PGE in transition

January 2020
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PGE at a glance
## Competitive advantages of the Group

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<tr>
<th>Assets</th>
<th>Strong financials</th>
<th>Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leader in installed capacity and electricity production</td>
<td>Stable and diversified revenues</td>
<td>Strategy for 2016-2020 aimed at keeping the leading position on Polish market</td>
</tr>
<tr>
<td>Focused on baseload generation, absolute cost leader in Poland - approx. 60% of power generated from own fuel (2 lignite mines)</td>
<td>EBITDA margin at 22% in 9M2019 - highest among Polish power utilities</td>
<td>Ongoing work on the new strategy. Strategic investment options including off-shore and lignite</td>
</tr>
<tr>
<td>Highly diversified and youngest generation fleet in Poland</td>
<td>Over 40% of EBITDA from regulated activities (distribution &amp; co-generation)</td>
<td>Developing modern conventional generation</td>
</tr>
<tr>
<td>Regulated assets operator (Dolna Odra Power Plant and pumped-storage plants)</td>
<td>Strong investment grade credit ratings with stable outlook (Fitch and Moody’s)</td>
<td>Developing new technologies and business models</td>
</tr>
<tr>
<td>RES leader: installed 550 MW in on-shore wind (97 MW under construction)</td>
<td>Healthy leverage – net debt/LTM EBITDA at 1.6x</td>
<td>Reduction of controllable costs and optimization of maintenance costs</td>
</tr>
<tr>
<td>2020 Regulatory Asset Base in distribution: PLN 17.6 billion.</td>
<td>Financing secured for financial and operational activities</td>
<td>Flexibility and efficiency of generation units</td>
</tr>
<tr>
<td></td>
<td></td>
<td>District heating strategy</td>
</tr>
</tbody>
</table>
PGE’s position on the electricity market (2018)

**Net generation**
- PGE: 43%
- TAURON: 10%
- ENEA: 15%
- Others: 20%

**Installed capacity**
- PGE: 37%
- TAURON: 11%
- ENEA: 14%
- Others: 25%

**Sales to final off-takers**
- PGE: 31%
- TAURON: 25%
- ENEA: 15%
- Others: 15%

**Volume of electricity distribution**
- PGE: 25%
- TAURON: 35%
- ENEA: 16%
- Others: 15%

Source: Own estimates based on ARE, URE and reports of companies
Largest and the most profitable electric utility in Poland

<table>
<thead>
<tr>
<th></th>
<th>PGE</th>
<th>Tauron</th>
<th>Enea</th>
<th>Energa</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revenues PLNm (2018)</strong></td>
<td>25,946</td>
<td>18,122</td>
<td>12,673</td>
<td>10,337</td>
</tr>
<tr>
<td><strong>EBITDA PLNm (2018)</strong></td>
<td>6,364</td>
<td>3,375</td>
<td>2,348</td>
<td>1,877</td>
</tr>
<tr>
<td><strong>EBITDA margin (2018)</strong></td>
<td>25%</td>
<td>19%</td>
<td>19%</td>
<td>18%</td>
</tr>
<tr>
<td><strong>Market cap [PLNm] (2019 EOY)</strong></td>
<td>14,883</td>
<td>2,874</td>
<td>3,649</td>
<td>2,699</td>
</tr>
</tbody>
</table>
PGE operates two lignite complexes: in Bełchatów and in Turów. Each complex encompasses open cast mine and power plant.

Bełchatów mine contains two fields: Bełchatów and Szczerców.

* Złoczew – a remote deposit to Bełchatów complex
Strategic direction: PGE in transition
PGE in transition
Energy transformation leader

Key commissionings
- Opole PP 1800 MW (0.7)
- Turów PP 500 MW (0.9)
- Polesie PP 100 MW (0.0)
- Czechina CCGT CHPP 170 MW (0.2)
- Dolna Odra PP CCGTs 1400 MW (0.3)
- Offshore Wind Farm ~1000 MW (0.0)
- CCGT CHPPs* ~520 MW (0.2)
- Offshore Wind Farms ~1500 MW (0.0)

PVs development program – totalling 2 500 MW by 2030 (0.0)

PGE net emission rate
- 2018: 0.88
- 2019: 0.85
- 2020: 0.85
- 2021: 0.85
- 2022: 0.78
- 2023: 0.78
- 2024: 0.78
- 2025: 0.78
- 2026: 0.78
- 2027: 0.78
- 2028: 0.78
- 2029: 0.78
- 2030: 0.78

Key decommissionings
- Belchatów PP 370 MW (1.2)
- Dolna Odra PP 454 MW (1.0)
- Rybnik PP 450 MW (1.0)
- Rybnik PP 450 MW (1.0)

End of capacity market support for existing coal units – portfolio review

Generation unit
Electric capacity (emission rate tCO2/MWh)

* New units, pre-investment analyses
Consequently reducing CO2 exposure

- Realisation of the pipeline shall lead to respective decrease in CO2 emissions
- Gradual transition to lower emission technologies will lower CO2 cost and risk exposure

<table>
<thead>
<tr>
<th>Project</th>
<th>Capacity</th>
<th>CO2 reduction effect 1Y*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opole PP units 5&amp;6</td>
<td>1 800 MW</td>
<td>2.6 m t</td>
</tr>
<tr>
<td>Turów PP unit 7</td>
<td>496 MW</td>
<td>0.1 m t</td>
</tr>
<tr>
<td>Offshore wind farm</td>
<td>1 040 MW</td>
<td>4.0 m t</td>
</tr>
<tr>
<td>Dolna Odra PP 2xCCGT</td>
<td>1 400 MW</td>
<td>3.0 m t</td>
</tr>
<tr>
<td>Czechnica gas CHPP</td>
<td>200 MW</td>
<td>1.0 m t</td>
</tr>
<tr>
<td>Onshore wind</td>
<td>100 MW</td>
<td>0.3 m t</td>
</tr>
<tr>
<td>Photovoltaics</td>
<td>100 MW</td>
<td>0.1 m t</td>
</tr>
</tbody>
</table>

*As a substitution effect of an average system hard coal unit of 35% efficiency

**For 2020 and 2025 estimated average emission rates of PGE Group according to initial schedules of the projects given above (contribution of 2 gas-steam units and partial contribution of the offshore wind)
Key initiatives reducing carbon footprint

DEVELOPMENTS
- **Expansion of RES capacities**
  - further onshore wind, photovoltaics
  - today delivering 9% of domestic RES generation, strategic goal to deliver 25% in 2030
- **Development of offshore wind farms**
  - 1,040 MW project being prepared for auction
  - Total potential offshore wind capacity to be delivered until 2030 ca. 2,550 MW
- **Expansion of cogeneration**
  - Most effective way to utilise fuel’s chemical energy with electricity output (efficiency of 85%)
  - Increased utilisation of zero- and low-emission fuels
- **Planned construction of gas-based generation capacity**
  - 2 x 700 MW of CCGT units in Dolna Odra Power Plant
  - Further one gas-fired unit potential analysed
- **Units in construction providing better efficiency, equipped with the best available technologies**

EFFICIENCY ACTIONS
- increasing the energy efficiency of production assets
- decreasing own consumption
- modernising generation assets
- decreasing network losses in distribution
- decreasing losses at district heating network

Generation mix of district heating in PGE

- **2017**
  - Lignite
  - Hard coal
  - RES
  - Gas
- **2030**
  - Hard coal
  - Low- and zero-emission fuels
Clean air, clean neighbourhood

Limiting environmental impact with best-in-class systems

- Most of our conventional generation investments in last years were carried over to reduce environmental impact
- Directly – development of desulphurization, denitrification and dust removing installations
- Indirectly – modernizations improving efficiency
- Assets adopted to IED Directive, currently being adopted to more stringent BAT conclusions
- Positive effect of new units in construction

Aggregated average emissions of PGE power plants

Assumed emission rates of new units in Opole and Turów power plants compared to existing units

Emissions relate to power plants: Belchatów, Opole, Turów, Dolna Odra and Rybnik.
Investment summary:

