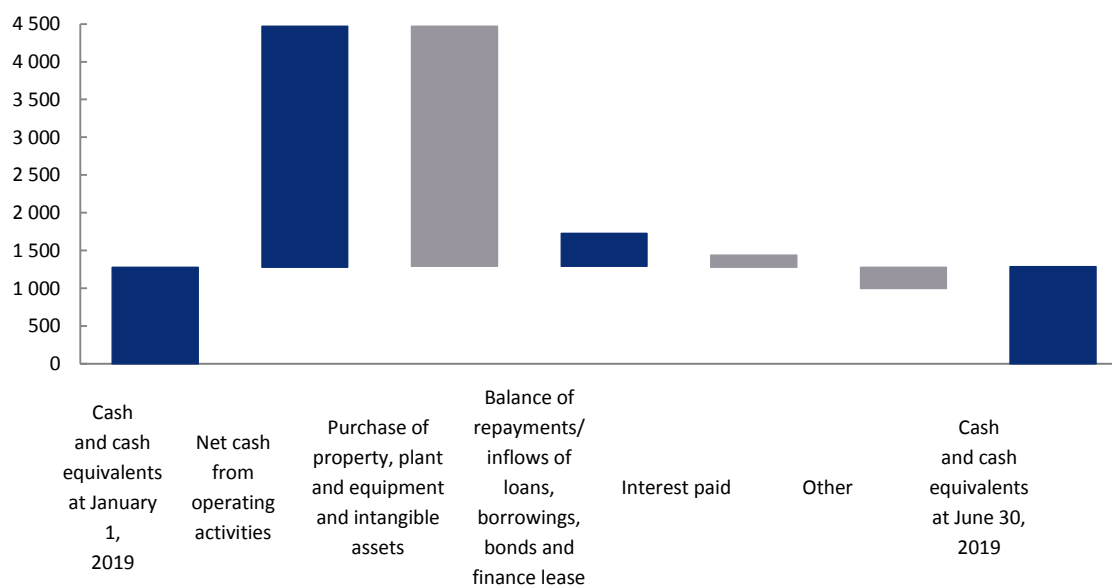
## CONSOLIDATED STATEMENT OF FINANCIAL POSITION

Chart: Structure of assets and equity and liabilities (in PLN million).



## CONSOLIDATED STATEMENT OF CASH FLOWS

Chart: Net change in cash (in PLN million).



Impact on level of cash

3 193

-3 180

439

-163

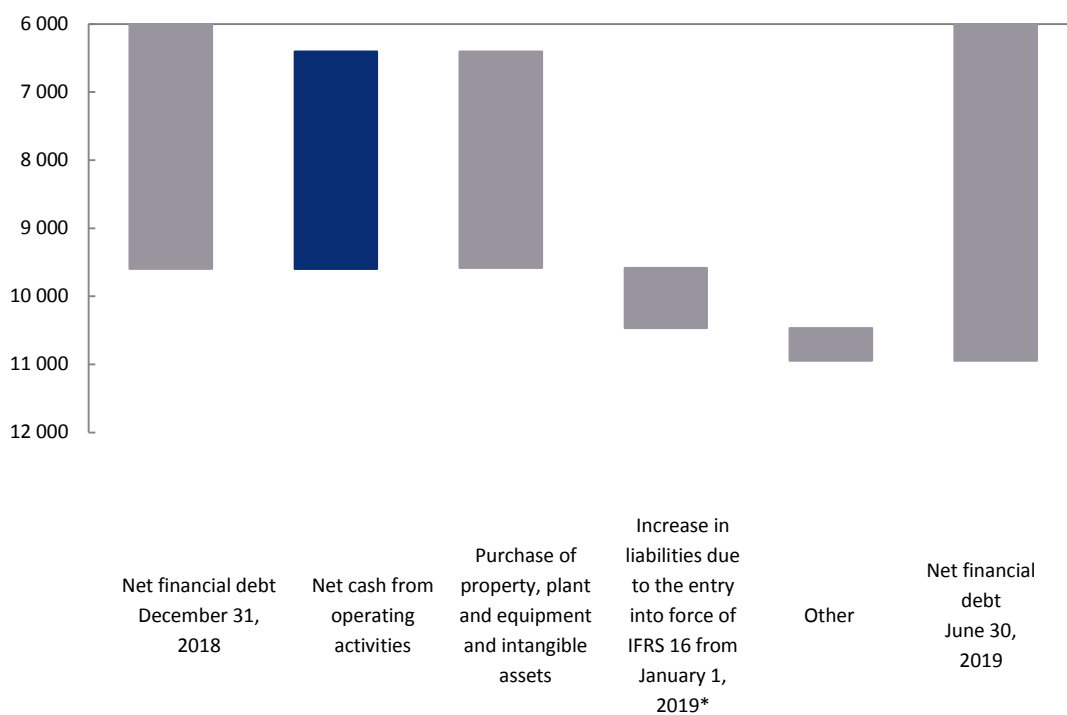
-281

Cash and cash equivalents

1 279

1 287

Chart: Net debt (in PLN million).



<b>Change in net debt</b>	<b>-3 193</b>	<b>3 180</b>	<b>881</b>	<b>480</b>	
Financial net debt	<b>9 600</b>				<b>10 948</b>

\*See note 4 to the consolidated financial statements.

KEY RESULTS IN BUSINESS SEGMENTS (IN PLN MILLION)



Conventional Generation



District Heating



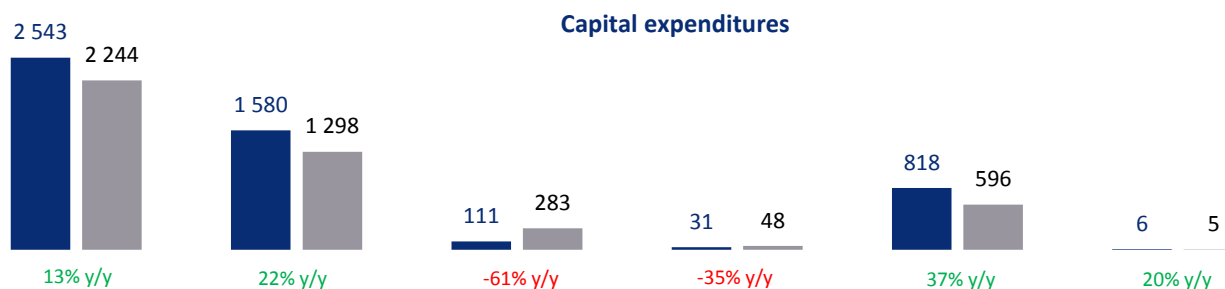
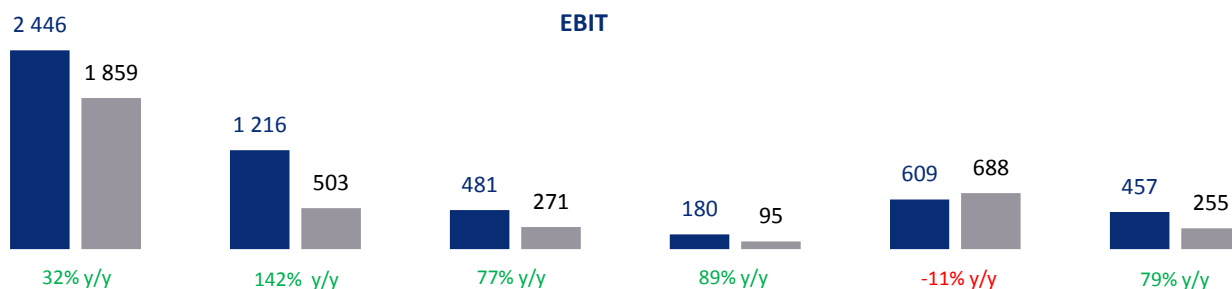
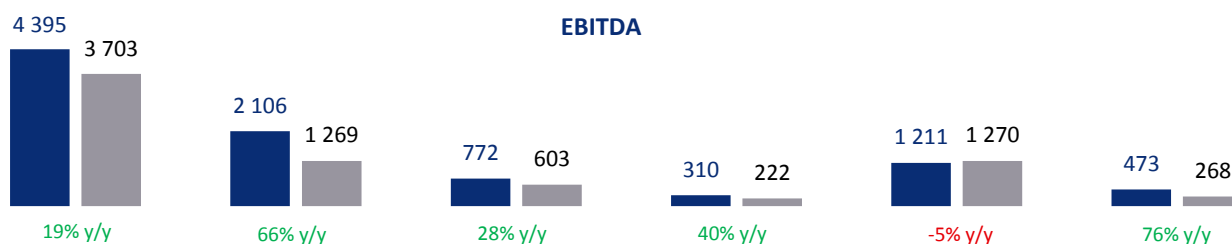
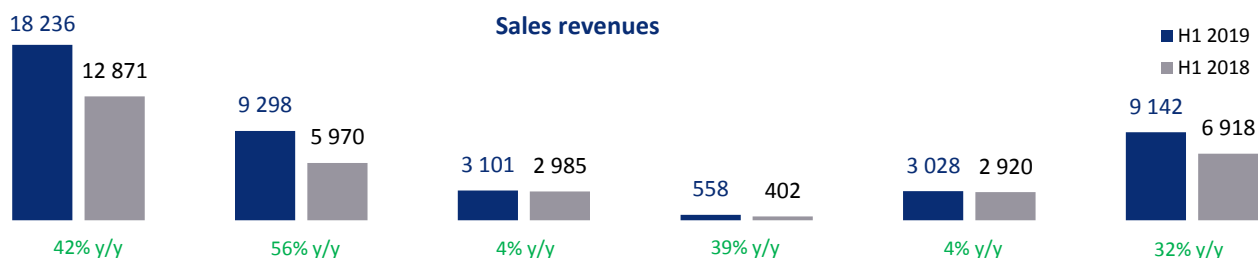
Renewables



Distribution



Supply



## BALANCE OF ENERGY OF PGE CAPITAL GROUP

Table: Sales, purchase, production and consumption of electricity in the PGE Capital Group (in TWh).

Volume	H1 2019	H1 2018	% change
<b>A. Sales of electricity outside the PGE Capital Group:</b>	<b>50.63</b>	<b>37.80</b>	<b>34%</b>
<i>Sales to end-users *</i>	21.89	20.73	6%
<i>Sales on the wholesale and balancing market</i>	28.74	17.07	68%
B. Purchases of electricity from outside of PGE Group (wholesale and balancing market)	23.40	7.12	229%
C. Net production of electricity in units of PGE Capital Group	29.50	32.92	-10%
<b>D. Own consumption DSO, lignite mines, pumped-storage power plants (D=C+B-A)</b>	<b>2.27</b>	<b>2.24</b>	<b>1%</b>

\* Sale mainly by PGE Obrót S.A. and PGE Energia Ciepła S.A.

The total volume of purchased and generated electricity is higher than the volume of electricity sold. The difference presented in point D results from the necessity to cover grid losses in the distribution business (Distribution System Operator), consumption of energy at lignite mines and consumption of energy at pumped-storage power plants.

An increase in the volume of electricity sales and in the volume of electricity purchases result from the higher trading in electricity on the power exchange, which has been caused by the introduction of the 100% power exchange obligation.

Part of the increased volume of sales to end customers is a consequence of difficult situation on retail market in 2018 resulting in bankruptcy of some companies that sold electricity to end customers and fulfilling the reserve seller by PGE Group companies. In addition absence of an active sales market is reflected in a smaller migration of customers between the retail sale companies.

### Production of electricity

Table: Electricity production (TWh).

Electricity generation volume	H1 2019	H1 2018	% change
<b>Electricity production in TWh, including:</b>	<b>29.50</b>	<b>32.92</b>	<b>-10%</b>
Lignite-fired power plants	17.01	19.25	-12%
Coal-fired power plants	6.39	7.93	-19%
<i>including co-combustion of biomass</i>	0.02	0.05	-60%
Coal-fired CHP plants	2.41	2.44	-1%
<i>including co-combustion of biomass</i>	0.01	0.01	0%
Gas-fired CHP plants	2.26	2.24	1%
Biomass-fired CHP plants	0.13	0.08	63%
CHP plants fuelled by municipal waste	0.02	0.00	-
Pumped-storage power plants	0.33	0.20	65%
Hydroelectric plants	0.27	0.25	8%
Wind power plants	0.68	0.53	28%
<i>including RES generation</i>	1.13	0.92	23%

The level of electricity generated in the first half of 2019, as compared to the first half 2018, was affected mainly by lower generation at lignite-fired power plants (a decrease by 2.24 TWh) and at hard coal-fired power plants (a decrease by 1.54 TWh). This is primarily a result of lower load factors and longer downtime of reserve units, mostly due to lower demand from the national power grid and higher generation of wind energy and electricity import. In addition, lower production results from the modernisation of units in the Opole power plant and the Turów power plant (see p. 4.2 of this report).

Lower generation at lignite-fired power plants results from lower average load factors at the Bełchatów power plant (by 26 MW, i.e. by 8%) and at Turów power plant (by 26 MW, i.e. by 16%). Furthermore, lower generation results from the longer repair-related downtime of units. Units no. 2-14 in Bełchatów power plant were in overhauls longer by 2 041 h (unit no. 2 has been in modernisation since February 28, 2019) while units in Turów power plant were in overhauls longer by 736 h (unit no. 1 has been in renovation since May 2018 and unit no. 3 since April 2019).

Lower generation at hard coal-fired power plants results mainly from lower generation at the Opole power plant which was caused by the longer (by 5 320 h) repair-related downtime of units 1-4 (unit no. 1 has been in renovation since December 29, 2018) and by a lower load factor of units 1-4 (by 33 MW, i.e. by 13%). The above effect was partly compensated by electricity

generation from unit no. 5 at the Opole power plant (0.69 TWh)<sup>3</sup>. Lower generation at the Dolna Odra power plant results from longer reserve downtime of units by 4 850 h (including longer by 2 537 h reserve downtime of units 1 and 2 used by PSE S.A. as cold reserve) and longer by 323 h downtime of units being in overhauls. Lower generation in the Rybnik power plant was caused by longer reserve downtime of units 3-8 (by 4 607 h) and lower load factor (by 6 MW), what was partly compensated by shorter by 3 257 h time of units 3-8 in overhauls.

Generation at hard coal-fired CHP plants and gas-fired CHP plants remained at similar level as in the base period.

Higher generation at wind farms results from better wind conditions in months: February, March and May. Load factor at wind farms in the first half of 2019 was higher by 6 p.p. on average.

Higher production in pumped-storage power plants results from the nature of these generation units which were used more extensively by PSE S.A. in the first half of 2019.

Higher production at biomass CHP plants results from technical conditions for operation of the boiler at the Szczecin CHP plant, where higher production of electricity was necessitated by lower heat generation (result of higher external temperatures) in order to keep the technical minimum of boiler operation.

Higher generation in hydro power plants was triggered by more favourable hydrological conditions.

Generation from municipal waste is a result of commissioning of thermal waste processing installation with energy recovery in Rzeszów in the third quarter of 2018.

Table: Production of heat (PJ).

Heat production volume	H1 2019	H1 2018	% change
<b>Heat production in PJ, including:</b>	<b>29.40</b>	<b>29.87</b>	<b>-2%</b>
Lignite-fired power plants	1.51	1.50	1%
Coal-fired power plants	0.50	0.42	19%
Coal-fired CHP plants	21.22	21.69	-2%
Gas-fired CHP plants	5.24	5.22	0%
Biomass-fired CHP plants	0.76	0.93	-18%
CHP plants fuelled by municipal waste	0.06	0.00	-
Other CHP plants	0.11	0.11	0%

External temperatures contributed more than any other factor to lower generation of heat in 2019 (y/y). As compared to 2018, the average temperature was by 0.6°C higher, which translated into lower production of heat (by 2% or 0.47 PJ) by CHP plants and power plants.

