




# Generation



-  Power Plants:  
Kozienice, Połaniec
-  Białystok Heat and Power Plant,  
MEC Piła, PEC Oborniki,  
Enea Ciepło Serwis, Enea Ciepło
-  Wind farms:  
Bardy, Darżyno, Baczyna
-  21 hydroelectric plants
-  Biogas plants:  
Gorzesław, Liszkowo
-  LW Bogdanka
-  Distribution network  
Of Enea Operator
-  Lublin Coal Basin

## Enea Group's generation assets

Description	Installed electrical capacity [MW <sub>e</sub> ]	Attainable electrical capacity [MW <sub>e</sub> ]	Installed heating capacity [MW <sub>t</sub> ]
Kozienice Power Plant	4 071.8	4 016.0	105.0
Połaniec Power Plant	1 837.0	1 882.0	130.0
Białystok Heat and Power Plant	203.5	156.6	383.7
Wind farms Bardy. Darżyno and Baczyna ( Lubno I. Lubno II )	70.1	70.1	-
Biogas plants Liszkowo i Gorzesław	3.8	3.8	3.1
Hydroelectric plants	60.4	57.6	-
MEC Piła	10.0	10.0	150.4
PEC Oborniki	-	-	30.4
Enea Ciepło	-	-	185.0
Total	6 256.6	6 196.1	987.6

## Generation of electricity and heat

Data of Enea Wytwarzanie excluding unit No. 11 in Kozienice Power Plant

Description	2016	2017	Change	Q4 2016	Q4 2017	Change
<b>Total generation of heat (net) [GWh]. including:</b>	<b>13 567</b>	<b>12 715</b>	<b>-6.3%</b>	<b>3 401</b>	<b>2 788</b>	<b>-18.0%</b>
<b>Net production from conventional sources[GWh]. including:</b>	<b>13 028</b>	<b>12 273</b>	<b>-5.8%</b>	<b>3 255</b>	<b>2 636</b>	<b>-19.0%</b>
Enea Wytwarzanie (excluding biomass co-combustion)	12 727	11 865	-6.8%	3 149	2 529	-19.7%
Enea Wytwarzanie – Heat Segment (Białystok Heat and Power Plant- excluding biomass combustion)	238	341	43.3%	88	87	-1.1%
MEC Piła	63	67	6.3%	18	20	11.1%
<b>Production from renewable energy sources [GWh]. including:</b>	<b>539</b>	<b>442</b>	<b>-18.0%</b>	<b>146</b>	<b>152</b>	<b>4.1%</b>
Combustion of biomass	256	69	-73.0%	55	29	-47.3%
Enea Wytwarzanie – RES Segment (hydroelectric plants)	113	173	53.1%	34	56	64.7%
Enea Wytwarzanie – RES Segment (wind farms)	160	190	18.8%	53	64	20.8%
Enea Wytwarzanie – RES Segment (biogas plants)	10	10	0.0%	4	3	-25.0%
<b>Gross generation of heat [TJ]</b>	<b>5 299</b>	<b>5 156</b>	<b>-2.7%</b>	<b>1 804</b>	<b>1 642</b>	<b>-9.0%</b>

Data of unit No. 11 in Kozienice Power Plant, currently under start-up

Description	2016	2017	Q4 2016	Q4 2017
<b>Total generation of electricity (net) [GWh], including:</b>	<b>0</b>	<b>884</b>	<b>0</b>	<b>810</b>

Description	2016	2017	Q4 2016	Q4 2017
Net production from conventional sources [GWh]	0	884	0	810

Poľaniec Power Plant

Description	2016	2017	14 March - 31 December 2017 (in Enea Group)	Q4 2016	Q4 2017
<b>Total generation of electricity (net) [GWh], including:</b>	<b>10 252</b>	<b>9 129</b>	<b>7 374</b>	<b>2 696</b>	<b>2 197</b>
Enea Elektrownia Poľaniec – net production from conventional sources	8 145	7 308	5 990	2 131	1 867
Enea Elektrownia Poľaniec – production from renewable energy sources (combustion of biomass – green unit)	1 528	1 292	1 045	432	262
Enea Elektrownia Poľaniec – production from renewable energy sources (co-combustion of biomass)	579	529	339	133	68
<b>Gross generation of heat [TJ]</b>	<b>2 382</b>	<b>2 459</b>	<b>1 914</b>	<b>618</b>	<b>638</b>

## Gross capacity

Enea Wytwarzanie

Number of unit	1	2	3	4	5	6	7	8	9	10	11
Attainable capacity [MW]	228	228	225	228	228	228	228	228	560	560	1 075

Enea Elektrownia Poľaniec

Number of unit	1	2	3	4	5	6	7	GU
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Number of unit	1	2	3	4	5	6	7	GU
Attainable capacity [MW]	225	242	242	242	225	242	239	225