- The largest infrastructure investment in Poland after 1989.
- **One of the most modern conventional power plants** in the world
- **SO\textsubscript{x} and NO\textsubscript{x} emissions per unit ~ 40-60% lower, CO\textsubscript{2} emissions per unit ~ 25% lower** than in older units
- Out of every PLN 1 spent, 70 groszy remained in Poland
- Even **5.5 ths people** worked on the construction site a day
- Units designed for **35 years** of operation with power utilization of up to **8000 h / year**. Adapted to the production of heat in cogeneration at the level of 300 MWt / h

**Gross capacity:**
- Air temperature of 2°C: 920 MWe
- Air temperature of 22°C: 905 MWe

**Net efficiency:**
- Air temperature of 2°C: ≥45.5 %
- Air temperature of 22°C: ≥43.8 %

**Availability:** ≥88 %

**Fuel:** hard coal (long-term contract with PGG)

**Net emission rate:** 0.74t CO\textsubscript{2}/MWh

**Net CAPEX:** PLN 11 bn
**Turów project**

**Status:**

- On the building site, construction and assembly works are in progress.
- In September 2019 **applied voltage** of 110 kV soon, the beginning of the intensive start-up phase of individual devices
- **Oil combustion of unit’s boiler** is scheduled at Q1 2020

**Environmental effect:**

**Emission rate (t CO₂/MWh)**

- **Gross capacity:** 490 MWe
- **Net efficiency:** 43.1%
- **Fuel:** lignite
- **Net emissions:** 0.91 t CO₂/MWh
- **Net CAPEX:** PLN 4.3 bn
- **Work progress:** approx. 93%
- **Date of commissioning:**
  Unit 7 – October 30, 2020
Klaster project

Project:
Complex of three onshore wind farms Starza, Rybice and Karnice II under the common name Klaster.

Installed capacity: 97.18 MWe
Annual generation: approx. 277 GWh
Expected lifetime/ RES support: 25 years/ 15 years

Date of commissioning:
Permission for Use for all farms planned to be obtained by the end of Q1 2020.

Project description:
• Estimated annual generation of new wind farms corresponds to the annual electricity demand of 130 ths households
• Implementation of the project will allow to avoid emissions of approx. 215 thousand tons of CO₂ a year
• After commissioning of the project, the total onshore wind capacity of PGE Group will increase by 18 % up to 647 MW

Status:
• Installation of all turbines of Karnice II wind farm completed in September (works related to the installation of internal equipment are underway) - wind turbine tests are scheduled for December. Other farms are in the process of delivery and assembly of turbines.
• 110kV distribution grid Kamien Pomorski - RS Rybice – Skrobotowo: completion of works on the RS Rybice - Skrobotowo section (reception of works by Enea and applied voltage). The voltage for the entire line is planned to be applied until the end of December 2019.
Offshore wind farms

- Baltica 3 area – connection agreement of 1 045 MW
- Baltica 2 area – technical conditions for connection of 1 498 MW
- Potential participation of partners in project (4 companies shortlisted)

- Baltica 1 area
- Potential other projects

Technical assumptions (Baltica 2 i Baltica 3)
- Total capacity: 2.5 GW
- Turbine type: 10 MW (base scenario), up to 13 MW
- Distance to shore: ca. 35 km
- Depth: 23-50 m

First offshore wind farm schedule

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>Environmental decision for wind farm</td>
</tr>
<tr>
<td>2020</td>
<td>Closing of the sale of the 50% stake</td>
</tr>
<tr>
<td>2022</td>
<td>Construction permit</td>
</tr>
<tr>
<td>2022</td>
<td>Process of choosing the suppliers to be launched</td>
</tr>
<tr>
<td>2023</td>
<td>Final Investment Decision</td>
</tr>
<tr>
<td>2025</td>
<td>Applying voltage</td>
</tr>
<tr>
<td>2026</td>
<td>Commercial Operation Date</td>
</tr>
</tbody>
</table>

Current Status

- Strategic partner: December 2019 - the initial framework agreement with Ørsted regarding the planned sale of 50% share in Baltica 2 and Baltica 3 projects
- Ongoing works in the technical area of Baltica 2 and 3 projects (including wind measurements, activities in the area of planning, obtaining decisions on environmental conditions and obtaining geophysical data)
- Announced tender procedure for the selection of a contractor for a preliminary seabed survey
CCGT units in Dolna Odra Power Plant

Regional impulse for development

Rationale of the project:
- restoring generation potential and eventually replacing all existing coal units at this location
- fuel diversification of the PGE Capital Group’s generation fleet
- reduction of CO₂ / MWh emission ratio of the Group’s generation fleet and reduction of exposure to the risk of rising prices of CO₂ emission allowances
- growing demand for flexible capacity in the National Power System, in particular in the north of the country due to intensive development of wind projects and potential synergies with offshore projects of the Group

Technical assumptions

- CCGT units of H/J class
- Total net capacity: 1 400 MW (2x 700 MW)
- Net efficiency: ca. 61%
- CO₂ net emission: ca. 0.3 tCO2/MWh

Project schedule*

<table>
<thead>
<tr>
<th>Year</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>Capacity market auction for 2024. Capacity of 1335MW contracted for 17 years</td>
</tr>
<tr>
<td>2020</td>
<td>Conclusion of the construction contract with the General Contractor (GE/Polimex Mostostal)</td>
</tr>
<tr>
<td>2023</td>
<td>Commissioning</td>
</tr>
</tbody>
</table>

Current status:

- Support from capacity market contracted for 17 years (starting from 2024) at approx. PLN 347m per year (indexed annually based on the CPI).
- Consortium of General Electric (consortium leader) & Polimex Mostostal accepted as the General Contractor. Net value of the offer for the construction amounts to approx. PLN 3.70 billion and the related 12-year service agreement to approx. PLN 1.03 billion.

*Project schedule depends on the date of the gas connection
Leader in development of PV power plants in Poland

- Targeted share of **25%** in PV power plants in Poland
- According to the initial draft of the Energy Policy of Poland until 2040 (PEP 2040) – development of **~2.5 GW** capacities in photovoltaics by 2030
- **Organic growth** of own projects as a basis in program
- **Acquisitions** of projects and PV power plants
- Utilisation of the **potential of Group’s sites**
- Potential of **~750 MW** PV capacities just in projects currently carried over
- Estimated CAPEX for program: **PLN 6-8bn**
- **Agreements concluded with external partners:**
  - Grupa Azoty and „Siarkopol” on construction of 5 MW in Corporate PPA formula
  - KGHM Polska Miedź – joint venture in construction and exploitation of PV installations on partner’s sites
  - PKP – utilisation of properties to develop PV installations
- 30 project to be prepared for auctioning by the end of 2020

### Estimated photovoltaic capacities in Poland (MW) according to the draft of PEP 2040

<table>
<thead>
<tr>
<th>Year</th>
<th>PGE – minimum target</th>
<th>Other installations</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>487</td>
<td></td>
</tr>
<tr>
<td>2025</td>
<td>5,200</td>
<td>1,300</td>
</tr>
<tr>
<td>2030</td>
<td>10,200</td>
<td>2,550</td>
</tr>
</tbody>
</table>
Example of Bełchatów complex transformation
Coal dominated area as a good fit for RES transformation

**PGE Bełchatów complex TODAY**
- Energy complex for lignite
- Installed capacity: ~ 5.1 GW (11 blocks of 390 MW and 1 block 858 MW)
- Annual electricity production: ~ 32 TWh
- Annual coal extraction: ~ 40 million tons
- Number of employees at the Power Plant and Mine: ~ 8,000 people (and additionally external servicing companies)
- Expected exploitation till 2035/2040

**PGE Bełchatów complex FUTURE**
- Potential areas in the Bełchatów complex for PV development:
  - Total: ~ 190 ha
  - Potential capacity in the first stage: ~ 60 MW
  - Expected start of operation: 2022
  - Estimated CAPEX: ~ EUR 35 – 45 m
- Potential areas in the Bełchatów complex for wind farms development:
  - Locations:
    - Mount Kamieńsk (extension of existing 30 MW wind farm)
    - Mount Szczerców (outside dump)
  - Potential additional capacity: ~ 70 MW
  - Estimated CAPEX: ~ EUR 100 m
Investing in district heating – growth & stability