### Sales of heat

In the first half of 2019 the heat sales volume in PGE Capital Group totalled 28.47 PJ and were lower by 0.43 PJ y/y. The above result was caused mainly by lower demand for heat due to the higher average outside temperatures by 0.6°C y/y.

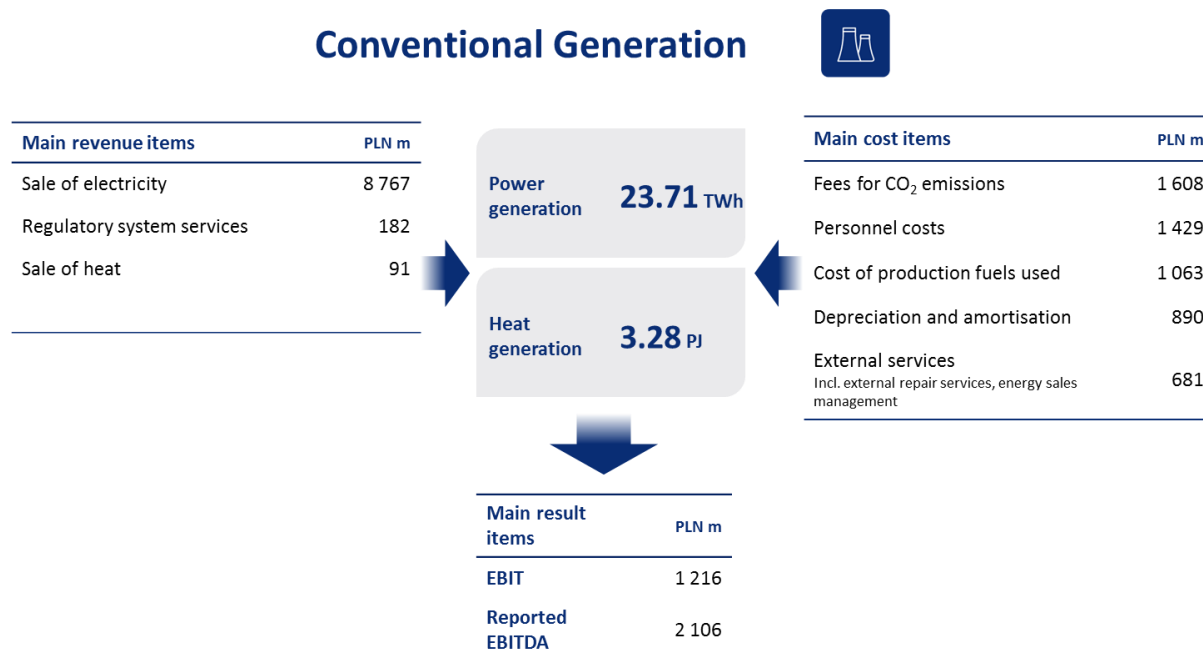
<sup>3</sup> The above the list includes production of units no. 5 and 6 of the Opole power plant since the start of the test run, i.e. from May 1, 2019 for unit no. 5. Production from unit no. 6 is not presented (test run from August 30, 2019).

### 4.3. Operational segments

#### CONVENTIONAL GENERATION

##### Segment description and its business model

This segment includes lignite mining, generation of electricity in conventional sources.



The main source of revenue in the Conventional Generation segment is revenue from the **sale of electricity** on the wholesale market, based on electricity prices that are shaped by supply and demand mechanisms, taking into account the variable costs of generation. At the same time, the segment's key cost items, given their size and volatility, and thus their impact on operating results, are the **cost of production fuels**, mainly hard coal and natural gas, as well as **fees for CO<sub>2</sub> emissions**. Lignite-based production, which is of key significance for the Group, is based on own mines, therefore its cost is relatively stable and reflected mainly in fixed-cost items, i.e. personnel costs, third-party services and depreciation.

A significant item in the segment's revenue constitutes **revenues from the provision of regulatory system services** based on an agreement with the Polish transmission system operator, PSE S.A. This revenue is in parallel to revenue generated on the electricity market and is related to the need to ensure stable operations for the national power system. Regulatory system services are provided by power plants of PGE GiEK and by Rybnik power plant.

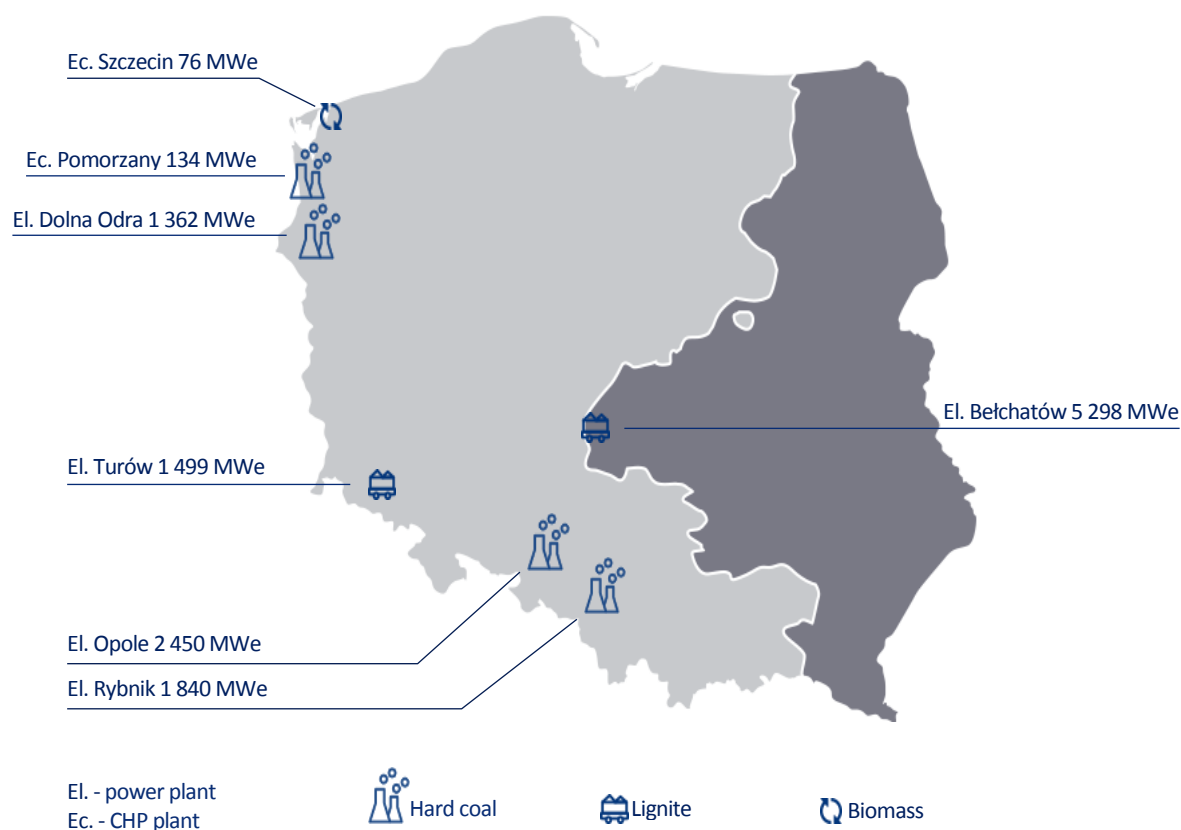
In addition, this segment generates **revenues from sales of heat** produced both at industrial plants and at the Szczecin CHP plant and Pomorzany CHP plant which form part of Zespół Elektrowni Dolna.

## ASSETS

Conventional Generation segment consists of: 2 lignite mines, 5 conventional power plants and 2 CHP plants.

Conventional Generation is the leader of lignite mining (its share in the extraction market of this raw material accounting for 88%<sup>4</sup> of domestic extraction), it is also the largest generator of electricity as it generates approx. 33%<sup>5</sup> of domestic gross electricity production. The generation is based on lignite extracted from mines owned by the company as well as hard coal and biomass.

Diagram: Main assets of the Conventional Generation segment.

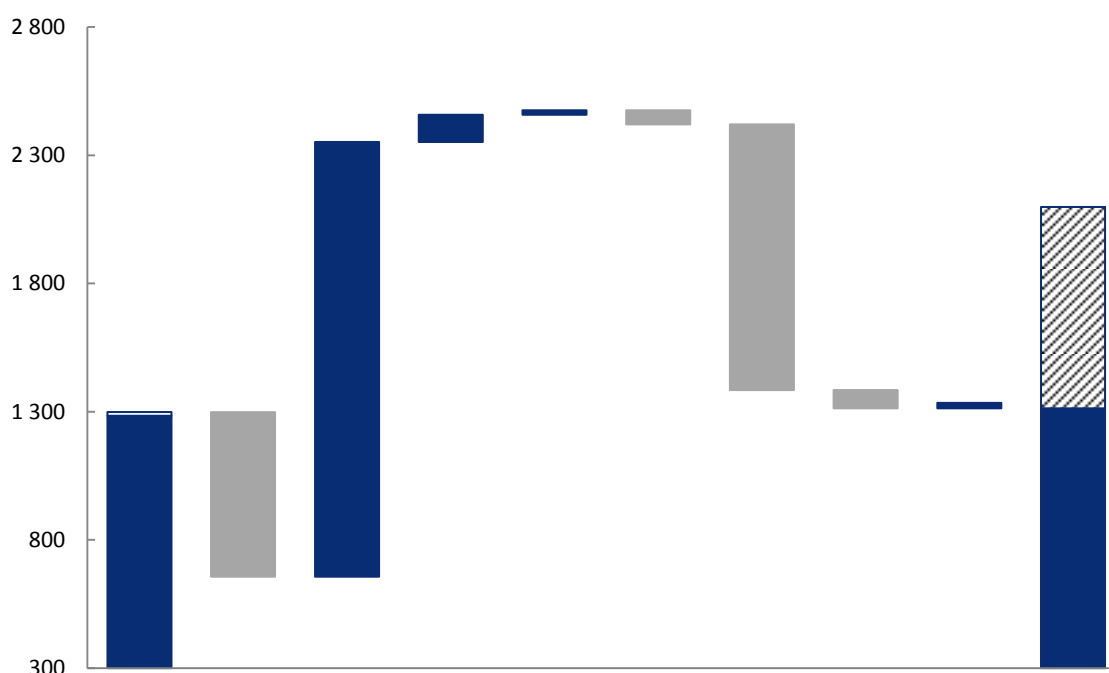


<sup>4</sup> Own calculations based on data from Central Statistical Office



<sup>5</sup> Own calculations based on data from PSE S.A.

## KEY FACTORS FOR THE RESULTS OF THE SEGMENT

Chart: Key changes of recurring EBITDA in Conventional Generation (in PLN million) – managerial perspective.



	EBITDA H1 2018	Electricity production difference in volume	Electricity production difference in price	Result on the optimization of the electricity trade	Revenues from agreement with TSO	Costs of fuel	Costs of CO <sub>2</sub>	Personnel costs	Other	EBITDA H1 2019
<b>Change</b>		<b>-642</b>	<b>1 696</b>	<b>105</b>	<b>18</b>	<b>-54</b>	<b>-1 036</b>	<b>-71</b>	<b>21</b>	
Reported EBITDA H1 2018	<b>1 269</b>									
One-offs H1 2018	<b>-15</b>									
Recurring EBITDA H1 2018	<b>1 284</b>	4 679	84	164	1 009	572	1 340			
Recurring EBITDA H1 2019		5 733	189	182	1 063	1 608	1 411			<b>1 321</b>
One-offs H1 2019										<b>785</b>
Reported EBITDA H1 2019										<b>2 106</b>

-  Reversal of the impact of the sum of one-off events reducing the reported result
-  Reversal of the impact of the sum of one-off events improving the reported result

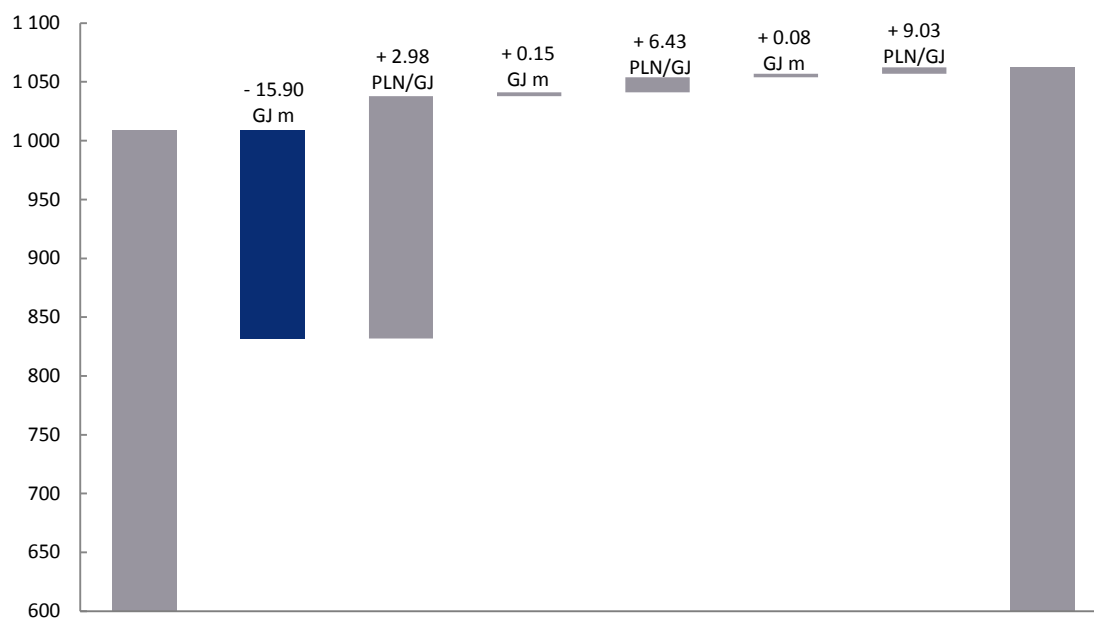
Key factors affecting the recurring EBITDA result of Conventional Generation segment on y/y basis included:

- **Lower electricity production volume** in PGE GiEK by 3.7 TWh due to lower degree of use of units by PSE S.A. resulting from decreased demand in NPS and higher wind generation (see p. 3.2 of this report).
- **Increase in electricity sales prices** (see p. 4.2 of this report).
- **Higher result on optimisation of electricity portfolio** due to higher volume of electricity trading by 7.4 TWh (PLN +127 million), with lower margin realized on electricity trading by PLN 1.6/MWh (PLN -20 million).
- **Higher revenues from ancillary control services**, mainly higher revenues from Operational Capacity Reserve ("OCR") in Rybnik power plant due to higher volume of capacity at disposal (units 1 and 2 in downtime in the first quarter of 2018).
- **Higher fuel consumption costs**, mainly hard coal, due to higher prices of hard coal on the domestic and international market, what directly translated into higher contractual prices. The above effect was limited due to lower production based on this fuel. Main changes on different types of fuel are presented on the chart below.



- **Higher CO2 costs** as a result of higher price of allowances and lower allocation of allowances granted free of charge. The above effect was reduced as a result of lower emissions of CO<sub>2</sub> due to lower electricity production. Main changes are shown in the chart below.
- **Higher personnel costs** mainly due to ongoing process to optimise salaries.

Chart: Costs of production fuels consumption in Conventional Generation (in PLN million).