## Allowances for CO<sub>2</sub> emissions

Enea Wytwarzanie ['000 tonnes]

Description	As at 31 December 2016 <sup>1)</sup>	As at 31 December 2017 <sup>2)</sup>	w tym blok 11
Volume of free allowance for CO <sub>2</sub> emissions (KPRU – National Allocation Plan)	3 369	2 426	0
Volume of allowances for CO <sub>2</sub> emissions purchased on the secondary market	9 003	10 237	945
<b>Total allowances for CO<sub>2</sub> emissions</b>	<b>12 372</b>	<b>12 663</b>	<b>945</b>
Emission coverage with free allowances	27.23%	19.16%	0.00%

<sup>1)</sup> It constitutes the actual redemption of 2016 in 2017

<sup>2)</sup> Book recognition has been presented

Enea Elektrownia Połaniec ['000 tonnes]

Description	As at 31 December 2016	As at 31 December 2017
Volume of free allowances for CO <sub>2</sub> emissions (KPRU – National Allocation Plan)	2 302	337
Volume of allowances for CO <sub>2</sub> emissions purchased on the secondary market	8 159	8 225
<b>Total allowances for CO<sub>2</sub> emissions</b>	<b>10 461</b>	<b>8 562</b>
Emission coverage with free allowances <sup>3)</sup>	22.01%	3.94%

<sup>3)</sup> For 2017, emission is not audited

## Cost of CO<sub>2</sub> emissions

Enea Wytwarzanie [PLN '000]

Description	2016	2017	including unit No. 11
Generation Area, including:	277 100	290 829	
Enea Wytwarzanie sp. z o.o. Segment of System Power Plants (Kozienice Power Plant)	275 551	273 854	24 750
Enea Wytwarzanie sp. z o.o. Heat Segment (Białystok Heat and Power Plant)	0	15 054	-
MEC Piła	1 443	1 569	-
PEC Oborniki	-	-	-
MPEC Białystok	106	352	-

Enea Elektrownia Połaniec [PLN '000]

Description	2016	2017
Połaniec Power Plant	246 828	201 351

## Purchase of electricity on the wholesale market by Enea Wytwarzanie

In 2017, the volume of electricity purchases at Kozienice Power Station amounted to 1 920.7 GWh. The purchase of electricity was basically conducted as part of trading in electricity. The initially sold energy was bought back on the market in order to reduce generation costs (in the case of such possibilities) and to guarantee the supply of energy sold, with the loss of one's own availability of the power of generation units. The volume of this sale is 1 066 GWh in the entire 2017.

In addition, as part of the operations of the [Balancing Market](#), energy purchases of 854.7 GWh were made. In the Heat Segment, the volume of purchases for 2017 amounted to 22.2 GWh – the purchase on the [Balancing Market](#) amounted to 19 GWh, the purchase on the market amounted to 3.2 GWh. As a rule,

energy trading (sale = purchase) is carried out within the market opportunities guaranteeing achievement of the assumed financial effect and in order to limit the failure effects. The purchase of electricity as part of 2017 trading mainly concerned Kozienice Power Plant and accounted for 55% of the entire energy purchase. The purchase of electricity within the [Balancing Market](#) accounted for 45%. The purchase as part of trading in the Heat Segment resulted from measures limiting the costs of failure of generation units and the lack of available capacity vs. concluded contracts.

## Purchase of electricity on the wholesale market by Enea Elektrownia Połaniec

In 2017, the volume of electricity purchases at Enea Elektrownia Połaniec amounted to 2 284 GWh. Purchases were made for the purpose of energy trading activities in the amount of 915 GWh. Additionally, under the [Balancing Market](#) mechanisms, 1 369 GWh of energy was purchased.

## Sales of electricity by Enea Wytwarzanie

The volume of electricity sales in Enea Wytwarzanie in 2017 amounted to 15 423 GWh. The sales were carried out by individual segments depending on the statutory obligations and the concluded contracts.

## Sales of electricity as part of one's own sales at the Kozienice Power Plant

The sales of electricity as part of one's own sales at Kozienice Power Plant in 2017 amounted to 14 600 GWh. During this period, Enea Wytwarzanie was statutorily obliged to sell electricity generated on the commodity exchange (Article 49a of the Act on the Energy Law[[\dic]]), which accounted for 16.5%. Other sales include sales within the Enea Group, 77.5% and to the [Balancing Market](#) (PSE SA), 6%.

## Sales of electricity within the Heat Segment

In the Heat Segment, the sales of electricity in 2017 amounted to 450 GWh – the sales within the Enea Group accounted for 94.3%, the sales in the [Balancing Market](#) (PSE SA) were at 3.2%, and the sales to end recipients amounted to 2.5%.

## Sales of electricity within the RES Segment

In the [RES](#) Segment, the sales of electricity in 2017 amounted to 373 GWh (outside the Enea Group – 42%, within the Enea Group – 58%).