1. Reducing overhaul expenses in generation assets by 10% until 2023 in relation to 2017
2. Managing district heating networks in at least 2/3 PGE Energia Ciepła locations by 2023
3. Construction of 1,000 MWe new capacities in cogeneration by 2030
4. Rising share of low-emission fuels in PGE Energia Ciepła generation mix to 50% by 2030
5. CAPEX 2018-2030: ~PLN 17.5 bn

Sale of district heat to end-users

Additional annual EBITDA resulting from the Strategy [PLN bn]
Grid grounding – we improve the reliability of supply

**Aim:**
- change in the structure of medium voltage (MV) networks consisting of increasing the share of cable lines to min. 30% in relation to the total length of the MV network

**Expected result:**
- reducing the duration and frequency of interruptions in the supply of electricity (reducing the SAIDI and SAIFI indicators) and improving the quality parameters of energy supply

**Work progress:**
- approx. 22% of annual plan implemented, 75% of the scope of the entire Program during design process

**Project schedule:** implementation in 2019 - 2023

**Status:**
- Launch of the Program in February 2019.
- Intensive design works for cable lines are underway (almost 8.5 ths km of lines are under design process).
- The construction of cable lines is carried out on an ongoing basis based on the obtained documentation (320 km of MV networks have already been completed, and a further 1 106 km are under construction)

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**Capital expenditures:**
- The expected level of MV network grounding without starting the Grid grounding Program will stand at approx. 25% in 2023
- Net CAPEX: PLN 3.46 bn
- The sum of the excess of capital expenditures with the Grid grounding Program in the years 2019-2023 amounts to approx. PLN 1.9 bn
Closed-end investment fund Eko-Inwestycje
Fund focused on investing in renewables and new businesses

- Agreement signed on **July 30, 2019**
- Fund manager: TFI Energia S.A.
- Fund will focus its activities on **implementation of investment projects of a complementary nature in relation to the core activity of the PGE Capital Group**, consistent with its strategy, aimed at the development of new business lines
- Main areas of interest of the fund: **photovoltaics, wind farms and energy storage**.
- Additional areas: mass electric transport and low-emission and highly efficient co-generation
- Target value of the fund: **min. PLN 1.5 billion** within 36 months from the date of Fund registration (August 23, 2019) - the majority of payments falling within year 2020
- Investment limitations: fund may invest max. 20% of its value in a single project
- Assumed investment horizon - min. 5 years (shorter period possible only in special cases)
## Other strategic options

### Option for development of nuclear power and utilization of lignite deposits

<table>
<thead>
<tr>
<th>Scope of works</th>
<th>Nuclear power</th>
<th>Lignite deposits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation of the investment process, conducting environmental and location research, obtaining the necessary decisions conditioning the implementation of the investment.</td>
<td>Work carried out to secure a concession for mining of lignite from the Złoczew deposit. So far a range of studies and documentation were prepared, providing information on the deposit, including its structure, quality parameters, hydrogeology, technological conditions related to coal mining.</td>
<td></td>
</tr>
</tbody>
</table>

| Prospects for project implementation | Decision of implementation will be made based on decisions by the Government 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. | Decision of implementation depends on the final shape of Poland’s energy policy (PEP2040) and national and international regulatory environment. |

| Current stage of works | PGE EJ1 is currently conducting location and environmental surveys at two potential sites in the Pomeranian Voivodeship. The surveys focus on activities necessary to prepare a report on the undertaking’s environmental impact and a site report. | Due to appeals being lodged against the environmental decision and spatial development studies, the concession award date is unknown at this point. Securing the concession without including the investment in these studies and without a legally binding environmental decision is not possible. |
Recent developments and outlook
**Electricity market**

**Relative 2019 price stabilisation**

- Decline in demand Y/Y in Q3 **-1.8%** (-0.7 TWh)
- Significant fall of generation Y/Y in Q3 **-6.6%** (-2.7 TWh)
- **Increased import surplus:** -2.8 TWh (Q3 2019) vs. -0.9 TWh (Q3 2018) (physical flows)
- The same level of net import as in Q2 2019

- Decline of prices in last months (~PLN **263**/MWh in Q4)
- Stable delivery price for 2020 ~PLN **269**/MWh
- Average realised price by PGE (9M) – total Conv. Generation & District Heating: ~PLN **246**/MWh

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**Domestic consumption and generation**

**BASE Forward next year**

Source: TGE

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Source: PSE
Rising electricity import

9M 2019 trade exchange

Poland parallel trade exchange (Germany + Czechia + Slovakia) - monthly balance (MW per hour)
Generation volume by fuel – Q3 2019 y/y

**TWh**

**National Power System (y/y):** electricity consumption lower by 0.7 TWh and net import expanded by +2 TWh → lower demand for energy generated in conventional power plants

**Lignite:** lower load factor (Bełchatów -57 MW y/y, Turów -61 MW y/y). Modernisation in Bełchatów +900 hours y/y (units 2-14).

**Hard coal:** lower load factor in Opole 1-4. Stand-by in reserve Dolna Odra +4.7 ths. hours y/y, Opole +1.4 ths. hours (units 1-4). Overhaul in Rybnik +2.3 ths. hours

**Natural gas:** increased cogeneration volumes in CHP Lublin Wrotków

**Pumped-storage:** increased volumes from non-controllable sources, greater demand for interventional works of pumped storage

**Wind:** favourable weather conditions

**Reported hard coal volume does not include** start phase of Unit 6 in July-August = 0.70 TWh, but it does include volumes of unit 5 in July-September 0.91 TWh and unit 6 in September 0.34 TWh.

**In Q3 2019 volume of 0.01 TWh derived from municipal waste (not presented on the bar chart)**
Generation volume by fuel – 9M 2019 y/y

National Power System (y/y): electricity consumption lower by 0.8 TWh and net import expanded by +2.7 TWh → lower demand for energy generated in conventional power plants

Lignite: lower load factor (Bełchatów -36 MW y/y, Turów -37 MW y/y). Modernization in Bełchatów +1.3 ths. hours y/y (units 2-14), Turów +750 hours y/y.

Hard coal: load factor in Opole 1-4 lower -51 MW y/y, overhaul in Opole +4.8 ths. hours y/y. Stand-by in reserve Dolna Odra +9,6 ths. hours (including 4.1 ths. hours cold reserve), Rybnik (units 3-8) +4.4 ths. hours y/y

Natural gas: increased cogeneration volumes in CHP Lublin Wrotków

Pumped-storage: increased volumes from non-controllable sources, greater demand for interventional works of pumped storage

Wind: favourable weather conditions

Reported hard coal volume does not include start phase of Unit 5 in January-April = 0.89 TWh and unit 6 in May-August = 0.92 TWh, but it does include volumes of unit 5 in May-September 1.59 TWh and unit 6 in September 0.34 TWh.

** In 9M 2019 volume of 0.03 TWh derived from municipal waste (not presented on the bar chart)
Opole – initial volumes provided to the system

<table>
<thead>
<tr>
<th>Unit</th>
<th>[TWh]</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>9M</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 5</td>
<td>Net generation, including:</td>
<td>0.57</td>
<td>1.01</td>
<td>0.91</td>
<td>2.49</td>
</tr>
<tr>
<td></td>
<td>reported volume*</td>
<td>-</td>
<td>0.69</td>
<td>0.91</td>
<td>1.59</td>
</tr>
<tr>
<td></td>
<td>start phase (CAPEX adjustment)</td>
<td>0.57</td>
<td>0.33</td>
<td>-</td>
<td>0.89</td>
</tr>
<tr>
<td>No. 6</td>
<td>Net generation, including:</td>
<td>-</td>
<td>0.22</td>
<td>1.05</td>
<td>1.26</td>
</tr>
<tr>
<td></td>
<td>reported volume*</td>
<td>-</td>
<td>-</td>
<td>0.34</td>
<td>0.34</td>
</tr>
<tr>
<td></td>
<td>start phase (CAPEX adjustment)</td>
<td>-</td>
<td>0.22</td>
<td>0.70</td>
<td>0.92</td>
</tr>
</tbody>
</table>

*Volume generated during trial run is included in net generation volume reported by PGE Group, whereas volume generated during start phase i.e. before trial run is reflected as a CAPEX adjustment (not included in total net generation of PGE Group).