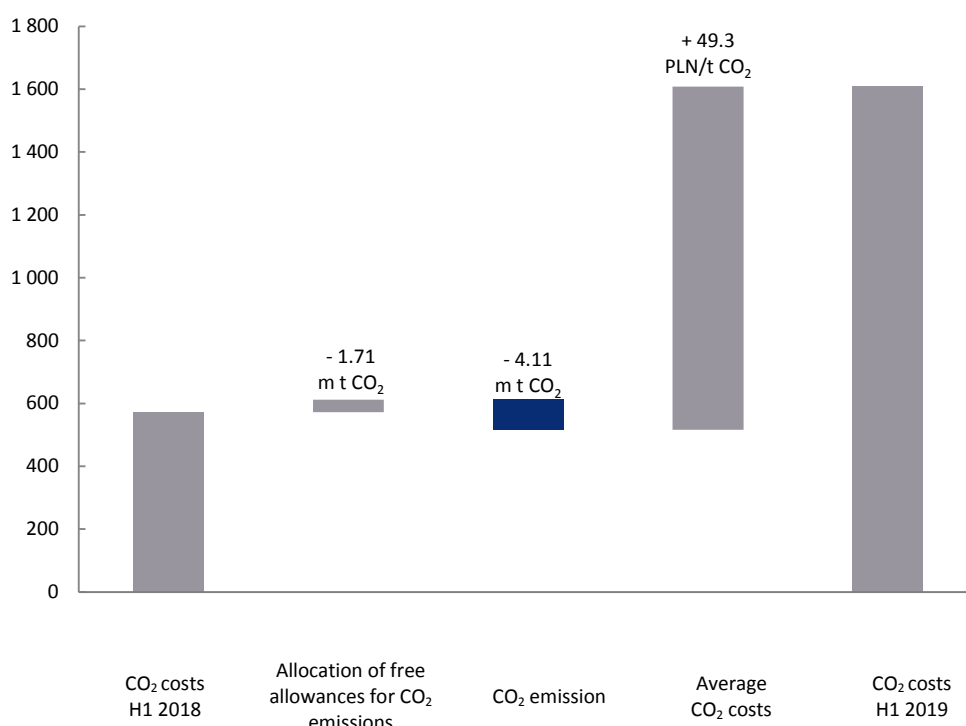


	Cost of fuels H1 2018	Hard coal volume	Hard coal price	Biomass volume	Biomass price	Light and heavy oil volume	Light and heavy oil price	Cost of fuels H1 2019
<b>Change</b>		<b>-177</b>	<b>206</b>	<b>3</b>	<b>13</b>	<b>3</b>	<b>6</b>	
Fuels H1 2018	<b>1 009</b>	946		38		25		
Fuels H1 2019		975		54		34		<b>1 063</b>

Table: Data on use of production fuels consumption in Conventional Generation.

Fuel type	H1 2019		H1 2018	
	Volume (tons ths)	Cost (PLN million)	Volume (tons ths)	Cost (PLN million)
Hard coal	3 158	975	3 927	946
Biomass	213	54	190	38
Fuel oil – light and heavy	752	34	673	25
<b>TOTAL</b>		<b>1 063</b>		<b>1 009</b>

Chart: CO<sub>2</sub> costs in Conventional Generation segment(in PLN million).



Change	40	-96	1 092
CO <sub>2</sub> costs H1 2018	572		
CO <sub>2</sub> costs H1 2019			1 608

Table: Capital expenditures incurred in Conventional Generation segment in the first half of 2019 and 2018.

PLN million	H1 2019	H1 2018	% change
Investments in generating capacities, including:	1 336	1 043	28%
▪ Development	787	597	32%
▪ Modernisation and replacement	549	446	23%
Other	31	24	29%
Rybnik power plant	32	64	-50%
<b>TOTAL</b>	<b>1 399</b>	<b>1 131</b>	<b>24%</b>
Capitalised costs of overburden removal in mines	181	167	8%
<b>TOTAL with capitalized costs of overburden removal</b>	<b>1 580</b>	<b>1 298</b>	<b>22%</b>

## KEY DEVELOPMENTS IN THE FIRST HALF OF 2019 IN THE CONVENTIONAL GENERATION SEGMENT

Key development investments:

- On January 15, 2019 the generator in unit no. 5 at the Opole power plant was initially synchronised with the national power system.
- On February 7, 2019 unit no. 5 at the Opole power plant reached capacity of 931 MWe.
- On March 29, 2019 annex no. 9 was signed to the contract for the construction of unit no. 7 at the Turów power plant.
- On April 19, 2019 the coal-fired boiler in unit no. 6 at the Opole power plant was put in operation.
- On May 14, 2019 unit no. 6 at the Opole power plant was synchronised with the NPS for the first time.
- On May 31, 2019 unit no. 5 at the Opole power plant was commissioned.
- On June 12, 2019, a contract notice in a tender for the selection of the General Contractor for the construction of two gas-steam units in PGE GiEK S.A. Branch Zespól Elektrowni Dolna Odra was published.

Key modernisation investments related to emission reductions:

- On January 26, 2019 the trial run of unit no. 2 at the Turów power plant was performed after its modernisation.
- On January 31, 2019 the SCR installation of boiler B was put into operation in the Pomorzany power plant.
- In February 2019, commissioning reports were signed for the AKPIA island, generator and electro-filter island and boiler island in unit no. 2 at the Turów power plant after their modernisation.
- On March 1, 2019 unit no. 2 at the Bełchatów power plant was stopped for modernisation.
- On April 1, 2019 unit no. 3 at the Turów power plant was stopped for modernisation.

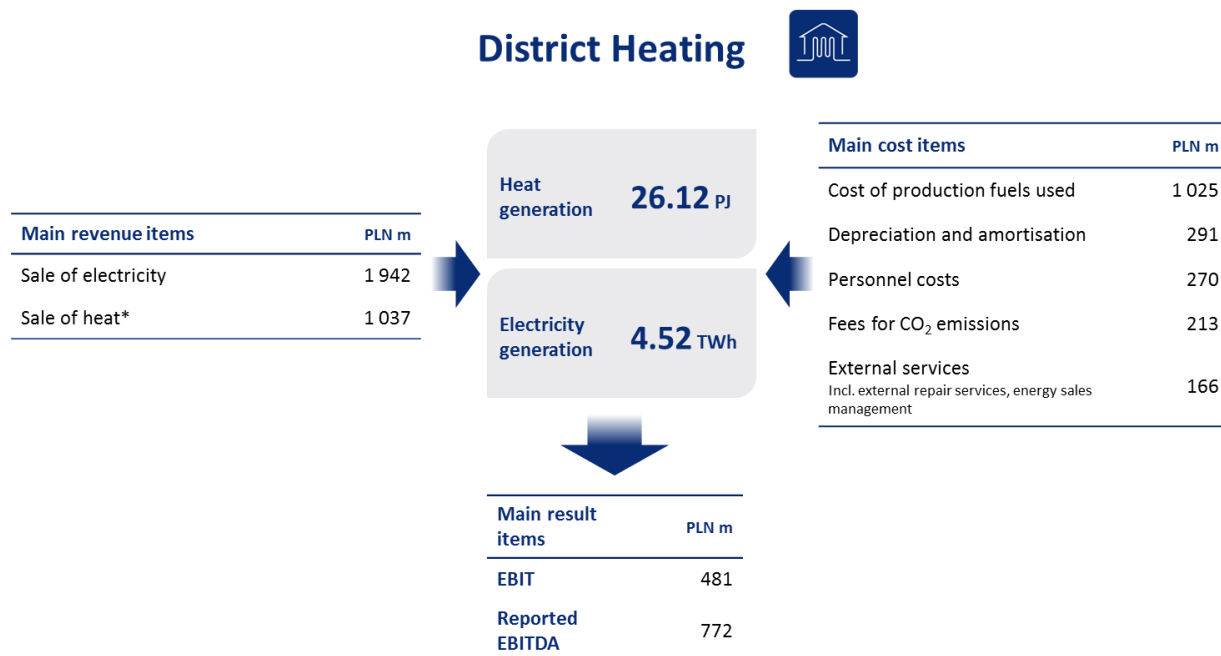
## KEY PROJECTS IN THE FIRST QUARTER OF 2019

Aim of the project	Budget (net, without costs of financing)	Capital expenditures incurred so far (net, without costs of financing)	Capital expenditures in H1 2019 (net, without costs of financing)	Fuel/ Net efficiency	Contractor	Expected date of completion	Status
<b>Construction of new units in Opole power plant</b>							
Construction of two power units of 900 MW each	PLN 10.94 billion	PLN 9.66 billion	PLN 473 million	Hard coal/ 45.5%	Syndicate of companies: Rafako, Polimex-Mostostal and Mostostal Warszawa with co-operation of GE as Project manager on behalf of the syndicate	unit 5 – <b>June 15, 2019</b> ; unit 6 – <b>September 30, 2019</b> .	On May 31, 2019 unit no. 5 was placed into commercial operations. Thus, the commissioning of unit no. 5 took place before scheduled date of June 15, 2019, which was set by the annex to the agreement. Unit 6 is currently undergoing regulation in order to optimise the work of individual installations and technological systems, as well as tests at different loads. Overall work progress on this project at the end of June 2019 was approx. 99%.
<b>Construction of new unit in Turów power plant</b>							
Construction of power unit with a capacity of 490 MW	PLN 4.26 billion	PLN 2.75 billion	PLN 163 million	Lignite / 43.1%	syndicate of companies: MHPSE, Budimex and Tecnicas Reunidas	<b>October 2020</b> .	Installation works were continued at the construction site. The installation of process pipelines is in progress. Silencers have been installed on the cooling tower. The assembly works on the unit coal supply system are in progress. In April 2019, documentation approved by PSE S.A. for the connection of a new unit in the Turów Power Plant was delivered. At the end of June 2019 the overall work progress on the project was approx. 90%. On March 29, 2019 annex no. 9 to the contract for the construction of a unit was signed, which expands the scope of works, increases the value of the contract and extends the deadline for the completion of the unit by six months, i.e. until October 2020. The value of the annex amount to approx. PLN 108 million. The increase in the contract value and the prolongation of the deadline result from need of technological adaptations and broader scope of works.

## DISTRICT HEATING

### Segment description and its business model

Core business of the segment includes production of heat and electricity from conventional sources as well as transmission and distribution of heat.



\* includes sales of heat, contracted capacity and distribution of heat.

As in the case of Conventional Generation, this segment's revenues are primarily revenues from electricity sales, however, they are usually directly related to generation of heat which in turn depends on demand that is highly seasonal and depends on external temperatures. This is why, in contrast to industrial power plants in Conventional Generation, as a rule, CHP plants do not have any considerable impact on the development of prices for electricity on the wholesale market.

**Revenues from the sale and distribution of heat** are regulated revenues. Energy companies independently set tariffs and present them to the President of the Energy Regulatory Office (URE President) for approval. Heat production at PGE Group takes place in cogeneration units, which offer the opportunity to set tariffs for heat using a simplified approach (compared to tariffs based on a full cost structure), based on reference prices, which are mainly based on the average sales prices for heat generated in units with specific fuel other than cogeneration units. They are published each year by the ERO President. Tariffs for heat production for cogeneration units in a given tariff year thus reflect changes in the costs of heat-generation units (not co-generation units) in the previous calendar year. The cost approach is applied in the case of tariffs for heat distribution, which allows to cover justified costs (mainly the costs of heat losses and property tax) and a return on invested capital, in line with guidelines from the ERO President. Distribution tariffs for heat are in place at branches in Gorzów and Zgierz, as well as by Kogeneracja S.A., PGE Toruń and Zielona Góra CHP.

Generation of heat and electricity is directly related to key variable costs of the segment, i.e. **the cost of production fuel used** (in particular, hard coal and gas) and **the cost of fees for CO<sub>2</sub> emissions**.

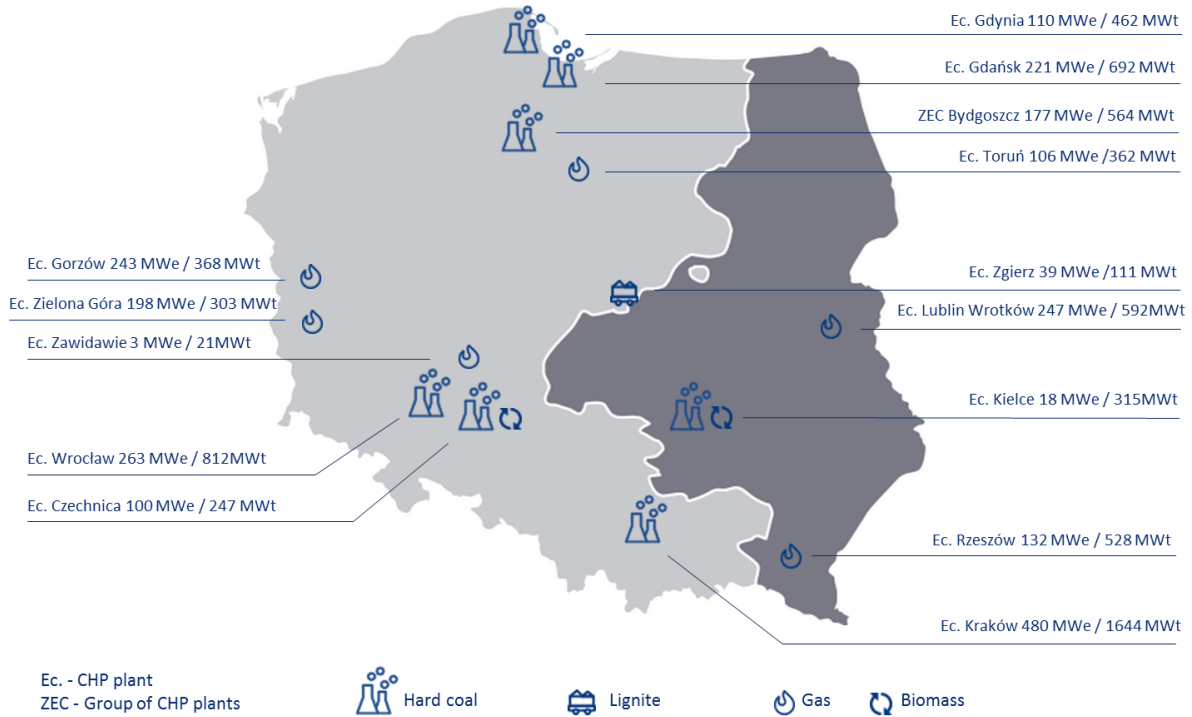
Electricity production in high-efficiency cogeneration is additionally remunerated. Until 2018, CHPs generated revenue from the **sale of energy origin certificates**, i.e. cogeneration certificates (yellow and red). From 2019, due to a change in support model, they will receive support at a level covering increased operating costs related to production. For large units, this will be set on an individual basis. In the first half of 2019, the support concerned was not paid, as the implementing regulations to the Act on Promotion of Electricity from Highly Efficient Cogeneration had not yet been introduced. The support mechanism in the form of certificates is in place also for biomass-fired generating assets. This type of production is additionally remunerated by awarding origin certificates, i.e. green certificates, the sale of which generates additional revenue, within the segment obtained only in biomass unit in Kielce CHP.

## ASSETS

District Heating within PGE Capital Group combines CHP plants separated from the EDF assets acquired on November 14, 2017 and CHP plants separated from PGE GIEK. Since January 2, 2019 the segment's composition has been as follows: PGE EC S.A., Kogeneracja S.A., PGE Toruń S.A. and Elektrociepłownia Zielona Góra S.A.

District Heating is the largest heat producer in Poland. Generation is based mainly on hard coal and gas.

Diagram: Main assets of the District Heating segment.