## Sales of electricity within the Wind Area

Description	2016	2017
Fixed price['000 PLN]	26 881	31 525
Weighted average price [PLN/MWh]	167.86	165.77

## Sales of electricity within the Subsidiaries

In 2017, sales of electricity within the Subsidiaries amounted to 67 GWh.

## Sales of electricity by Enea Elektrownia Połaniec

In 2017, the volume-related electricity sales in Enea Elektrownia Połaniec amounted to 11 396 GWh, of which 1 821 GWh was energy from [RES](#).

## Fuel supply – Enea Wytwarzanie

Data of Enea Wytwarzanie excluding unit No. 11 in Kozienice Power Plant

Fuel type	2016		2017	
	Volume ['000 tonnes]	Cost <sup>1)</sup> [mPLN]	Volume['000 tonnes]	Cost <sup>1)</sup> [mPLN]
Bituminous coal	5 426	1 137	5 652	1 183
Biomass	427	79	174	24
Fuel oil (heavy) <sup>2)</sup>	8	7	8	9
Gas ['000 m3] <sup>3)</sup>	16 198	23	16 831	19
<b>TOTAL</b>	<b>22 059</b>	<b>1 246</b>	<b>22 665</b>	<b>1 235</b>

Data of unit No. 11 in Kozienice Power Plant, under start-up

Fuel type	2016		2017	
	Volume ['000 tonnes]	Cost <sup>1)</sup> [mPLN]	Volume ['000 tonnes]	Cost <sup>1)</sup> [mPLN]
Bituminous coal	0	0	614	125
Fuel oil (light) <sup>2)</sup>	0	0	7	19
<b>TOTAL</b>			<b>621</b>	<b>144</b>

<sup>1)</sup> Including transport

<sup>2)</sup> Light-up fuel in Kozienice Power Plant

<sup>3)</sup> Used for the production of electricity and heat energy in MEC Piła and heat energy in PEC Oborniki

## Enea Wytwarzanie – Kozienice Power Plant

The basic fuel used to produce electricity is bituminous coal (fuel dust). In 2017, the main supplier of coal to Enea Wytwarzanie – Kozienice Power Plant was LW Bogdanka SA (around 84.3% of supplies). Additionally, coal supplies were performed by Polska Grupa Górnicza SA (approx.. 14.6% of supplies), Jastrzębska Spółka Węglowa SA (approx. 0.4% of supplies) and Węgłokoks SA (approx. 0.8% of supplies). In 2017, biomass was not co-combusted in Kozienice Power Plant.

## Enea Wytwarzanie – Heat Segment

The basic fuels used in Enea Wytwarzanie in the Heat Segment (Białystok Heat and Power Plant) include: coal and biomass –mainly as wood chips, energetic willow chips and agricultural production left-overs and sunflower husk pellet. In 2017, the volume of supplied biomass amounted to over 173 thousand tonnes, and



the supplies were performed by 12 entities. They were significantly smaller than in the same periods of previous years due to e.g. a complete renovation of the turbine set on the biomass unit. Approx. 10% of biomass was delivered to the area of Enea Wytwarzanie – Heat Segment, using rail transport. In 2017, the coal supplies to Enea Wytwarzanie – Heat Segment were performed by Polska Grupa Górnicza sp. z o.o. and LW Bogdanka SA (approx. 36%).

## Coal supply – Enea Elektrownia Połaniec

Fuel type	2016		2017	
	Volume ['000 tonnes]	Cost <sup>1)</sup> [mPLN]	Volume ['000 tonnes]	Cost <sup>1)</sup> [mPLN]
Bituminous coal	3 543	723	3 673	730.6
Biomass	1 737	334	1 450	253.6
Fuel oil	6	8.7	7	11.4
<b>TOTAL</b>	<b>5 286</b>	<b>1 065.7</b>	<b>5 130</b>	<b>995.6</b>

<sup>1)</sup>Including transport

In 2017, the main supplier of coal to Połaniec Power Plant was LW Bogdanka SA.

## Coal transport – Enea Wytwarzanie

### Enea Wytwarzanie – Kozienice Power Plant

The only means of transport used to deliver bituminous coal to Kozienice Power Plant was rail transport. PKP Cargo SA shipper performed approx. 90% of supplies and CD Cargo Poland sp. z o.o. (formerly: Koleje Czeskie sp. z o.o.) approx. 10% of supplies.

### Enea Wytwarzanie – Heat Segment

Coal supplies to Enea Wytwarzanie – Heat Segment in 2017 were performed with rail transport by PKP Cargo SA. Prices of fuels included the cost of delivery to Białystok Heat and Power Plant generating source.

## Coal transport – Enea Elektrownia Połaniec

In 2017, coal transport in Enea Elektrownia Połaniec was performed mainly by PKP Cargo SA and CTL Logistics sp. z o.o. Some supplies were performed by EPCT Silesia, PGG and JSW.