<table>
<thead>
<tr>
<th>Milestones</th>
<th>Network synchronization</th>
<th>Start of trial run</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit number 5</td>
<td>January 15</td>
<td>May 1</td>
</tr>
<tr>
<td>Unit number 6</td>
<td>May 14</td>
<td>August 30</td>
</tr>
</tbody>
</table>
### Key data

#### Consolidated (preliminary)

<table>
<thead>
<tr>
<th></th>
<th>Q4 2019E</th>
<th>Q4 2018</th>
<th>y/y</th>
<th>12M 2019E</th>
<th>12M 2018</th>
<th>y/y</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBITDA</td>
<td>1 053</td>
<td>1 231</td>
<td>-14%</td>
<td>7 124</td>
<td>6 375</td>
<td>12%</td>
</tr>
<tr>
<td>Recurring EBITDA</td>
<td>1 690</td>
<td>1 468</td>
<td>15%</td>
<td>6 620</td>
<td>6 712</td>
<td>-1%</td>
</tr>
</tbody>
</table>

#### EBIT

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<tbody>
<tr>
<td>Recurring EBIT</td>
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</tr>
</thead>
<tbody>
<tr>
<td>Net profit to equity</td>
<td>-309</td>
<td>-199</td>
<td>n/a</td>
<td>1 864</td>
<td>1 498</td>
<td>24%</td>
</tr>
<tr>
<td>Net profit to equity - ex. impairments</td>
<td>-128,37</td>
<td>-37</td>
<td>n/a</td>
<td>2 196</td>
<td>1 824</td>
<td>20%</td>
</tr>
</tbody>
</table>

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</tr>
</thead>
<tbody>
<tr>
<td>Earnings per share</td>
<td>-0,17</td>
<td>-0,11</td>
<td>n/a</td>
<td>1,00</td>
<td>0,80</td>
<td>24%</td>
</tr>
<tr>
<td>Earnings per share - ex. impairments</td>
<td>-0,07</td>
<td>-0,02</td>
<td>n/a</td>
<td>1,17</td>
<td>0,98</td>
<td>20%</td>
</tr>
</tbody>
</table>

- **Q4: decline in reported results.** Negative balance of one-offs y/y PLN -400m as a result of higher reclamation provision.
- **Q4: improvement of recurring results** on the back of the increase in realized wholesale price +67 PLN/MWh Y/Y. Personnel expenses higher by PLN 290m. CO2 cost increased by PLN 110m.
- **12M reported results:** enhanced by one-off item (additional EUA granted free of charge, worth PLN 1.4 bn).
- **12M recurring results:** higher price of electricity +71 PLN/MWh Y/Y offset by lower volumes 7.6 TWh and raising CO2 costs PLN 1.64bn.

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</tr>
</thead>
<tbody>
<tr>
<td>Net debt</td>
<td>11 415</td>
<td>11 703</td>
<td>288</td>
<td>11 415</td>
<td>9 600</td>
<td>1 815</td>
</tr>
</tbody>
</table>

The decline in net debt during Q4 is connected among other things to the decrease of margin deposits blocked for the settlement of commodity exchange transactions. Restricted cash is excluded from cash balance when net debt is computed.
Development of EBITDA by major value drivers

Q3 2018 EBITDA REPORTED
One-offs 1

Q3 2018 EBITDA RECURRING*
Wholesale price of electricity 989
Volume of electricity 445
Optimization of electricity portfolio 113
Heat 26
Hard coal with transport
Natural gas 34
Biomass 30
CO2 cost 21

Q3 2019 EBITDA RECURRING*
Development of EBITDA by major value drivers
One-offs

Q3 2019 EBITDA REPORTED

* Revenues from green certificates ** Including network losses
## Reported EBITDA: outlook for 2020

<table>
<thead>
<tr>
<th>Key factors</th>
<th>Conventional Generation</th>
<th>Distric heating</th>
<th>Renewables</th>
<th>Supply*</th>
<th>Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Average wholesale realised price at ~PLN 275-280/MWh</td>
<td>• Increase in the total cost of CO₂ emission allowances due to lower allocation of free allowances for 2020 (~1m tonnes less)</td>
<td>• Production volume dependent on weather conditions – 2019 with relatively high windiness</td>
<td>• Base year result includes ~PLN 0.7bn: ~PLN 17.5bn and ~PLN 113m for advanced metering infrastructure (AMI)</td>
<td>• Base year result includes effect of provision reversal related to electricity prices bill (neutral for Group result)</td>
<td>• Regulatory Asset Base (RAB) higher by ~PLN 0.7bn: ~PLN 17.5bn and ~PLN 113m for advanced metering infrastructure (AMI)</td>
</tr>
<tr>
<td>• Output under pressure of falling unitary margins in view of potential higher import level and commissionings of new generation capacities with lower variable cost</td>
<td>• Higher availability of Belchatów and Turów power plants as a result of lighter overhaul burden</td>
<td>• Incremental generation of new wind onshore farms ~200 GWh</td>
<td>• Market conditions affect margin levels</td>
<td>• WACC lower by ~50 bps: 5.5% (pre-tax) as a result of significant drop in the risk-free rate</td>
<td></td>
</tr>
<tr>
<td>• Higher generation volumes from hard coal in the wake of operation of 5&amp;6 Opole units</td>
<td>• Higher generation volumes from hard coal</td>
<td>• Rise of operating cost due to i.a. development of the offshore wind within the segment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Stable average price of hard coal</td>
<td>• Lack of free CO₂ allowances for electricity generation from 2020 (~8.5m tonnes less)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Base year result includes ~PLN 1bn from additional CO₂ allowances</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Segment consists of wholesale and retail sales
# CAPEX: outlook for 2020

<table>
<thead>
<tr>
<th></th>
<th>Outlook 2020 vs 2019</th>
<th>Key factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional Generation</td>
<td>↓</td>
<td>• Lower development CAPEX in Conventional Generation (completion of Opole unit no. 5&amp;6, final stage in construction of unit no. 7 in Turów power plant)</td>
</tr>
<tr>
<td>District heating</td>
<td></td>
<td>• Continued BAT/BREF modernisations</td>
</tr>
<tr>
<td>Renewables</td>
<td>↑</td>
<td>• Construction of onshore wind farms as part of the Klaster project with ~97 MW of installed capacity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Initial stage of the PV development program of up to 2.5GW</td>
</tr>
<tr>
<td>Supply</td>
<td></td>
<td>• Realisation of current development and maintenance projects</td>
</tr>
<tr>
<td>Distribution</td>
<td>↑</td>
<td>• Realisation of the grid grounding program leading to rise in RAB and increased reliability</td>
</tr>
</tbody>
</table>
# Mid-term outlook of PGE Group

<table>
<thead>
<tr>
<th>Major factors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Conventional Generation</strong></td>
</tr>
<tr>
<td>• Hard coal price rising in short term. Projected decline of prices after finalization of investments in Polish mines and moderation of fuel intake after commissioning of highly efficient units</td>
</tr>
<tr>
<td>• Volatility of CO2 caused by regulations, GDP growth and pace of decarbonisation</td>
</tr>
<tr>
<td>• 2019 – commissioning of new units at Opole Power Plant (~1 800 MW total)</td>
</tr>
<tr>
<td>• 2020 – commissioning of new unit in Turów (~500 MW total)</td>
</tr>
<tr>
<td>• 2021 – beginning of capacity market payments</td>
</tr>
<tr>
<td>• 2021 – BAT LCP regulations become effective (need of adjustments at power plants)</td>
</tr>
<tr>
<td>• 2025 – limitation of support scheme for units with emission exceeding 550 g/kWh</td>
</tr>
<tr>
<td><strong>District Heating</strong></td>
</tr>
<tr>
<td>• Under pressure in short term because of delayed transition of CO2 price increase, neutral in long term</td>
</tr>
<tr>
<td>• 2019 – new support scheme for highly efficient cogeneration (limited support for existing units, but an incentive for development of new capacities)</td>
</tr>
<tr>
<td>• 2021 – BAT LCP regulations becomes effective (need of adjustments at power plants)</td>
</tr>
<tr>
<td>• 2023 – launch of new Czechnica CHP CCGT</td>
</tr>
<tr>
<td>• Potential acquisitions of district heating network – the goal is to obtain 2/3 of networks in the area of current operations</td>
</tr>
<tr>
<td><strong>Renewable Generation</strong></td>
</tr>
<tr>
<td>• Finalisation of works on support for offshore wind farms</td>
</tr>
<tr>
<td>• 2020 – commissioning of wind farms (~100 MW) „Klaster” program</td>
</tr>
<tr>
<td>• 2021 – Project of PGE solar capacity development, initial 100 MW and potential 1.3 GW in 2025</td>
</tr>
<tr>
<td>• 2026 – 1 000 MW offshore</td>
</tr>
<tr>
<td><strong>Supply</strong></td>
</tr>
<tr>
<td>• In short term under pressure of regulatory uncertainty involving the Act on electricity prices</td>
</tr>
<tr>
<td><strong>Distribution</strong></td>
</tr>
<tr>
<td>• 2019-23 – Grid grounding program (ca. PLN 1.9 billion of additional RAB)</td>
</tr>
<tr>
<td>• 2021 – new model of distribution remuneration</td>
</tr>
</tbody>
</table>
Fundamentals of the distribution business