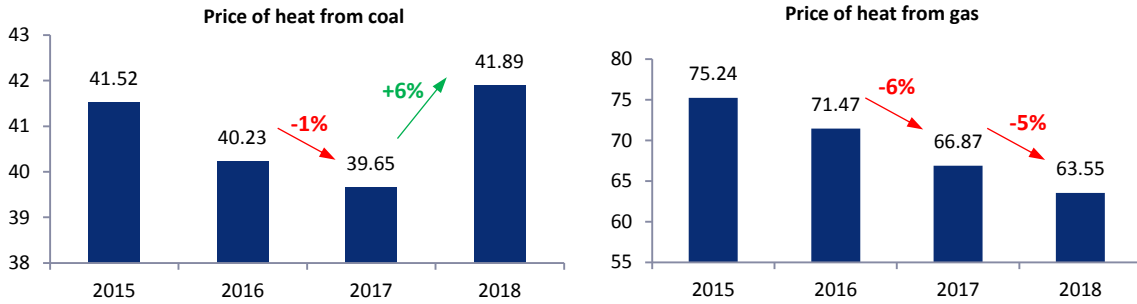


## TARIFFS IN DISTRICT HEATING

### Description of tariffs in the segment

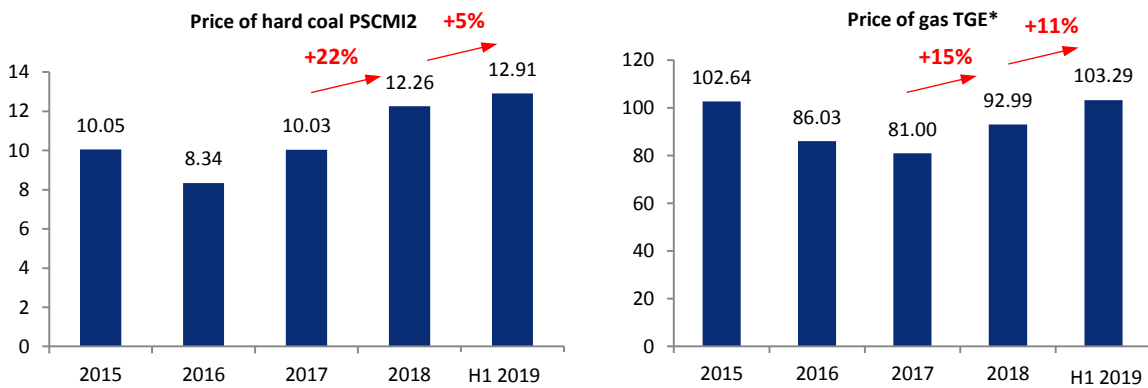
Due to the fact that the income on heat sales for CHP plant are tariffed as part of the so-called simplified method, they are characterised by a relative delay in the transfer of costs (annual or two-year). They are based on the year-to-year dynamics of average costs (taking into consideration the fuels used) incurred by entities that are not co-generation entities for the year preceding the time of tariff establishment.

Charts: Changes in the reference price of heat for hard coal and natural gas (PLN/GJ).



Source: ERO.

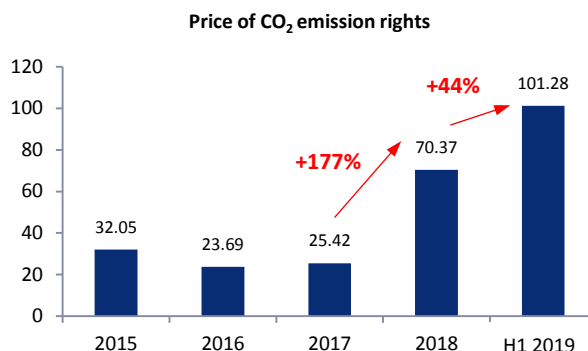
Charts: Changes in costs of fuels – hard coal (PLN/GJ) and gas (PLN/MWh).



Source: ARP, TGE.

\* Weighted average from forward contracts, RDN and RDB contracted on TGE for a given period.

Chart: Changes in price of CO<sub>2</sub> emission rights (PLN/t).



Source: ICE.

Despite the fact that the reference price of heat produced from hard coal increased in 2018 by 6% (contributing to the increase in heat prices for co-generation entities establishing the tariff also for 2019), the average market prices of hard coal increased by 22%, while the prices of CO<sub>2</sub> emission rights - by 177%. In the conditions of increasing prices, the costs for the CHP plant can be even higher – in the first half of 2019, the prices of hard coal were higher by another 5% and the prices of CO<sub>2</sub> emissions - by another 44%. Aside from the time delay in costs transfer, it is also important that the CO<sub>2</sub> cost is only partially transferred in the reference unit price. This is related to the fact that only approx. 45% of heating entities in Poland is part of the ETS system (capacity above 20 MW), i.e. is obliged to redeem the carbon dioxide emission allowances. The reference price also transfers only approx. 45% of the real CO<sub>2</sub> consumption costs at the average heat sales price.

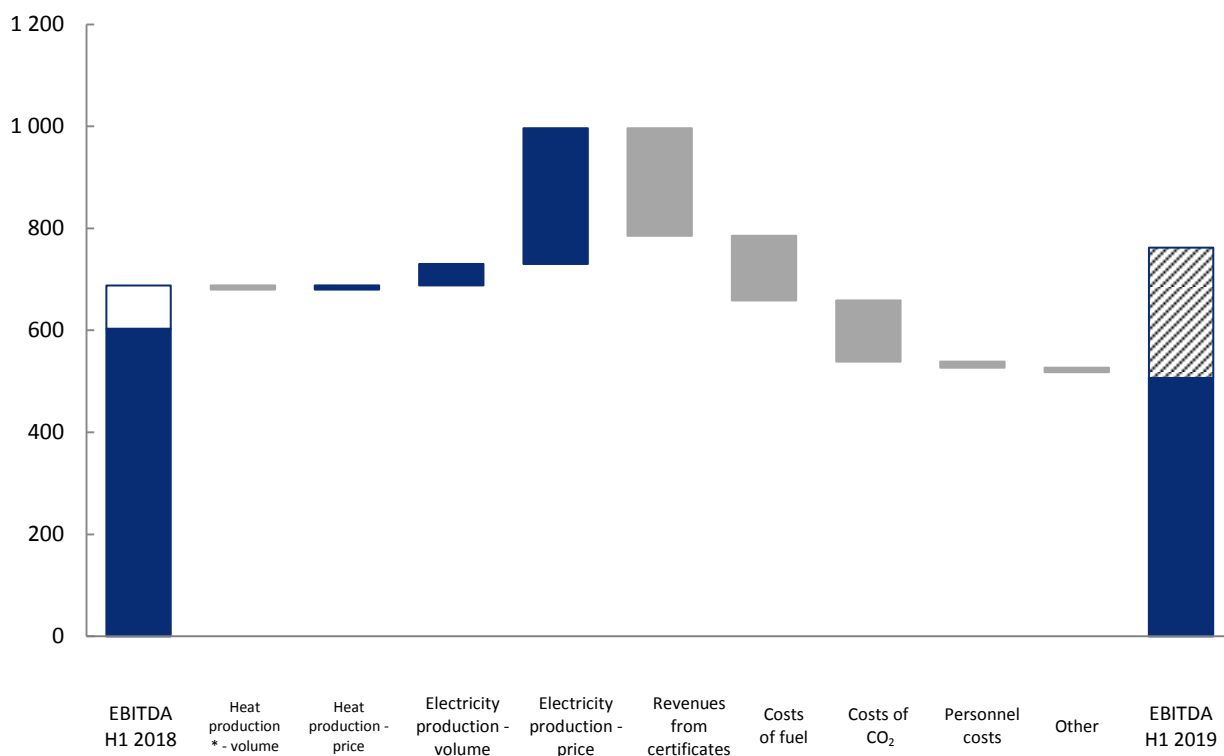
In addition, in 2018 and in the first half of 2019, an increase in natural gas prices was observed, while the relatively high average price for the first half of 2019 was primarily related to the collection of gas contracted in earlier periods. The average spot market price was just under PLN 84/MWh, falling to below PLN 40/MWh at the end of the first half of 2019.

Weather also substantially affects the segment's results. Temperatures directly shape the level of heat demand. Simultaneously, the level of heat production determines the level of electricity production in co-generation, which is an additional source of revenues that decisively affects the CHP plant's profitability.





## KEY FACTORS FOR THE RESULTS OF THE SEGMENT

Chart: Key changes of recurring EBITDA in District Heating (in PLN million) – managerial perspective.



	EBITDA H1 2018	Heat production * - volume	Heat production - price	Electricity production - volume	Electricity production - price	Revenues from certificates	Costs of fuel	Costs of CO <sub>2</sub>	Personnel costs	Other	EBITDA H1 2019
<b>Change</b>		-8	8	42	266	-211	-127	-120	-12	-9	
Reported EBITDA H1 2018	603										
One-offs H1 2018	-85										
Recurring EBITDA H1 2018	688	1 037		818		223	898	93	258		
Recurring EBITDA H1 2019		1 037		1 126		12	1 025	213	270		517
One-offs H1 2019											255
Reported EBITDA H1 2019											772

-  Reversal of the impact of the sum of one-off events reducing the reported result
-  Reversal of the impact of the sum of one-off events improving the reported result

\* Includes sales of heat, of contracted capacity and distribution of heat.

Key factors affecting the recurring EBITDA result of District Heating segment on y/y basis included:

- **Lower volume of heat production** is a result of higher outside temperatures. The average temperatures were higher by 0.6°C, which translated into lower sales of heat (by 0.20 PJ).
- **Increase of heat sale price** is connected with the publishing new tariffs by the ERO for seven CHP plants and new tariffs for distribution of heat for units in Toruń, Zielona Góra and Gorzów, where price grew by approx. 1.4% y/y.
- **Higher volume of electricity generation** by 0.2 TWh due to higher use of co-generation generating units vs. Peak units and operation of cogeneration devices in pseudo-condensation.
- **Increase in electricity sale prices** (see p. 3.2 of this report).
- **Lower revenues from sale of certificates** as a result of ceasing the support for production of electricity in highly efficient co-generation in 2019.
- **Higher costs of fuels** caused by increasing prices of main fuels: hard coal, gas and biomass.
- **Higher CO<sub>2</sub> costs** are a result of higher price of allowances and lower allocation of allowances granted free of charge. The main changes are shown in the chart below.
- **Higher personnel cost** result mainly from the consolidation and change in structure of a new segment.
- **Higher level in item other** results mainly from positive impact of LTC compensations.

Chart: Consumption costs of production fuels in District Heating (in PLN million).

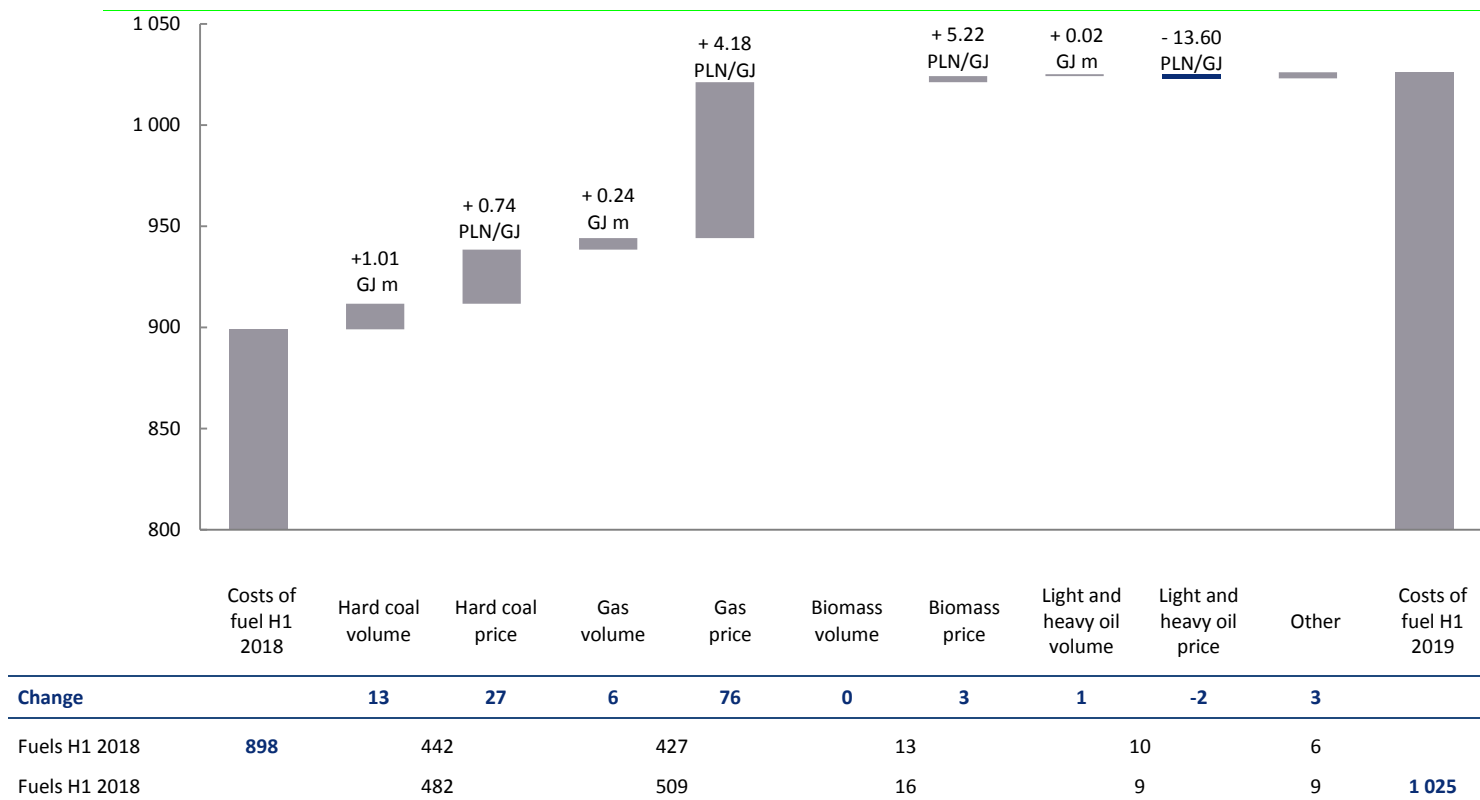
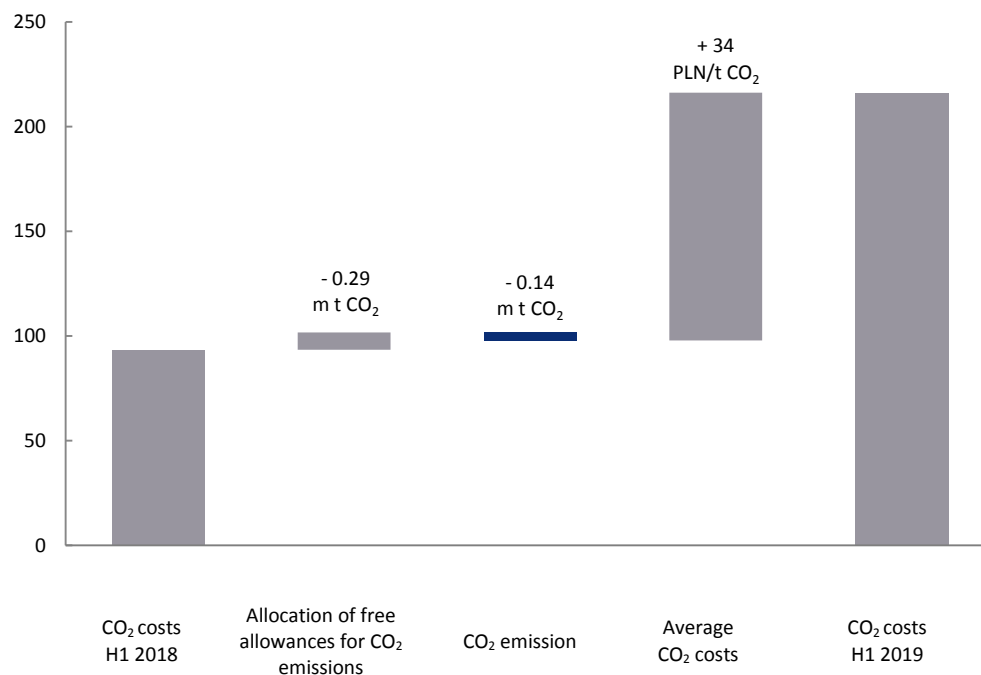


Table: Data on use of production fuels consumption in District Heating.

Fuel type	H1 2019		H1 2018	
	Volume (tons ths)	Cost (PLN million)	Volume (tons ths)	Cost (PLN million)
Hard coal	1 598	482	1 516	442
Gas (cubic metres ths)	600 798	509	602 944	427
Biomass	71	16	70	13
Fuel oil – light and heavy	105	18	93	16
<b>TOTAL</b>		<b>1 025</b>		<b>898</b>

Chart: CO<sub>2</sub> costs in District Heating segment(in PLN million).



Change	8	-4	116
CO <sub>2</sub> costs H1 2018	93		
CO <sub>2</sub> costs H1 2019			213

## CAPITAL EXPENDITURES

Table: Capital expenditures incurred in District Heating segment in the first half of 2019 and 2018.

PLN million	H1 2019	H1 2018*	% change
Investments in generating capacities, including:	98	271	-64%
▪ Development	12	122	-90%
▪ Modernisation and replacement	86	149	-42%
Other	13	12	8%
<b>TOTAL</b>	<b>111</b>	<b>283</b>	<b>-61%</b>

Presented data were restated for the sake of data comparability, because District Heating segment was not separated for the first half of 2018.

## KEY DEVELOPMENTS IN THE FIRST HALF OF 2019 IN THE DISTRICT HEATING SEGMENT

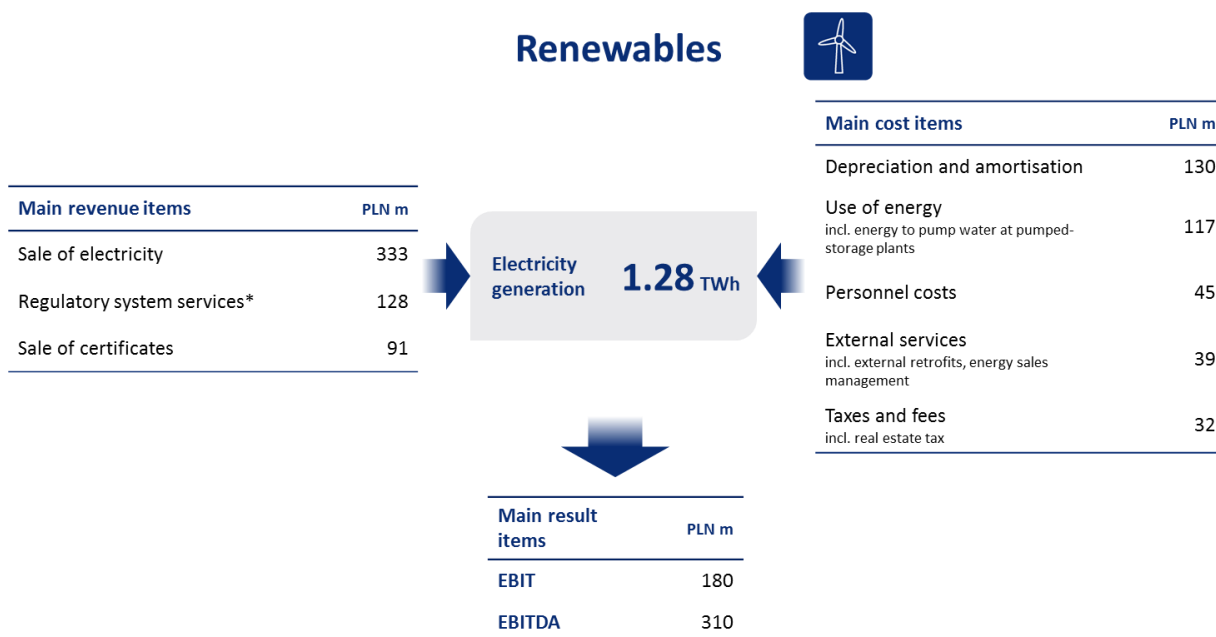
Program of adaptation of PGE EC's assets to requirements of BAT conclusions, including:

- Decision of the Marshal of the Podkarpackie voivodship was obtained with regard to change of Integrated permit for boilers WR25 regarding reduction of capacity of boiler WR25 K2 from 35 MW to 29 MW in fuel in Rzeszów CHP plant.
- A decision of the Marshal of the Pomorskie Voivodeship, amending the decision on the Integrated Permit for the Gdańsk CHP Plant was obtained, with exemption from the emission limit values from the BAT Conclusions on SO<sub>x</sub> and NO<sub>x</sub> for the peak load boiler plant and NO<sub>x</sub> for the unit boilers.
- A decision of the Marshal of the Pomorskie Voivodeship, amending the decision on the Integrated Permit for the Gdynia CHP Plant was obtained, with exemption from the emission limit values from the BAT Conclusions on NO<sub>x</sub> for the unit boilers.
- A decision of the Marshal of the Lesser Poland Voivodeship, amending the decision on the Integrated Permit for the Kraków CHP Plant was obtained, regarding the conditions for introducing cooling water and sewage from IMOS into the Vistula River.
- Tender proceedings were continued with regard to selection of contractors for adaptation of CHP plants to BAT conclusions.
- The works on the process of selecting a contractor for the construction of a new steam-gas unit at Czechnica CHP Plant for Kogeneracja S.A. were continued .

## RENEWABLES

### Segment description and its business model

This segment is involved in the generation of electricity from renewable sources and in pumped storage plants.



\* Managerial perspective.

The Renewables segment generates revenue mainly from the **sale of electricity**, however contrary to production at industrial plants within the Conventional Generation segment, this revenue is subject to a larger degree to changes in weather conditions and prices on the spot market due to the renewables sales model in place. Electricity output volume translates into property rights (green) and revenue from the sale of energy origin certificates obtained by the segment's assets, excluding hydropower plants over 5 MWe.

A stable part of the segment's results is related to the **provision of ancillary services** using pumped-storage plants, which is performed on the basis of an agreement with the transmission system operator, PSE S.A.

On the cost side, the most important items include: depreciation of segment assets, use of energy to pump water at pumped-storage plants and third-party services, mainly in the form of repair services. Property tax and employee wages also constitute a significant cost item in this segment.

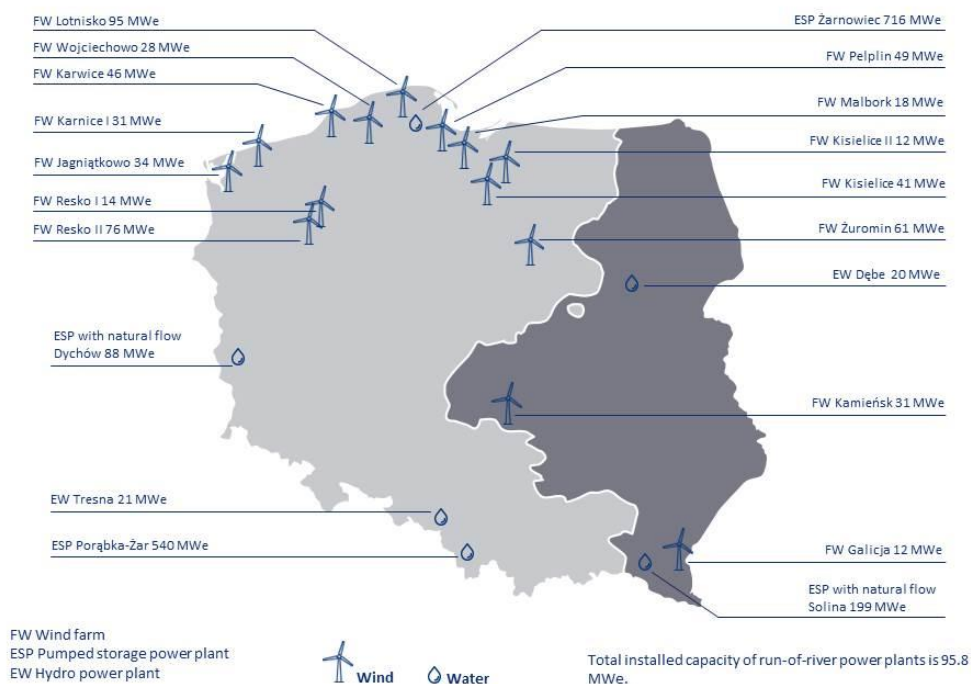
### Assets

The PGE Capital Group's operations in renewable energy are managed by the PGE Energia Odnawialna S.A. Due to the profile of operations, the segment includes PGE Baltica sp. z o.o., which is recognized in presentation of Renewables segment. This company is responsible for all activities related to off-shore wind farms.

Assets in the segment include:

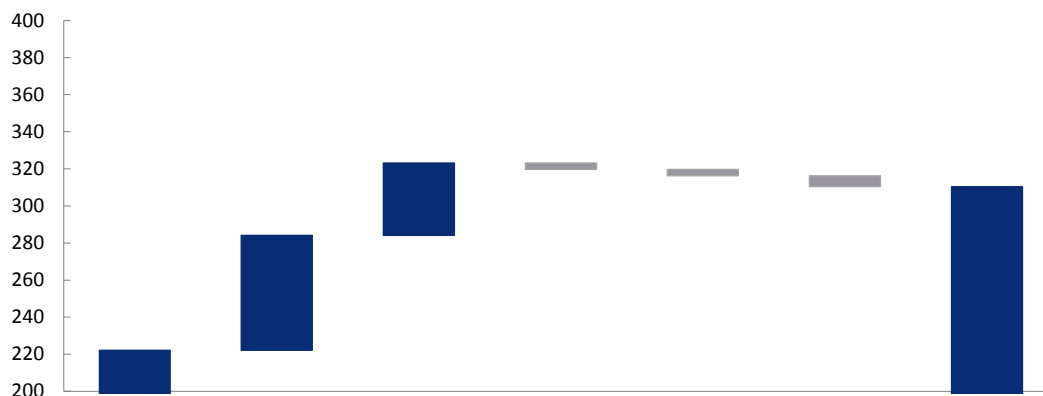
- 14 wind farms,
- 1 photovoltaic power plant,
- 29 run-of-river hydro power plants,
- 4 pumped-storage power plants, including 2 with natural flow.

Diagram: Main assets of the Renewables segment.



## KEY FACTORS FOR THE RESULTS OF THE SEGMENT

Chart: Key changes of EBITDA in Renewables (in PLN million) – managerial perspective.



	EBITDA H1 2018	Electricity revenues	Certificates revenues	Revenues ancillary control services*	Personnel costs	Other	EBITDA H1 2019
<b>Change</b>		<b>62</b>	<b>39</b>	<b>-3</b>	<b>-3</b>	<b>-7</b>	
EBITDA H1 2018	<b>222</b>	145	52	131	42		
EBITDA H1 2019		207	91	128	45		<b>310</b>

\* Excluding revenues and costs relating to Balancing market not affecting EBITDA result.

Key factors affecting the y/y results of Renewables included:

- **Increase in revenues from electricity sales** resulting from: higher electricity sale price by PLN 33/MWh y/y, what resulted in growth of revenues by approx. PLN 32 million; higher generation volume by 152 GWh, what translated into revenues increase by approx. PLN 27 million; FIT/FIP support scheme for 9 small hydro power plants in place of certificates, which has been in force for those installations from January 2019, what attributed to increase of revenues by approx. PLN 3 million y/y.
- **The increase of revenues from sales of certificates** resulting mainly from: higher prices, what resulted in an increase in revenues by approx. PLN 27 million; higher volume of certificates sales, what translated directly into revenues growth by PLN 12 million.
- **Lower sales revenues from ancillary control services** result mainly from lower rate by PLN 1.0/MW determined in accordance with the terms of the current contract.
- **Increase of personnel costs** resulting from: increased employment level caused by switching to proprietary maintenance of wind; establishing of new company - PGE Baltica sp. z o.o., which deals with the development of the offshore project.

## CAPITAL EXPENDITURES

Table: Capital expenditures incurred in Renewables segment in the first half of 2019 and 2018.

PLN million	H1 2019	H1 2018	% change
Investments in generating capacities, including:	30	47	-36%
▪ Development	7	13	-46%
▪ Modernisation and replacement	23	34	-32%
Other	1	1	-
<b>TOTAL</b>	<b>31</b>	<b>48</b>	<b>-35%</b>

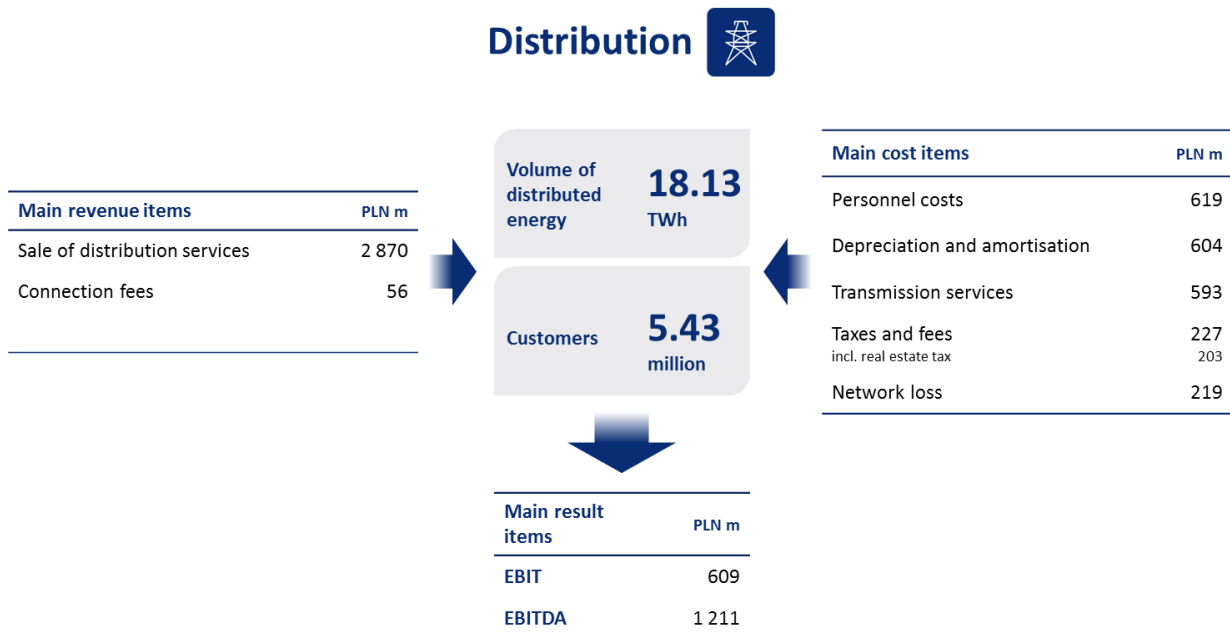
## KEY DEVELOPMENTS IN THE FIRST HALF OF 2019 IN THE RENEWABLES SEGMENT

- On January 4, 2019 an agreement was signed for the design and construction of 110 kV cable line along the route: Kamień Pomorski substation (GPZ) – Rybice switchboard (RS) – Skrobotowo substation (GPZ), including the Rybice switchboard, and for the expansion of the Skrobotowo substation for the offtake from Rybice Wind Farm, Starza Wind Farm and Karnice II Wind Farm with the total capacity of 88 MW.
- In February 2019, the construction works concerning access roads and HV lines were commenced which formed part of the construction of Rybice Wind Farm, Starza Wind Farm and Karnice II Wind Farm with the total capacity of 88 MW.
- In May 2019, public tender procedures were announced for strategic investment tasks carried out as part of the comprehensive modernisation programme of the Porąbka – Żar pumped-storage power plant.

## DISTRIBUTION

### Segment description and its business model

Core business of the segment includes supply of electricity to final off-takers through the grid and HV, MV and LV infrastructure.