RAB (with RAB-AMI) development*
(PLN m)

<table>
<thead>
<tr>
<th>RAB 2018</th>
<th>CAPEX recognized</th>
<th>Deduction</th>
<th>RAB 2019</th>
<th>CAPEX recognized</th>
<th>Deduction</th>
<th>RAB 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>16,380</td>
<td>1,843</td>
<td>1,339</td>
<td>16,884</td>
<td>1,877</td>
<td>1,194</td>
<td>17,567</td>
</tr>
</tbody>
</table>

Regulated revenue composition*
(PLN m)

<table>
<thead>
<tr>
<th>2018</th>
<th>2019</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>6,131</td>
<td>5,985</td>
<td>6,106</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2018</th>
<th>2019</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,104</td>
<td>1,226</td>
<td>1,245</td>
</tr>
<tr>
<td>1,202</td>
<td>1,231</td>
<td>1,274</td>
</tr>
<tr>
<td>1,004</td>
<td>1,016</td>
<td>975</td>
</tr>
</tbody>
</table>

WACC:

<table>
<thead>
<tr>
<th>2018</th>
<th>2019</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.015%</td>
<td>6.015%</td>
<td>5.507%</td>
</tr>
</tbody>
</table>

Return on RAB:

<table>
<thead>
<tr>
<th>2018</th>
<th>2019</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>101%**</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

* Based on a Tariff
** Regulatory coefficient at 1.01 i.a. with regard to establishment of the Central Information Exchange System
Regulations at a glance
## Dual-commodity market

### Currently

- Wholesale price based on variable costs of generation (mainly fuel and CO₂ emission rights)
- Generation units ranked by rising variable costs form **merit order**
- Market mechanism sets the **price at the level of costs for the marginal unit required to meet the demand**

### Effective 2021

- Wholesale price based on variable costs of generation (mainly fuel and CO₂ emission rights)
- Generation units ranked by rising variable costs form **merit order**
- Market mechanism sets the **price at the level of costs for the marginal unit required to meet the demand**
- Is to cover **fixed costs** and **costs of modernisation or construction** of new units
- Payments for keeping capacity (in MW) disposable
- Auction mechanism guarantees economic efficiency of support

**CO₂ price * emission rate**

**Fuel price/efficiency**

**Demand**

**Price**
Capacity market and electric energy market

- Capacity market is **separated from wholesale electric energy market** and influences prices of electric energy only indirectly by securing stable supply and safe reserve
- Without capacity **market wholesale price of electric energy would have to increase** (ceteris paribus) as a result of supply contraction
- Revenues from capacity market should allow units, that would be otherwise decommissioned, to stay in the merit order

Additionally, **keeping the reserve at the sufficient level lowers the price risk** (moderating the price peaks) so as the risk of delivery interruption

Retail electric energy market

- This is the market where **retails sellers to final off takers** compete
- **Retail price** contains:
  - Electric energy wholesale price
  - Distribution costs
  - Additional taxes and levies (e.g. support scheme for renewables or cogeneration)
- **Capacity fee** to cover the capacity market will be introduced in 2021
Results of the auction

<table>
<thead>
<tr>
<th>Clearing price (PLN/kW/year)</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
<th>2024</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>240.32</td>
<td>198.00</td>
<td>202.99</td>
<td><strong>259.87</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Volume contracted (MW)</th>
<th>22 427</th>
<th>10 580</th>
<th>10 631</th>
<th><strong>8 671</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiyear contracts (MW)</td>
<td>12 459</td>
<td>125</td>
<td>853</td>
<td><strong>5 669</strong></td>
</tr>
</tbody>
</table>

*Estimated revenues based on auction clearing price. Capacity obligation price for multiyear agreements will be adjusted annually with the annual average consumer price index (assumed 2.5% a year). In addition, remuneration for new or modernised units is lowered by the amount of public aid granted to investments. PGE minimalised the risk that capacity market revenues will be curtailed because of public aid.
PGE on the capacity market

Capacities contracted in main auction for 2024

Multiyear capacities contracted in main auction for 2024 (including contracted in earlier auction)

Capacities contracted for 2024

Total capacities contracted for respective delivery years (MW)

<table>
<thead>
<tr>
<th></th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
<th>2024</th>
</tr>
</thead>
<tbody>
<tr>
<td>PGE</td>
<td>11 652</td>
<td>12 040</td>
<td>11 493</td>
<td>9 713</td>
</tr>
<tr>
<td>Others</td>
<td>10 775</td>
<td>10 999</td>
<td>11 722</td>
<td>12 395</td>
</tr>
<tr>
<td>Total</td>
<td>22 427</td>
<td>23 039</td>
<td>23 215</td>
<td>22 108</td>
</tr>
</tbody>
</table>
What next?

**Key Winter Package implications:**

- Grandfathering clause secures rights acquired for contracts concluded **before 31 Dec 2019**
- EPS of 550 gr CO2 per kWh from **1 July 2025** (exclusion of coal from the auctions)

**Supplementary auctions for 2021** (18 Mar 2020)

- Parameters:
  - Base capacities to be contracted for consecutive quarters (2.6 GW, **1.2 GW**, **1.2 GW**, **3.1 GW**)
  - Maximum foreign capacities allowed (total): **1.2 GW**
  - Maximum price: **312** PLN/kW
  - Price-taker price: **178** PLN/kW
**Earnings in Distribution (2016-2020 model)**

**EBIT** = RETURN ON CAPITAL

(WACC x RAB x Q x WR)

- **WACC** determined by the ERO President in a multiyear model with RFR adjusted quarterly (basing on 18m average of 10Y State Treasury bonds with the longest maturity)

- **Regulatory Asset Base**
  established on the basis of completed investments adjusted by depreciation

- **Q – Quality coefficient** (0.85-1.00)
  Each DSO has individual targets for efficiency indicators (interruption time, interruption frequency, connection time, time to provide metering and settlement data)

- **WR – Regulatory coefficient** (0.9-1.1)
  Regulator’s adjustment ability (1.0 in 2020 and 2019, 1.01 in 2018)

**Δ NETWORK LOSSES REALISATION VS. TARIFF**

Tariff set volume and price for electricity to cover network losses

**Δ OTHER COSTS REALISATION VS. TARIFF**

ERO President approves in tariff justified level of costs

**OTHER REVENUES**

---

**WACC computation**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Tariff for 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk free rate (%)</td>
<td>2.801</td>
</tr>
<tr>
<td>External capital risk premium (%)</td>
<td>1.000</td>
</tr>
<tr>
<td>Cost of external capital (%)</td>
<td>3.801</td>
</tr>
<tr>
<td>Asset beta</td>
<td>0.400</td>
</tr>
<tr>
<td>Equity beta</td>
<td>0.724</td>
</tr>
<tr>
<td>Equity risk premium</td>
<td>4.200</td>
</tr>
<tr>
<td>Cost of equity (%)</td>
<td>5.842</td>
</tr>
<tr>
<td>Share of external capital</td>
<td>0.500</td>
</tr>
<tr>
<td>Post-tax WACC, nominal (%)</td>
<td>4.460</td>
</tr>
<tr>
<td><strong>Pre-tax WACC, nominal (%)</strong></td>
<td><strong>5.507</strong></td>
</tr>
<tr>
<td>Tax rate, nominal (%)</td>
<td>19%</td>
</tr>
</tbody>
</table>
Tariffs in district heating – heat generation