**Segment revenue is based on a tariff for electricity distribution services**, which is approved by the ERO President every year at company request and is regulated. The tariff allows costs related to the distribution system operator's on-going activities to be transferred, that were considered justified by the ERO President. These are both operating costs, depreciation as well as costs related to the necessity to cover grid losses on electricity distribution or the purchase of transmission services from the transmission system operator. At the same time, the tariff reflects the transferred costs in fees such as the RES fee, transition fee or - starting from 2019 - cogeneration fee.

The key element shaping the Distribution segment's result is **return on company's invested capital**. This is based on the Regulatory Asset Base ("RAB"), which is established on the basis of completed investments and taking into account asset depreciation. The Regulatory Asset Base serves as the basis for calculating return on capital, using weighted average cost of capital, which is published by the ERO President in accordance with a set formula and using as the risk free rate the average yield on 10-year State Treasury bonds with the longest maturity during the 18-month period preceding the tariff application submission. Moreover, in the quality regulation for years 2018-2025 the ERO President obliged the company to reach until the end of 2025 the efficiency ratios including: efficiency indicators that cover: interruption time, interruption frequency, connection time and time to provide metering and settlement data.

The act regulating electricity prices in 2019 kept the DSO tariffs unchanged at the level from December 31, 2018 and decreased the transition fee. The amended act eliminated the necessity to apply 2018 rates, but reduced transition fee was upheld. DSO tariff rates for 2019 was approved by the ERO President on March 22, 2019 and are used by PGE Dystrybucja S.A. from April 6, 2019.



## VOLUME, CUSTOMERS AND OPERATING DATA

PGE Dystrybucja S.A. operates in the area of 123 425 sq. km and delivers electricity to approximately 5.4 million customers.

Diagram: Area of PGE distribution grid.



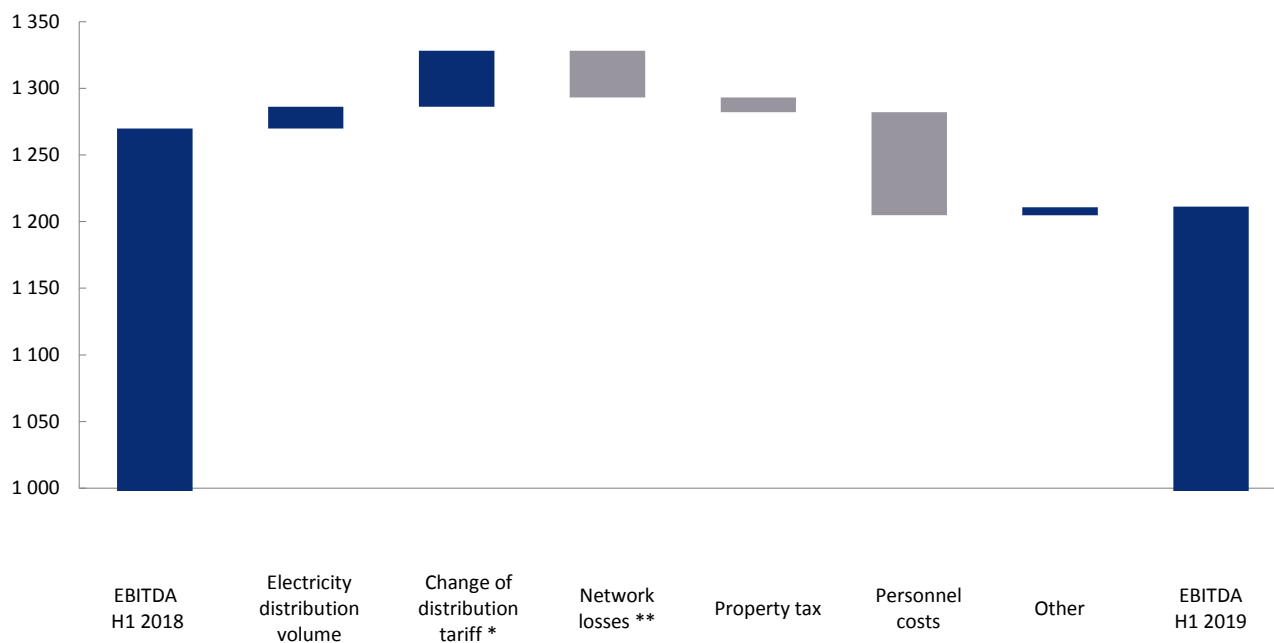
Table: Volume of distributed energy and number of customers in the first half of 2019 and 2018.

Tariff	Volume (TWh)*		Number of customers according to power take-off points	
	H1 2019	H1 2018	H1 2019	H1 2018
A tariff group	2.74	2.79	109	109
B tariff group	7.10	6.90	11 890	11 546
C+R tariff groups	3.48	3.50	483 069	480 935
G tariff group	4.81	4.80	4 937 432	4 882 720
<b>TOTAL</b>	<b>18.13</b>	<b>17.99</b>	<b>5 432 500</b>	<b>5 375 310</b>

\* with additional estimation of sales.

## KEY FACTORS FOR THE RESULTS OF THE SEGMENT

Chart: Key changes of EBITDA in Distribution (in PLN million) – managerial perspective.



Change	16	42	-35	-11	-77	6	
EBITDA Q1 2018	<b>1 270</b>	2 121	184	192	542		
EBITDA Q1 2019		2 179	219	203	619		<b>1 211</b>

\* Excluding cost of transmission services from PSE S.A.

\*\* Adjusted for revenues from the Balancing market.

Key factors affecting the results of Distribution y/y included:

- **Increase of fixed charge** in tariff for 2019 compared to the previous year, that translated into an increase in revenues from the sale of distribution services.
- **Increased volume of distributed energy** by 138 GWh resulting from – inter alia – higher number of customers measured by power take-off points (by approx. 57 thousand y/y) and from growth of the economic activity of customers, mainly from group B, in the area of operation of PGE Dystrybucja S.A.
- **Increase in personnel costs**, related to higher employment level and an increase in wages as a result of signed agreements with the social partners.
- **Higher costs of energy to cover balancing difference** as a result of higher prices on the wholesale market.
- **Increase of costs of tax on real estate** in connection with an increase of grid assets value as a result of investments; tax rates on land and buildings.

## CAPITAL EXPENDITURES

Table: Capital expenditures incurred in Distribution segment in the first quarter of 2019 and 2018.

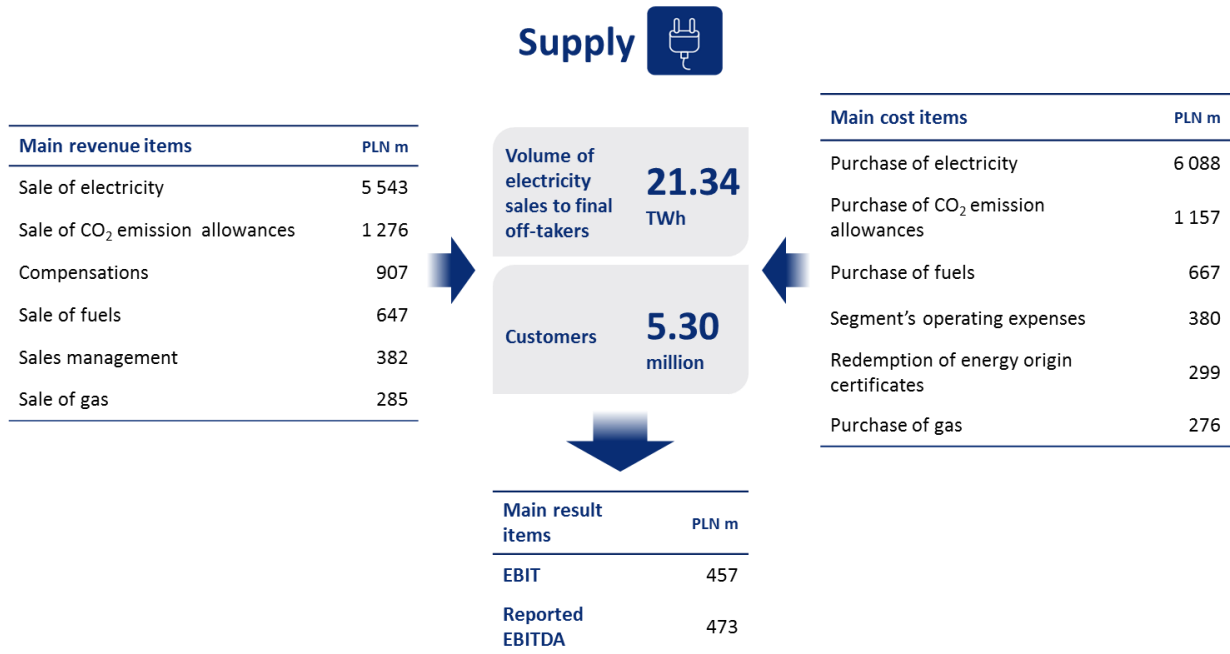
PLN million	H1 2019	H1 2018	% change
Development investments	352	268	31%
Modernisation and replacement	431	304	42%
Other	35	24	46%
<b>TOTAL</b>	<b>818</b>	<b>596</b>	<b>37%</b>

In the first half of 2019 the largest expenditures in amount of PLN 334 million were incurred for connection of new off-takers.

## SUPPLY

### Segment description and its business model

Supply segment activities include Group's wholesale and retail trading of electricity. Wholesale trading include mainly electricity trading on behalf of and for Conventional Generation segment, District Heating segment and Renewables segment.



As part of retail-market activities, the key source of segment's revenue is **sale of electricity** to final customers. This is sale to business and institutional clients, which constitutes approx. 3/4 of the sales volume, and to retail clients. The segment's revenue also includes the sale of fuels, mainly: pulverised coal and fat coal, which is sold by PGE Paliwa sp. z o.o., and **sale of gas**.

Electricity sales are matched by the **costs to purchase electricity** on the wholesale market and costs to redeem certificates as part of the support system for renewable sources and energy efficiency.

The Supply segment also covers costs related to the Group's corporate centre.

### VOLUME, CUSTOMERS AND OPERATING DATA

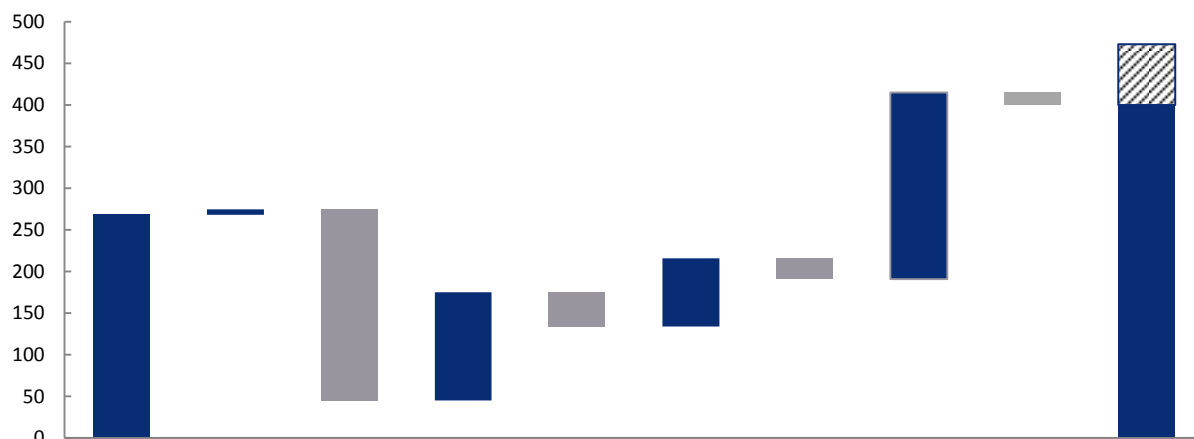
Table: Volume of electricity sales to final off-takers Main and number of customers in the first half of 2019 and 2018.

Tariff	Volume (TWh)*		Number of customers according to power take-off points	
	H1 2019	H1 2018	H1 2019	H1 2018
A tariff group	4.77	5.03	163	149
B tariff group	7.73	6.52	12 653	11 223
C+R tariff groups	3.82	3.33	453 970	432 456
G tariff group	5.02	4.78	4 835 987	4 758 238
<b>TOTAL</b>	<b>21.34</b>	<b>19.66</b>	<b>5 302 773</b>	<b>5 202 066</b>


\*PGE Obrót S.A.

## KEY FACTORS FOR THE RESULTS OF THE SEGMENT

Chart: Key changes of recurring EBITDA in Supply (in PLN million) – managerial perspective.



	EBITDA H1 2018	Result on electricity - volume	Result on electricity - margin	Revenues from services provided to other segments of the PGE Group	Result on sale of coal	Valuation of financial instruments	Personnel costs	Balance of provisions for onerous contracts	Other	EBITDA H1 2019
<b>Change</b>		<b>7</b>	<b>-230</b>	<b>130</b>	<b>-41</b>	<b>82</b>	<b>-25</b>	<b>224</b>	<b>-15</b>	
Recurring EBITDA H1 2018	<b>268</b>	249	265	48	-36	148	0			
Recurring EBITDA H1 2019		26	395	7	46	173	224			<b>400</b>
One-offs H1 2019										<b>73</b>
Reported EBITDA H1 2019										<b>473</b>

 Reversal of the impact of the sum of one-off events improving the reported result

Key factors affecting recurring EBITDA of Supply segment y/y included:

- **Lower result from electricity** by PLN 223 million resulting mainly from achieving lower unit margin on sale of electricity, due to: increase of prices on the wholesale market, particularly on spot market, partly used for balancing of electricity demand resulting from sales to final off-takers; lowering prices for final off-takers billing pursuant to the act on electricity prices in 2019; recognition of expected return of lost revenues in form of compensation pursuant to the act on electricity prices in 2019.
- **Increase of revenues from services performed within the Group** resulting mainly from increased revenues from the Agreement for Commercial Management of Generation Capacities ("ZHZW") (PLN (+) 131 million) as a consequence of higher sale and purchase prices of electricity under management and covering new assets under ZHZW agreement.
- **Lower result on sale of hard coal** mainly a result of achieving lower unitary trade margin.
- **Valuation of financial instruments** i.e. forward contracts connected with trading of CO<sub>2</sub> emission rights.
- **Increased personnel expenses** in connection with ongoing process to optimise salaries and determination of FTEs, mainly as a result of organizational changes within PGE Capital Group.
- **Balance of provisions for onerous contracts** mainly in relation to the act on electricity prices in 2019. The provision in retail sale companies was recalculated at the end of the first half of 2019 and as a result the provision in the amount of PLN 261 million was released and the provision in the amount of PLN 37 million was recognised.

#### 4.4. Significant events of the reporting period and subsequent events

##### BEGINNING OF TALKS REGARDING POTENTIAL COOPERATION ON CONSTRUCTION PROJECT OF 1 000 MW UNIT IN OSTROŁĘKA

In response to the invitation from Energa S.A. and Enea S.A., on January 7, 2019 the companies started talks that may potentially result in involvement of PGE in the construction project of 1 000 MW unit in Ostrołęka, which is currently pursued by Energa S.A. and Enea S.A.

Current report of PGE S.A.:

- [Beginning of talks regarding potential cooperation on construction project of 1 000 MW unit in Ostrołęka>>](#)

##### SIGNING OF AN ANNEX TO THE AGREEMENT FOR DESIGNING AND CONSTRUCTION OF POWER UNIT IN TURÓW POWER PLANT

On March 29, 2019 PGE GiEK S.A. signed the annex to the agreement for designing and turn-key construction of power unit in Turów power plant, that is being pursued by the consortium formed by companies: Mitsubishi Hitachi Power Systems Europe GmbH, Budimex S.A. and Tecnicas Reunidas SA. Due to need of technological adaptations and broader scope of works, the value of the Agreement was increased by PLN 108.5 million net to PLN 3 647 million net, and date of completion of works was prolonged by 6 months, i.e. till October 30, 2020.

Current report of PGE S.A.:

- [Signing of an annex to the agreement for designing and construction of power unit in Turów power plant>>](#)

##### GRANTING OF ADDITIONAL CO<sub>2</sub> ALLOWANCES FOR PGE GROUP'S INSTALLATIONS

On the ground of the announcement of the Minister of Environment of April 16, 2019, the Company had taken information about the number of CO<sub>2</sub> emission rights, which had been granted to installations generating electricity, belonging to PGE Group in 2019.

As a result of settlement of capital expenditures in PGE Group, generation assets acquired from EDF group in 2017 received in April 2019 an additional allocation of CO<sub>2</sub> emission allowances for the years 2013-2017 in amount of approx. 11 million emission rights. (see Note 25.2 to the consolidated financial statements). Results of valuation of additional CO<sub>2</sub> emission rights are recognised in the operational result.

Current report of PGE S.A.:

- [Granting of additional CO<sub>2</sub> allowances for PGE's installations >>](#)

##### WITHDRAWAL FROM THE PROCESS OF ACQUISITION OF ALL SHARES IN PGE EJ1

On April 17, 2019 PGE decided to withdraw from the process of acquisition of shares of PGE EJ1 sp. z o.o. ("PGE EJ1") held by other partners, that was initiated in the fourth quarter of 2018. Thus, PGE's share in PGE EJ1 will remain at 70%.

Current report of PGE S.A.:

- [Initial interest in buying all shares in the company PGE EJ1>>](#)
- [Withdrawal from the process of acquisition of all shares in PGE EJ1 >>](#)

##### ACQUISITION OF SHARES OF 4MOBILITY BY PGE NOWA ENERGIA

On April 24, 2019 PGE Nowa Energia sp. z o.o. ("Nowa Energia") concluded an agreement for the purchase of 51.47% of shares in 4Mobility S.A. 4Mobility provides car-sharing services and is the third company in Poland in terms of the number of cars available to customers. It provides services in Warsaw and in Poznań. Information regarding the acquisition of shares in 4Mobility have been provided in section 5.1 of this report and in note 1.3 to the consolidated financial statements.

##### ISSUE OF BONDS WITH TOTAL VALUE OF PLN 1.4 BILLION

Bonds amounting to total value of PLN 1.4 billion were issued in two series: PLN 1 billion with 10-year maturity (series PGE003210529) and PLN 400 million with 7-year maturity (series PGE002210526). On May 21, 2019, both series of issues were settled, and on May 23, 2019, Fitch Ratings assigned the final national rating of the issue at AA (pol). Information regarding the issue and terms of the bonds were published in the following current reports:

- [Potential issue of bonds on Polish market>>](#)
- [Fitch Ratings assigns upcoming domestic bonds an expected senior unsecured National Rating>>](#)

- [Terms of domestic bonds issue by PGE Polska Grupa Energetyczna S.A.>>](#)

## COMMISSIONING OF UNIT 5 IN OPOLE POWER PLANT

On May 30, 2019 PGE GiEK S.A. obtained the concession to produce electricity in the unit 5 in Opole Power Plant and on May 31, 2019 issued the certificate of completion of the investment and the above mentioned unit was handed over and placed into service.

Unit no. 5 is a part of the agreement for construction of units 5 and 6 in Opole Power Plant being realized by the General Contractor (consortium formed by companies: Polimex-Mostostal S.A., Mostostal Warszawa S.A. and Rafako S.A.) and GE Power, which is the general designer and consortium leader managing the contract execution.

## SIGNING OF THE AGREEMENT REGARDING THE FIZAN EKO-INWESTYCJE FUND

On July 30, 2019 PGE, PGE Energia Ciepła S.A., PGE Górnictwo i Energetyka Konwencjonalna S.A. and PGE Energia Odnawialna S.A. signed the investment agreement with Towarzystwo Funduszy Inwestycyjnych Energia S.A. ("TFI Energia" – investment fund company), which plans to establish a closed-end investment fund under the name "Closed-end Investment Fund of Non-public Assets Eco-Investments". The details are presented in Note 25.3 to the consolidated financial statements.

## ACT ON THE AMENDMENT OF THE ACT ON THE EXCISE TAX AND CERTAIN OTHER ACTS

On December 28, 2018, the Act on the amendment of the act on the excise tax and certain other acts (the "Act on electricity prices") was adopted. The aim of this act is to stabilise the prices of electricity sale to the end recipient in 2019. The act was amended twice: with the Act of February 21, 2019 and Act of June 13, 2019. Furthermore, on July 19, 2019, the act on the system of compensation for energy-intensive sectors and subsectors, which affects the Act on electricity, was adopted. Specific information and the effects of the Act on electricity prices were discussed in note 25.1 to the consolidated financial statement.

## CHANGES IN THE MANAGEMENT BOARD AND SUPERVISORY BOARD

### Management Board members

As at June 30, 2019 and as at the publication date of this report, the Management Board worked in following composition:

Name and surname of the Management Board	Position
Henryk Baranowski	President of the Management Board
Wojciech Kowalczyk	Vice-President for Capital Investments
Marek Pastuszko	Vice-President for Corporate Affairs
Paweł Śliwa	Vice-President for Innovations
Ryszard Wasilek	Vice-President for Operations
Emil Wojtowicz	Vice-President for Finance

### Supervisory Board members

As at June 30, 2019 and as at the publication date of this report, the Supervisory Board worked in following composition:

Name and surname	Position
Anna Kowalik	Chairman of the Supervisory Board
Artur Składanek	Vice-Chairman of the Supervisory Board – independent
Grzegorz Kuczyński	Secretary of the Supervisory Board - independent
Janina Goss	Supervisory Board Member - independent
Tomasz Hapunowicz	Supervisory Board Member - independent
Mieczysław Sawaryn	Supervisory Board Member - independent
Jerzy Sawicki	Supervisory Board Member - independent
Radosław Winiarski	Supervisory Board Member

As at June 30, 2019 and as at the publication date of this report, the committees worked in following compositions:

Name and surname of the member of the Supervisory Board	Audit Committee	Corporate Governance Committee	Strategy and Development Committee	Appointment and Remuneration Committee
Janina Goss	Member			Member
Tomasz Hapunowicz		Member Chairman	Member	
Anna Kowalik	Member		Member	Member
Grzegorz Kuczyński	Member Chairman	Member		
Mieczysław Sawaryn			Member	Member Chairman
Jerzy Sawicki		Member	Member	Member
Artur Składanek	Member		Member Chairman	
Radosław Winiarski	Member		Member	

## ACTIVITIES RELATED TO NUCLEAR ENERGY

### Business partnership

PGE EJ1 is PGE Group's entity directly responsible for preparing the investment process, consisting of conducting environmental and location surveys and obtaining all of the necessary decisions for the construction of the first Polish nuclear power plant, and implementing the investment. PGE EJ1 was established in 2010. In 2014, a shareholder agreement was signed, pursuant to which Enea S.A., KGHM Polska Miedź S.A. and TAURON Polska Energia S.A. (the "Shareholders") each purchased from PGE a 10% stake in

PGE EJ1 (30% in total). The Shareholders agreement requires the parties to jointly finance, proportionately to the stakes held, activities related to implementing the investment.

#### Site characterisation and environmental surveys

Current scope of Program conducted by PGE EJ 1 assumes location and environmental surveys at two potential Lubiatowo-Kopalino, Żarnowiec and preparing an Environmental Impact Assessment Report and Site Report.

Selecting an appropriate location is one of the key aspects in ensuring nuclear safety and the efficient and reliable operation of a nuclear power plant. The results of these works are necessary in order to develop solutions that ensure the power plant's safe operation and minimise its impact on the natural environment and the everyday life of local residents.

#### Social acceptance

At the same time, with a view toward ensuring social acceptance for the project to build the first Polish nuclear power plant, PGE Group is conducting activities aiming to maintain a high level of community support at the planned nuclear plant sites and to deliver knowledge about nuclear power. In the first half of 2019, works were continued within the Site Municipality Development Support Programme intended to reinforce partner relations with the local communities and authorities of the municipalities by providing support to initiatives that are of significance to the residents and development of the region.

#### Prospects for the project implementation and financing capabilities

Decisions with regard to the continuation of the Programme will be made based on decisions by the government administration concerning a role of nuclear energy in Polish fuel mix, mode for the procurement of nuclear power plant technology, investment financing model and an updated Programme for Poland's Nuclear Power.

#### Compensations from WorleyParsons

WorleyParsons initiated a lawsuit for payment of PLN 59 million for due remuneration, according to the claimant, and return of an amount unduly collected, according to the claimant, by PGE EJ1 from a bank guarantee, and subsequently expanded its claim to PLN 104 million (i.e. by PLN 45 million). On March 31, 2018, the company filed a response to WorleyParsons' expanded claim. PGE Group does not accept the claim and regards its possible admission by the court as unlikely.

## LEGAL ASPECTS

#### Claims for annulment of the resolutions of the General Meetings of PGE S.A.

Information on claims for annulment of the resolutions of the General Meetings of PGE S.A. are described in note 22.4 to the consolidated financial statements.

#### The issue of compensation regarding the conversion of shares

Information on the issue of compensation regarding the conversion of shares are described in note 22.4 to the consolidated financial statements.

## INFORMATION CONCERNING PROCEEDINGS IN FRONT OF COURT, BODY APPROPRIATE FOR ARBITRATION PROCEEDINGS OR IN FRONT OF PUBLIC ADMINISTRATION AUTHORITIES

Significant proceedings pending in front of courts, competent arbitration authority or public administration authority are described in note 22.4 to the consolidated financial statements.

#### Claims related to agreements for sale of certificates signed with Energa-Obrót S.A.

Information on claims related to agreements for sale of certificates signed with Energa-Obrót S.A. are described in note 22.1 to the consolidated financial statements.

#### Termination by Enea S.A. of agreements for sale of certificates

Information on termination by Enea S.A. of agreements for sale of certificates are described in note 22.4 to the consolidated financial statements.



## **INFORMATION CONCERNING THE GUARANTEES FOR LOANS GRANTED BY THE COMPANY OR A SUBSIDIARY**

Within the Group, as at June 30, 2019 PGE S.A. and subsidiaries did not grant guarantees to other entities or to a subsidiary, where a value of guarantees constitutes at least 10% of the Company's equity.

## **INFORMATION ON ISSUE, REDEMPTION AND REPAYMENT OF DEBT SECURITIES AND OTHER SECURITIES**

Information on issue, redemption and repayment of debt securities and other securities is described in p. 5.1 of the foregoing report and in note 1.3 to the consolidated financial statements.

## **TRANSACTIONS WITH RELATED ENTITIES**

Information about transactions with related entities is presented in note 24 to the consolidated financial statements.

## 5. Other elements of the report

### 5.1. Significant changes in organisation of the Capital Group

Changes which occurred in the PGE Capital Group's structure in the period from January 1, 2019 until the publication date of this report, are presented in note 1.3 to condensed interim consolidated financial statements and described below.

#### ACQUISITION OR DISPOSAL OF SHARES BY THE COMPANIES

Segment	Shares of the company	Date of transaction/ registration in the National Court Register	Comment
<b>Other Operations</b>	ElectroMobility Poland S.A. („ElectroMobility”) - acquisition by PGE S.A. of increased value of the shares held in ElectroMobility	October 4, 2018/ January 7, 2019	On October 4, 2018 the Extraordinary General Meeting of ElectroMobility adopted resolution on a share capital increase by PLN 40 000 000 to PLN 70 000 000 by increasing the nominal value of existing shares. In exchange for a cash contribution, PGE S.A. took up increased nominal value of 2 500 shares, the total nominal value of which increased from PLN 7 500 000 to PLN 17 500 000, i.e. by PLN 10 000 000. As a result of the share capital increase, PGE S.A.'s stake in ElectroMobility did not change (25% shareholding).
<b>District Heating</b>	Pracownice Towarzystwo Emerytalne „Nowy Świat” S.A. z siedzibą w Warszawie („PTE Nowy Świat”) – acquisition of shares by PGE EC (as a result of conditional share sale agreement)	February 18, 2019 June 25, 2019 (transfer of ownership of shares)	On February 18, 2019 PGE EC as the buyer and PGE S.A. as the seller entered into the agreement for the sale of one registered share in PTE Nowy Świat with the total nominal value of PLN 10 which is 0.002% of the share capital. On June 25, 2019 transfer of ownership of shares to PGE EC took place (the Financial Supervision Authority granted approval for the acquisition of shares of PTE Nowy Świat). The acquisition of the share resulted in PGE EC becoming a shareholder in PTE Nowy Świat and PGE S.A. ceasing to be a shareholder in that company.
<b>Other Operations</b>	4Mobility S.A. seated in Warsaw („4Mobility”) – acquisition by PGE Nowa Energia sp. z o.o. of shares in the increased share capital of 4Mobility	April 24, 2019/ May 8, 2019	On April 24, 2019 the Extraordinary Assembly of Partners of 4Mobility adopted resolution on a share capital increase by PLN 187 500 to PLN 364 316, through issue of new bearer shares. On April 24, 2019 PGE Nowa Energia sp. z o.o. signed an agreement to acquire all newly issued bearer shares, i.e. total of 1 875 000 shares in the increased share capital of 4Mobility with a total nominal value of PLN 187 500 in exchange for a cash contribution. The acquired shares constitute 51.47% in the share capital of the company.
<b>District Heating</b>	PGE Gaz Toruń sp. z o.o. („PGE Gaz Toruń”) – acquisition of shares by PGE Nowa Energia sp. z o.o. (as a result of accepting the share purchase offer)	June 14, 2019	On May 15, 2019, Fundusz Inwestycji Infrastrukturalnych – Kapitałowy Fundusz Inwestycyjny Zamknięty Aktywów Niepublicznych (Infrastructure Investment Fund - Private Assets Closed-end Capital Investment Fund) with its registered office in Warsaw (partner of PGE Gaz Toruń), represented by Polski Fundusz Rozwoju S.A. with its registered office in Warsaw, submitted a statement of acceptance of the offer submitted by PGE EC to acquire 662 shares in PGE Gaz Toruń, constituting 49.96% of the share capital. On June 14, 2019 – the day of payment of the purchase price for the shares – the ownership right to the above mentioned shares in PGE Gaz Toruń was transferred to PGE EC, which resulted in PGE EC becoming the sole shareholder in PGE Gaz Toruń, holding 100% of shares in its share capital.

## DE-MERGERS

Segment	Spun off company /acquiring company	Date of transaction/ registration in the National Court Register	Comment
Conventional Generation	PGE GiEK/ PGE EC	October 18, 2018 On January 2, 2019 de-merger was registered in the National Court Register	The Extraordinary General Meetings of PGE GiEK and PGE EC adopted resolutions on the division of PGE GiEK (divided company) through a carve out, pursuant to art. 529 § 1 point 4 of the Polish Commercial Companies Code, by way of transfer to PGE EC (acquiring company) of selected PGE GiEK assets in the form of six PGE GiEK branches (Branches), i.e.: (1) Zespół Elektrociepłowni Bydgoszcz, (2) Elektrociepłownia Gorzów, (3) Elektrociepłownia Zgierz, (4) Elektrociepłownia Lublin Wrotków, (5) Elektrociepłownia Kielce and (6) Elektrociepłownia Rzeszów. The Branches constitute an organised part of enterprise and are functionally related to the generation of electricity, generation of electricity and heat in cogeneration and distribution of heat and electricity. The transfer of the Branches to PGE EC was carried out by lowering PGE GiEK's share capital by PLN 406 847 180 and increasing PGE EC's share capital by PLN 763 432 450 through cancelling 40 684 718 shares of PGE GiEK, with nominal value of PLN 10 each, and issue of 76 343 245 new shares of PGE EC, with nominal value of PLN 10 each. As the sole shareholder of PGE GiEK, PGE S.A. acquired all new shares in PGE EC's increased share capital in exchange for the cancelled PGE GiEK shares.

## 5.2. Publication of financial forecasts

PGE S.A. did not publish financial forecasts.