Tariffs approved by the Energy Regulatory Office for 12-month period

Non-CHP plants

Full cost method
(Planned costs and revenues as an input)

ERO publishes average reference year price of heat in non-CHP sources with a fuel breakdown

CHP plants

Simplified method
(Initial price calculated for year 0 adjusted every year)

Yearly adjustment

• Y/Y change of the reference price in non-CHP plants implies change of price in CHP plants (generation mix accordingly)
• Multiplied by the reference indicator given by the ERO (1.0 in last years), that could be also increased by 1-7% depending on capacity of the installation
• + Co-generation premium (1-2 p.p. extra)*
• If overall indicator is below 0 price may stay at the previous level

Key implications for CHP plants:
• Forecasted costs in full cost method basing to a large degree on history
• Even 2-year lag in CHP plants’ price as a result of costs in non-CHP plants (depending on tariff period – nonhomogeneous)
• Ca. 55% of non-CHP plants are not EU ETS installations, therefore CO2 rise in price is not fully transferred to CHP plants price

* Applies only for installation operating before 2010 (most of PGE assets). In order to converge to higher prices in non-CHP plants
Tariffs in district heating – heat distribution & transmission

Tariffs approved by the Energy Regulatory Office for 12-month period (same as generation tariff)

**Base method**

- Full planned justified cost + WACC*WRA
- Unless it is higher than y-1 revenues indexed on inflation and change of heat losses in whole heat transmission sector (published by the ERO for y-1)
- Above 0 dynamics in co-generation sector (due to specific of reference price) implies partially rise of average cost of heat losses allowing tariff rise in heat transmission

**Extraordinary method**

- Exceeding y-1 revenues allowed
- Return on capital limited - multiplied by the assets efficiency rate (installed capacity to ordered capacity ratio) and coefficient preventing clients from unjustified rise of prices (system average price / planned tariff price)
- Both coefficients take the value 0.0-1.0

### WACC in heat

- determined by the ERO President in a 2018-2020 model with RFR adjusted quarterly (basing on 18m average of 10Y State Treasury bonds with the longest maturity)
- Equity risk premium in heat transmission maximally enlarged by 3 p.p.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Q3 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quarterly adj. Risk free rate (%)</td>
<td>3.015</td>
</tr>
<tr>
<td>External capital risk premium (%)</td>
<td>1.260</td>
</tr>
<tr>
<td>Cost of external capital (%)</td>
<td>4.275</td>
</tr>
<tr>
<td>Asset beta</td>
<td>0.400</td>
</tr>
<tr>
<td>Equity beta</td>
<td>0.724</td>
</tr>
<tr>
<td>Equity risk premium</td>
<td>4.500</td>
</tr>
<tr>
<td>Cost of equity (%)</td>
<td>6.273</td>
</tr>
<tr>
<td>Share of external capital</td>
<td>0.500</td>
</tr>
<tr>
<td>Post-tax WACC, nominal (%)</td>
<td>4.868</td>
</tr>
<tr>
<td>Pre-tax WACC, nominal (%)</td>
<td>6.010</td>
</tr>
<tr>
<td>Tax rate, nominal (%)</td>
<td>19%</td>
</tr>
<tr>
<td>Pre-tax WACC, incl. +3% premium</td>
<td>7.350</td>
</tr>
<tr>
<td>Post-tax WACC, incl. +3% premium</td>
<td>5.954</td>
</tr>
</tbody>
</table>
ETS IV (2021-2030)

• “The EU ETS system after 2020 – recommendations”, adopted on July 30, 2019, the energy sector in Poland would benefit from a one third of the Polish share of the Modernisation Fund, which is equal to 57.5 million of EUAs

• The Modernisation Fund gives priority to investments in RES, energy efficiency (excl. coal investments), energy storage, grids, social transformation of the coal-reliant regions. Investment projects out of this catalogue must be positively evaluated by the Investment Committee (EIB, EC and representatives of other EU countries).

• Instead of transferring Article 10c derogation (ca. 275 million of EUAs) to the Modernisation Fund, the Polish government has decided to create a targeted national fund dedicated to the environmental and energy objectives (pending works)

• The main aim of that targeted fund is to support in particular:
  • the nuclear energy;
  • modernisation of the existing generation units;
  • distribution electricity and heat grids development;
  • energy efficiency, including buildings;
  • RES development, in particular hydro;
  • GHG reductions in transport sector, including electromobility development;
  • energy storage;
  • hydrogen in energy sector;
  • transnational interconnectivity;
  • just transition in coal-dependent regions.
# New scheme for Cogeneration Support

<table>
<thead>
<tr>
<th></th>
<th>Support length</th>
<th>&lt;1 MW</th>
<th>&lt;1-50 MW</th>
<th>&gt;=50 MW</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EXISTING</strong></td>
<td>15 years from the first CHP certificate</td>
<td>Guaranteed premium</td>
<td>Individual guaranteed premium</td>
<td></td>
</tr>
<tr>
<td><strong>MODERNISED</strong></td>
<td>5-6-7 years from the modernisation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(CAPEX &gt;=50%*)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SIGNIFICANTLY</strong></td>
<td>15 years after the modernisation</td>
<td>Pay-as-bid auction for cogeneration premium</td>
<td>Enrollment on individual cogeneration premium</td>
<td></td>
</tr>
<tr>
<td><strong>MODERNISED</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(CAPEX 25%-50%*)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>NEW</strong></td>
<td>15 years after completion</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Producers receive **premium** – additional payment to the electricity (100% of the volume if >70% of the heat is put into the public grid, otherwise proportionally**)
- Premium applies to units with **EPS of maximum 450 kgCO2/MWh** under current market conditions***
- Premium calculated on LCOE basis for baskets (reference prices include capacity and fuels: gas/solid fuel/biomass/other)
- Cogeneration premium = 110% of the reference price
- Individual guaranteed premium <= individual cogeneration premium
- Premiums indexed and respectively adjusted****

* Of the CAPEX related to the construction of a new unit
** The rule does not apply to small units (<1 MW)
*** Exemption for new units if there are no technical/economical conditions to provide gas and biomass in a specific location
**** Investment support subtracted, existing units: age coefficient, modernised: CAPEX level
RES support schemes – new installations
(commissioned until July 2016)

PROSUMERS
(micro installations)

- ≤ 10 kW
  Coefficient 0.8x
- 10-50 kW
  Coefficient 0.7x

 Fitzgerald/FIP system
< 1MW

90% of the reference price
(published by the ministry in charge of energy)

Auctions in capacity baskets

- ≤ 1MW
- >1MW

Technology division

Onshore wind competing with PVs in the same technology basket but in general wind is more competitive >1MW while PVs more competitive ≤1MW

OFFSHORE WIND
(potential dedicated model of support)

Pending works

* Prosumer gets a discount for the part of the electricity taken from the grid (not paying power and distribution price, just RES fee and transitional fee), not larger than 0.8x or 0.7x of the volume fed into the grid
Onshore wind and PV auctions (illustrative)

Assumed capacities won in 2018 and 2019 auctions and potential capacities for 2020 auctions

- **2018***: 1000 PV, 500 wind
- **2019***: 900 PV, 2200 wind
- **2020****: 1500 PV, 0 wind

### Contracted prices*** (PLN/MWh)

<table>
<thead>
<tr>
<th></th>
<th>Average</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018***</td>
<td>352</td>
<td>289</td>
<td>365</td>
</tr>
<tr>
<td>2019***</td>
<td>196</td>
<td>158</td>
<td>217</td>
</tr>
<tr>
<td>2020**</td>
<td>318</td>
<td>269</td>
<td>327</td>
</tr>
</tbody>
</table>

* Potential capacities in development assumed on the basis of general volumes contracted and average efficiencies

** Draft regulation assumes 1000 MW of capacities >1MW and 500 MW<=1MW and no onshore wind capacities contracted

*** Prices relate to full auction baskets: PV (<=1MW), wind (>1MW). Prices without VAT.

Development of other technologies (biogas, biomass, small hydro) not shown
RES support schemes - existing installations