## 5.3. Information about shares and other securities

### SHAREHOLDERS WITH A SIGNIFICANT STAKE

According to the best knowledge, on the ground of the letter from the Ministry of the State Treasury of April 27, 2016, the State Treasury holds 1 072 984 098 ordinary shares of the Company, representing 57.39% of the Company's share capital and entitling to 1 072 984 098 votes on the General Meeting of the Company, constituting 57.39% of total votes.

Table: Shareholders holding directly or indirectly by subsidiaries at least 5% of the total votes at the General Meeting of PGE S.A.

Shareholder	Number of shares	Number of votes	% in total votes on General Meeting
State Treasury	1 072 984 098	1 072 984 098	57.39%
Others	796 776 731	796 776 731	42.61%
<b>Total</b>	<b>1 869 760 829</b>	<b>1 869 760 829</b>	<b>100.00%</b>

### Shares of the parent company owned by the members of management and supervisory authorities

According to the best knowledge of the Management Board of the Company, members of management and supervisory authorities of the Company as of the date of submission of this report and as of the date of publishing of the report for the first quarter of 2019 did not hold shares of PGE S.A.

## 6. Statements of the Management Board

### STATEMENT ON THE RELIABLE PREPARATION OF THE FINANCIAL STATEMENTS

To the best knowledge of the Management Board of PGE S.A., the half-yearly financial report, containing interim condensed consolidated financial statements of PGE Capital Group, interim condensed standalone financial statements for PGE S.A. and comparative data were prepared in accordance with the governing accounting principles, present a fair, true and reliable view of the material and financial situation of PGE Capital Group and its financial result.

The report of the Management Board on the activities of PGE Capital Group presents a true view of the development, achievements and situation of the Capital Group.

### STATEMENT ON THE ENTITY AUTHORISED TO AUDIT THE FINANCIAL STATEMENTS

The Management Board of PGE S.A. declares that the entity authorised to audit the financial statements, which reviews the interim consolidated financial statements and interim condensed standalone financial statements for PGE S.A., has been appointed in accordance with provisions of the law. The entity and the statutory auditors, who performed the review, fulfilled all the requirements for issuing an unbiased and independent report on the review, in accordance with the governing provisions and professional standards.

## **7. Approval of the Management Board's Report**

The foregoing Management Board's Report on activities of the Capital Group of PGE Polska Grupa Energetyczna S.A. was approved for publication by the Management Board of the parent company on September 24, 2019.

Warsaw, September 24, 2019

Signatures of Members of the Management Board of PGE Polska Grupa Energetyczna S.A.

**President  
of the  
Management  
Board**

**Henryk  
Baranowski**

**Vice-  
President  
of the  
Management  
Board**

**Wojciech  
Kowalczyk**

**Vice-  
President  
of the  
Management  
Board**

**Marek  
Pastuszko**

**Vice-  
President  
of the  
Management  
Board**

**Paweł  
Śliwa**

**Vice-  
President  
of the  
Management  
Board**

**Ryszard  
Wasilek**

**Vice-  
President  
of the  
Management  
Board**

**Emil  
Wojtowicz**

## Glossary

AKPiA	Control, measurement and automation apparatus area
Ancillary control services (ACS)	services provided to the transmission system operator, which are indispensable for the proper functioning of the National Power System and ensure the keeping of required reliability and quality standards.
Achievable capacity	the maximum sustained capacity of a generating unit or generator, maintained continuously by a thermal generator for at least 15 hours or by a hydroelectric generator for at least five hours, at standardized operating conditions, as confirmed by tests.
Balancing market	a technical platform for balancing electricity supply and demand on the market. The differences between the planned (announced supply schedules) and the actually delivered/off-taken volumes of electricity are settled here. The purpose of the balancing market is to balance transactions concluded between individual market participants and actual electricity demand. The participants of the balancing market can be the generators, customers for electricity understood as entities connected to a network located in the balancing market area (including off-takers and network customers), trading companies, electricity exchanges and the TSO as the balancing company.
Base, baseload	standard product on the electricity market: a constant hourly power supply per day in a given period, for example week, month, quarter or year.
BAT	Best Available Technology
Best Practices	Document „Best Practice for GPW Listed Companies 2016” adopted by the resolution of the GPW Supervisory Board of October 13, 2015 and effective from January 1, 2016.
Biomass	solid or liquid substances of plant or animal origin, subject to biodegradation, obtained from agricultural or forestry products, waste and remains or industries processing their products as well as certain other biodegradable waste in particular agricultural raw materials.
Black energy	popular name for energy generated as a result of combustion of black coal or lignite.
Circular economy	system that minimises the consumption of resources and the level of waste as well as emissions and energy losses by creating a closed loop of processes in which waste from one process is used as resources in other processes so as to maximally reduce the quantity of production waste
Co-combustion	the generation of electricity or heat based on a process of combined, simultaneous combustion in one device of biomass or biogas together with other fuels; part of the energy thus generated can be deemed to be energy generated with the use of renewable sources.
Co-generation	the simultaneous generation of heat and electricity or mechanical energy in the course of one and the same technological process.
Constrained generation	the generation of electricity to ensure the quality and reliability of the national power system; this applies to generating units in which generation must continue due to the technical limitations of the operation of the power system and the necessity of ensuring its adequate reliability.
CVC fund	Corporate Venture Capital; in the CVC model, portfolio companies, aside from financial support, receive the opportunity to verify their ideas in a corporate setting
Distribution	transport of energy through distribution grid of high (110 kV), medium (15kV) and low (400V) voltage in order to supply the customers.
Distribution System Operator (DSO)	a power company engaging in the distribution of gaseous fuels or electricity, responsible for traffic in the gas or electricity distribution systems, current and long-term security of operation of the system, the operation, maintenance, repairs and indispensable expansion of the distribution network, including connections to other gas or power systems.
Energy cluster	civil-law arrangement that may include natural persons, legal entities, scientific units, research institutes or local government units, concerning the generation, distribution or trade in energy and energy demand balancing, with this energy being from renewable sources or other sources or fuels, within a distribution grid with nominal voltage below 110 kV, within the operational area of the given cluster, not exceeding the area of one district (powiat) in the meaning of the act on district authorities) or 5 municipalities (gmina) in the meaning of the act on municipal authorities; an energy cluster is represented by a coordinator, which is a cooperative, association, foundation appointed for this purpose or any member of the energy cluster indicated in the civil-law arrangement
ERO	Energy Regulatory Office (pol. URE).
EUA	European Union Allowances: transferable CO <sub>2</sub> emission allowances; one EUA allows an operator to release one tonne of CO <sub>2</sub> .
EU ETS	European Union Greenhouse Gas Emission Trading Scheme) EU emission trading scheme. Its operating rules are set out in the ETS Directive, amended by the Directive 2009/29/EC of the European Parliament and of the Council of April 23, 2009 (OJ EU L. of 2009, No. 140, p. 63—87).

FIT/FIP	Feed-in-Tariff (FIT) and Feed-in-Premium (FIP): system of subsidies to the market price of electricity performed by Zarządca Rozliczeń S.A.
Generating unit	a technically and commercially defined set of equipment belonging to a power company and used to generate electricity or heat and to transmit power.
GJ	Gigajoule, a unit of work/heat in the SI system, 1 GJ = 1000/3.6 kWh = approximately 278 kWh.
GPZ	main power supply point, a type of transformer station used for the processing or distribution of electricity or solely for the distribution of electricity.
Green certificate	popular name for energy generated from renewable energy sources.
GW	gigawatt, a unit of capacity in the SI system, 1 GW = 10 <sup>9</sup> W.
GWe	one gigawatt of electric capacity.
GWt	one gigawatt of heat capacity.
HICP	Harmonised Index of Consumer Prices
High Voltage Network (HV)	a network with a nominal voltage of 110 kV.
IED	Industrial Emissions Directive
IGCC	Integrated Gasification Combined Cycle.
Installed capacity	the formal value of active power recorded in the design documentation of a generating system as being the maximum achievable capacity of that system, confirmed by the acceptance protocols of that system (a historical value, it does not change over time).
IRIESP	the Transmission Network Operation and Maintenance Manual required to be prepared by a transmission system operator pursuant to the Energy Law; instructions prepared for power networks that specify in detail the terms and conditions of using these networks by system users as well as terms and conditions for traffic handling, operation and planning the development of these networks; sections on transmission system balancing and system limitation management, including information on comments received from system users and their consideration, are submitted to the ERO President for approval by way of a decision.
IRZ	Cold Intervention Reserve Service – service consisting of maintaining power units ready for energy production. Energy is produced on request of PSE S.A.
KRI	Key Risk Indicator
KSE	the National Power System, a set of equipment for the distribution, transmission and generation of electricity, forming a system to allow the supply of electricity in the territory of Poland.
KSP	the National Transmission System, a set of equipment for the transmission of electricity in the territory of Poland.
kV	kilo volt, an SI unit of electric potential difference, current and electromotive force; 1kV= 10 <sup>3</sup> V.
kWh	kilowatt-hour, a unit of electric energy in the SI system defined as the volume of electricity used by the 1 kW equipment over one hour. 1 kWh = 3,600,000 J = 3.6 MJ.
Low Voltage Network (LV)	a network with a nominal voltage not exceeding 1 kV.
LTC	long-term contracts on the purchase of capacity and electricity entered into between Polskie Sieci Elektroenergetyczne S.A. and electricity generators in the years 1994-2001.
Medium-voltage network (MV)	an energy network with a nominal voltage higher than 1 kV but lower than 110 kV.
MEV	Minimum Energy Volumes.
MSR	Market Stability Reserve (relating to CO <sub>2</sub> )
MW	a unit of capacity in the SI system, 1 MW = 10 <sup>6</sup> W.
Mwe	one megawatt of electric power.
MWt	one megawatt of heat power.
NAP	National emissions Allocation Plan, prepared separately for the national emission trading system and for the EU emission trading system by the National Administrator of the Emission Trading System.
NAP II	National CO <sub>2</sub> emissions Allocation Plan for the years 2008-2012 prepared for the EU emission trading system adopted by the Ordinance of the Council of Ministers of July 1, 2008 (Dz. U. of 2008, No. 202, item 1248).
Nm <sup>3</sup>	normal cubic meter; a unit of volume from outside the SI system signifying the quantity of dry gas in 1 m <sup>3</sup> of space at a pressure of 101.325 Pa and a temperature of 0°C.
NO <sub>x</sub>	nitrogen oxides.
N:W ratio	Ration of volume of overburden removed in m <sup>3</sup> to the mass of extracted coal in tons

OTF	Organized Trading Facilities
Operational Capacity Reserve (ORM)	ORM constitutes of generation capacities of active Production Scheduling Units (JGWa) in operation or layover, representing excess capacity over electricity demand available to the TSO under the Energy Sale Agreements and on the Balancing Market in unforced generation
Peak, peakload	a standard product on the electricity market; a constant power supply from Monday to Friday, each hour between 7:00 a.m. and 10:00 p.m. (15-hour standard for the Polish market) or between 8:00 a.m. and 8:00 p.m. (12-hour standard for the German market) in a given period, for example week, month, quarter or year.
Peak power pumped storage plants	special type of hydro-power plant allowing for electricity storage. It uses the upper reservoir, to which water is pumped from the lower reservoir using electricity (usually excessive in system). The pumped storage facilities provide ancillary control services for the national power system. In periods of increased demand for electricity, water from the upper reservoir is released through the turbine. This way, electricity is produced.
PJ	Petajoule, a unit of work/heat in the SI system, 1 PJ = approx. 278 GWh
Property rights	negotiable exchange-traded rights under green and co-generation certificates
Prosumer	end customer who purchases electricity under a comprehensive agreement and generates electricity only from renewable sources at a micro-installations for own purposes, unrelated to economic activities
PSCMI1	Polish Steam Coal Market Index 1 - average level of prices of coal dust sold to industrial-scale power plants in Poland
RAB	Regulatory Asset Base.
Red certificate	a certificate confirming generation of electricity in co-generation with heat.
Red energy	popular name for electricity co-generated with heat.
Regulator	the President of ERO, fulfilling the tasks assigned to him in the energy law. The regulator is responsible for, among others, giving out licenses for energy companies, approval of energy tariffs, appointing Transmission System Operators and Distribution System Operators.
Renewable Energy Source (RES)	a source of generation using wind power, solar radiation, geothermal energy, waves, sea currents and tides, flow of rivers and energy obtained from biomass, landfill biogas as well as biogas generated in sewage collection or treatment processes or the disintegration of stored plant or animal remains.
SAIDI	System Average Interruption Duration Index - index of average system interruption time (long, very long and disastrous), expressed in minutes per customer per year, which is the sum of the interruption duration multiplied by the number of consumers exposed to the effects of this interruption during the year, divided by the total number of off-takers. SAIDI does not include interruptions lasting less than three minutes and is determined separately for planned and unplanned interruptions. It applies to breakdowns in the low (LV), medium (MV) and high voltage (HV), wherein SAIDI in quality tariff does not include interruptions on low voltage.
SAIFI	System Average Interruption Frequency Index - index of average system amount of interruptions ( long, very long and disastrous ), determined as number of off-takers exposed to the effects of all such interruptions during the year divided by the total number of off-takers. SAIFI does not include interruptions lasting less than three minutes and is determined separately for planned and unplanned interruptions. It applies to breakdowns in the low (LV), medium (MV) and high voltage (HV), wherein SAIFI in quality tariff does not include interruptions on low voltage .
SCR	Selective catalytic reduction
SNCR	Selective non-catalytic reduction
Start-up	early-stage company established in order to build new products or services and characterised by a high level of uncertainty. The most common features of start-ups are: short operational history (up to 10 years), innovativeness, scalability, higher risk than in the case of traditional businesses but also potential higher returns on investment
Tariff	the list of prices and rates and terms of application of the same, devised by an energy enterprise and introduced as binding on the customers specified therein in the manner defined by an act of parliament.
Tariff group	a group of customers off-taking electricity or heat or using services related to electricity or heat supply to whom a single set of prices or charges and terms are applied.
TGE	Towarowa Gielda Energii S.A. (Polish Power Exchange), a commodity exchange on which trading can take place in electricity, liquid or gas fuels, extraction gas, emission allowances and property rights whose price depends directly or indirectly on electric energy, liquid or gas fuels and emission allowances, admitted to commodity exchange trading.
TPA, TPA rule	Third Party Access, the owner or operator of the network infrastructure to third parties in order to supply goods/services to third party customers.



Transmission	transport of electricity through high voltage (220 and 400 kV) transmission network from generators to distributors.
Transmission System Operator (TSO)	a power company engaging in the transmission of gaseous fuels or electric energy, responsible for traffic in a gas or power transmission system, current and long-term security of operation of that system, the operation, maintenance, repair and indispensable expansion of the transmission system, including connections with other gas or power systems. In Poland, for the period from July 2, 2014 till December 31, 2030 Polskie Sieci Elektroenergetyczne S.A. was chosen as a TSO in the field of electricity transmission.
TWh	terawatt hour, a multiple unit for measuring of electricity unit in the system SI. 1 TWh is $10^9$ kWh.
Ultra-high-voltage network (UHV)	an energy network with a voltage equal to 220 kV or higher.
V (volt)	electrical potential unit, electric voltage and electromotive force in the International System of Units (SI), $1 \text{ V} = 1 \text{ J}/1 \text{ C} = (1 \text{ kg} \times \text{m}^2) / (\text{A} \times \text{s}^3)$ .
W (watt)	a unit of power in the International Systems of Units (SI), $1 \text{ W} = 1 \text{ J}/1 \text{ s} = 1 \text{ kg} \times \text{m}^2 \times \text{s}^{-3}$ .
Yellow certificate	a certificate confirming generation of energy in gas-fired power plants and CCGT power plants.
Yellow energy	popular name for energy generated in gas-fired power plants and CCGT power plants.