Existing Installations
commissioned until July 2016

- Hydro >5 MW
  - No support from 2016
- Biomass co-combustion (undedicated)
  - 1 MWh = 0.5 certificate
- Other RES
  - 1 MWh = 1 certificate

15-year support
(since commissioning or since the beginning of the system: 2005)

NEW RES SUPPORT SYSTEM

- GREEN CERTIFICATES
- BLUE CERTIFICATES
  (just agricultural biogas)

Possibility to change support scheme

AUCTIONS
For existing installations

FIT/FIP system

Baskets similarly determined as for new installations (see next slide)

Installations <1MW
**Limitation of capacity utilisation in existing units**

(illustrative only, outlined)

- **Volume of electricity sold ('X' Price)**
  - Generation volume
    - Wholesale market
      - Producer is trying to optimize his trading position
      - Repurchases of electricity – avoiding generation cost
    - Balancing market (free)
      - Basing on balancing offers and demand clearing price (CRO) is created – a base for settlement of potential reductions
    - Balancing market (technical)
      - Remuneration for operator includes unit’s average generation cost (CW) -5% and current CO2 cost
      - Margin
        - (X – variable cost of generation)
        - (X – repurchase cost)
        - (X – CRO)
        - (X – 0.95*CW – CO2)

- Reductions of market nature*
- Reductions of technical nature**

* Based on decisions of market participants
** Based on decisions of the operator

Reductions are creating extra margin or being paid by the operator but as a rule that does not fully transfer fixed cost of lignite assets
Financing
Debt maturity and available financing

Debt maturity profile (PLN m) as at September 30, 2019 (excluding current account credits)

Drawn debt and availability of external financing (in PLN m) as at September 30, 2019.
Debt development and structure (as at Sep. 30, 2019)

Gross debt and net debt (in PLN million)

Fixed vs floating rates (drawn debt)

- Fixed: 65%
- Floating: 35%

Currency profile of drawn debt (including hedging transactions)

- 96% PLN
- 3% USD
- 1% EUR
Issue of domestic bonds in May 2019

Issue of 10-year bonds issue successfully completed

- Bonds issue with a total value of PLN 1.4 billion: PLN 1 bn (10 years), PLN 0.4 bn (7 years)
- First domestic bonds with a 10-year investment horizon issued by industrial enterprise
- Double oversubscription
- National rating by Fitch at AA(pol) - very low risk in comparison with other issuers or bond issues in Poland

Detailed terms of the issue

<table>
<thead>
<tr>
<th>Issuer</th>
<th>PGE Polska Grupa Energetyczna SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of instrument</td>
<td>Senior (unsubordinated) bearer bonds issued under the domestic bonds issue program of the Issuer with limit of PLN 5 billion</td>
</tr>
<tr>
<td>Value of the issue</td>
<td>PLN 1 000 000 000</td>
</tr>
<tr>
<td>Bonds maturity</td>
<td>10 years</td>
</tr>
<tr>
<td>Bond interest rate</td>
<td>WIBOR 6M + margin 140 b.p.</td>
</tr>
<tr>
<td>Issue date</td>
<td>May 21, 2019</td>
</tr>
<tr>
<td>Rating (Fitch)</td>
<td>AA (pol)</td>
</tr>
<tr>
<td>Quotation market</td>
<td>Catalyst market (within 90 days from the issue date)</td>
</tr>
<tr>
<td>Agent, Dealer</td>
<td>Bank Pekao S.A.</td>
</tr>
</tbody>
</table>
Loan from EIB for RES development

„Green facility” agreement signed in December 2019

• Intended for **financing of Klaster project** – construction of onshore wind farms Starza, Rybice i Karnice II with total capacity of 97 MW
• First agreement of this type concluded after EIB declared revision of its credit policy for energy sector (inter alia focusing on financing of investment tasks contributing to decarbonisation)
• Value of the loan – up to PLN 272.5 million (50% of total expected capex)
• EIB appreciated the PGE’s efforts in its transition towards low- and zero-emission generation

**General terms of the loan**

<table>
<thead>
<tr>
<th>Type of instrument</th>
<th>Loan available in tranches</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Value of loan</strong></td>
<td>Up to PLN 272.5 million</td>
</tr>
<tr>
<td><strong>Availability</strong></td>
<td>Up to 22 months from the date of the agreement</td>
</tr>
<tr>
<td><strong>Repayment</strong></td>
<td>Up to 17 years from the drawing date of the first tranche</td>
</tr>
</tbody>
</table>
PGE cash position provides... 

... plenty of headroom in the balance sheet

<table>
<thead>
<tr>
<th></th>
<th>Q3 2019</th>
<th>H1 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Debt (PLN m)</td>
<td>12 670</td>
<td>11 980</td>
</tr>
<tr>
<td>Net debt (PLN m)</td>
<td>11 703</td>
<td>10 948</td>
</tr>
<tr>
<td>Net Debt/LTM EBITDA</td>
<td>1.60x</td>
<td>1.55x</td>
</tr>
<tr>
<td>Net Debt/Equity</td>
<td>0.24x</td>
<td>0.22x</td>
</tr>
</tbody>
</table>

Financial strength has been confirmed by rating agencies

<table>
<thead>
<tr>
<th></th>
<th>MOODY'S</th>
<th>FITCH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-term company rating (IDR)</td>
<td>Baa1</td>
<td>BBB+</td>
</tr>
<tr>
<td>Rating outlook</td>
<td>Stable</td>
<td>Stable</td>
</tr>
<tr>
<td>Date of rating assignment</td>
<td>September 2, 2009</td>
<td>September 2, 2009</td>
</tr>
<tr>
<td>Date of the latest rating confirmation</td>
<td>December 16, 2019</td>
<td>February 15, 2019</td>
</tr>
<tr>
<td>Senior unsecured rating</td>
<td></td>
<td>BBB+</td>
</tr>
<tr>
<td>Date of the latest rating change</td>
<td></td>
<td>August 4, 2011</td>
</tr>
<tr>
<td>Date of the latest rating confirmation</td>
<td></td>
<td>February 15, 2019</td>
</tr>
<tr>
<td>Long-term national rating</td>
<td></td>
<td>AA (pol)</td>
</tr>
<tr>
<td>Date of rating assignment</td>
<td></td>
<td>August 10, 2012</td>
</tr>
<tr>
<td>Date of latest rating change</td>
<td></td>
<td>August 3, 2016</td>
</tr>
</tbody>
</table>
### FITCH

**Factors that could lead to an upgrade**
- A more resilient business profile, for example due to a persistently high share of regulated or quasi-regulated income in EBITDA or a more diversified fuel generation mix with lower CO2 emissions per MWh; and
- FFO adjusted net leverage below 2x on a sustained basis, supported by management’s more conservative financial policy

**Factors that could lead to a downgrade**
- Deterioration of credit ratios, including FFO adjusted net leverage above 3x and FFO fixed charge cover below 5x on a sustained basis, for example due to lower margins on generation or large investments
- Large capex or acquisitions in higher-risk business segments such as coal-fired generation (beyond the ongoing projects) or coal mining, which would substantially worsen PGE’s business profile

### MOODY’S

**Factors that could lead to an upgrade**
- Upward rating pressure is unlikely in the short to medium term, given the challenges that PGE faces in terms of carrying out its capital investment programme and the expected decline in its credit metrics. Over the medium to long term, we would consider an upgrade in the event of improved clarity regarding the evolution of the energy market in Poland, coupled with a successful implementation of investment projects and a strong financial profile of the group

**Factors that could lead to a downgrade**
- Negative pressure on PGE’s rating would develop if (1) its FFO/net debt were to decline below 30% and its FFO interest coverage ratio were to fall below 5x on a sustained basis, possibly because of significantly increased levels of investments and/or a significant deterioration in the profitability of PGE’s thermal generation plants as a result of adverse market developments, such as lower electricity prices and/or higher carbon prices; (2) the group were to embark on its nuclear investments without adequate financial and contractual risk protections; or (3) there is a significant adverse change in the regulatory framework of Poland.
- In addition, a significant deterioration in the credit quality of the Polish government or a reduction in the support assumptions currently incorporated into our assessment, or both, would likely put negative pressure on PGE’s ratings
## PGE’s Rating vs other utilities

<table>
<thead>
<tr>
<th>Company</th>
<th>Fitch rating</th>
<th>Moody's rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>PGE</td>
<td>BBB+ stable</td>
<td>Baa1 stable</td>
</tr>
<tr>
<td>Enea</td>
<td>BBB stable</td>
<td>n/a</td>
</tr>
<tr>
<td>Energia</td>
<td>BBB stable</td>
<td>n/a</td>
</tr>
<tr>
<td>Tauron</td>
<td>BBB stable</td>
<td>n/a</td>
</tr>
<tr>
<td>PGNiG</td>
<td>BBB stable</td>
<td>Baa2 stable</td>
</tr>
<tr>
<td>PKN Orlen</td>
<td>BBB- stable</td>
<td>Baa2 stable</td>
</tr>
<tr>
<td>Poland</td>
<td>A- stable</td>
<td>A2 stable</td>
</tr>
</tbody>
</table>
Governance
Corporate structure
## Governance structure

<table>
<thead>
<tr>
<th>Management Board</th>
<th>Supervisory Board</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tasks</strong></td>
<td><strong>Structure</strong></td>
</tr>
<tr>
<td>Conducts the company’s affairs and represents it in all activities in and out of court</td>
<td>From 5 to 9 members</td>
</tr>
<tr>
<td>Statements of will on behalf of the company must be made by two MB members or a MB member and a proxy</td>
<td>Half of the members are appointed from amongst candidates put forward by the State Treasury</td>
</tr>
<tr>
<td>From 1 to 7 members, including the president</td>
<td>At the end of 2019, the Supervisory Board consisted of 8 members, including 6 independent members in compliance with criteria set out in Best Practices for WSE-Listed Companies</td>
</tr>
<tr>
<td>At the end of 2019, the Management Board consisted of 6 members, appointed for a joint term in February 2017</td>
<td><strong>Term</strong></td>
</tr>
<tr>
<td>Members are appointed by the supervisory board for a joint three-year term after a competitive procedure</td>
<td>SB members are appointed and dismissed by the general meeting, except for the member appointed by the State Treasury by way of a statement</td>
</tr>
<tr>
<td>MB members are dismissed or suspended by the general meeting or supervisory board</td>
<td>They are appointed for a joint three-year term</td>
</tr>
</tbody>
</table>
Compensation Practices*

- **Fixed part of remuneration**
  - Paid monthly
  - Determined by the Supervisory Board
  - Range: from 7x to 15x of the average remuneration in the business sector exclusive of profit-based bonuses in the fourth quarter of the prev. year as announced by local statistical office

- **Variable part of remuneration**
  - Paid annually - cannot exceed 100% fixed part of remuneration
  - Subject to assessment of KPIs (SB selects KPIs for MB from the catalog established by the General Meeting of the Company and, additionally, it may set specific goals for a given year
  - Payment after (1) approval of the MB report on the company’s operations and financial statements for the given financial year and (2) approval for performance of MB duties by GM

| + severance pay | 3 months notice period, maximum 3x monthly fixed remuneration, provided such a member has performed the function for a period of at least 12 months before the termination of the Agreement. |
| + non-competition agreement | may be entered into only if a member of the MB has performed their function for a period of at least 6 months, and its amount may not exceed 50% of the monthly fixed remuneration, period of the prohibition against competition may not exceed 6 months |

- Determined by the General Meeting
- Based on average remuneration in the business sector exclusive of profit-based bonuses in the fourth quarter of the prev. year as announced by local statistical office and following factor: 1.7 for SB chairperson and 1.5 for other SB members
- Remuneration irrespective of the number of convened meetings of the Supervisory Board.
- Not payable for a month, in which a member has not been present at any correctly convened meeting and such absences have not been justified.

* Basing on Resolution no 4 and 5 of EGM of December 14, 2016 r. on principles determining the amount of remuneration for members of MB and SB
Remuneration – Managerial Objectives

- Variable part of the management board's remuneration depends on the company's results and the assessment of the management KPIs.
- Supervisory Board specifies the management KPIs together with the determination of the weightings of these goals and the criteria for their implementation and settlement.

Catalog of Managerial Objectives

- EBITDA for the PGE CG at the level specified in the approved material and financial plan for a given accounting year;
- Compliance with the covenants under credit agreements – (net debt/EBITDA);
- Availability index for the centrally dispatched operating units of PGE GiEK;
- Achievement of particular milestones in the Megainvestment Projects of PGE GiEK;
- Improvement in the customer service quality indexes;
- Adjustment to the essence of the structural changes within the sector;
- Creation of an ecosystem for innovations within the PGE Group;
- Development of a structural approach brand building, product marketing; sponsorship of cultural, sports and social events.
Ownership structure and listing

<table>
<thead>
<tr>
<th>Shareholders structure (end of 2018)</th>
<th>No of shares and votes (pcs)</th>
<th>% of shares and votes</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Treasury</td>
<td>1,072,984,098</td>
<td>57.39%</td>
</tr>
<tr>
<td>Open Pension Funds</td>
<td>282,066,968</td>
<td>15.09%</td>
</tr>
<tr>
<td>Other Shareholders</td>
<td>514,709,763</td>
<td>27.53%</td>
</tr>
<tr>
<td>Total</td>
<td>1,869,760,829</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

PGE on the Warsaw Stock Exchange (2019)

- Average turnover per session (PLN m): 18.03
- Maximum EOD price in year (PLN): 12.47
- Minimum EOD price in year (PLN): 7.32

Key Treasury special control powers

Company statues provide for special powers for the State Treasury.

As long as it is a shareholder of PGE, State Treasury:

- has the right to appoint one member of the Supervisory Board either by a written statement submitted to PGE at the General Meeting or outside the General Meeting, via the Management Board;
- holds special right with regard to selection of the Supervisory Board members - when appointing members of the Supervisory Board by the General Meeting, half of the members shall be elected from among persons indicated by the State Treasury;
- Supervisory Board selects the Chairman of the Supervisory Board from among its members wherein the Chairman of the Supervisory Board shall be elected from among persons indicated by the State Treasury;
- may demand in writing that the Management Board convene a General Meeting;
- may demand that certain matters are placed on the General Meeting agenda.

PGE shares

- PGE's shares are ordinary, bearer shares.
- PGE’s shares are listed on the regulated market of the Warsaw Stock Exchange.
- PGE's shares are not privileged.
Risk management

- Skillful identification of risks and implementation of preventive mechanisms are the foundations of an organisation's longevity. PGE's responsible development requires a multi-dimensional and multi-level risk management system.

- Risk management at PGE is exercised based on 3 pillars:
  (1) GRC model (Governance, Risk, Compliance),
  (2) Three lines of defence concept

  and (3) Front-middle-back office structure.
  Located at the Corporate Centre, the Risk Department (middle office) is organisationally and functionally independent of the Group's business activities (front office) and of transaction clearing/recording (back office). Thanks to this, risk analysis is independent and objective.
Compliance & organisational culture

**PARTNERSHIP** | **GROWTH** | **RESPONSIBILITY**

- We take care of sustainable, safe growth of PGE Group
- We are here for our customers
- We take care of natural environment
- We compete honestly
- We do not tolerate corruption or dishonest behavior
- We handle company information in a responsible manner
- We take care of friendly work conditions
- We are improving and we are proactive
- Employee safety and health are our priorities
- We take care of relationships with business partners
- We are building trust by providing reliable information on our operations
Diversity & experience PGE S.A.*

**Supervisory Board - HQ**
- **Gender**
  - Women: 12%
  - Men: 88%

**Management Board - HQ**
- **Gender**
  - Women: 29%
  - Men: 71%

**Supervisory Board - Group level**
- **Gender**
  - Women: 8%
  - Men: 92%

**Management Board - Group level**
- **Gender**
  - Women: 8%
  - Men: 92%

**Experience**
- **Legal**: 75%
- **Power sector**: 50%
- **Supervision of companies with Treasury shareholding**: 25%

**Experience**
- **Power sector**: 85%
- **Public administration**: 85%
- **International**: 70%
- **Finance**: 35%
- **Legal**: 35%

* As of December 31, 2018
Read also our 2018 Integrated Report

raportzintegrowany2018.gkpge.pl/en/
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