

COVID and Carbon Crunch

Why PGE's "Strategy 2030" Already Looks Dated

Executive Summary

In this note, we update our modelling of the profitability of Poland's biggest energy company, Polska Grupa Energetyczna (PGE). Our update reflects the impact of the coronavirus pandemic on energy and foreign exchange markets, and assesses the impact of PGE's "Strategy 2030" unveiled in October. The context for the analysis is PGE's failure to respond to a low-carbon transition that has been long telegraphed by European policymakers and is now in full swing. In mid-2020, coal still accounted for 86% of PGE's total power generation, compared with 94% in mid-2011.

Regarding PGE's new strategy, we incorporate the company's proposed changes to renewables capacity through 2030. We model the future of the company both with and without its existing coal generation business, given that PGE's new proposals to spin out its coal and lignite portfolio lack detail and are unfunded at present.

Regarding updated commodity and foreign exchange prices, we compare prices in November 2020 versus February 2020 as a proxy for before and after COVID.¹ We find power prices have fallen as much as 14%. The national currency, the zloty (PLN), has depreciated by 5% versus the euro and gained 3% against the dollar, increasing the PLN cost of euro-denominated carbon emission permits, called European Union Allowances (EUAs), by as much as 16%. The PLN price of dollar-denominated seaborne coal has fallen as much as 11%, and natural gas as much as 22%. While PGE sources most coal domestically, costs are impacted by seaborne prices. We note that the latter have been two thirds the domestic coal price in 2020,² and so we favour PGE's coal segment by using the international price in this report.

We calculated the impacts of these commodity price and renewables capacity changes on the profitability of PGE's electricity generation business, i.e. excluding the distribution and supply segments. We measured earnings before interest, taxes, depreciation, and amortisation (EBITDA), through 2030. Our main findings were:

- PGE's new strategy is a wasted opportunity for a significant company re-set. The company's 2030 target for offshore wind is unchanged (2.5 gigawatts), compared with its previous direction.³ Regarding onshore, we generously assume a 90% increase (>1GW versus 0.7GW), and for solar PV, a 30% upgrade (>3GW versus 2.6GW). We note that these renewables targets are still less ambitious than Poland's National Energy and Climate Plan (NECP).
- This strategy fails to overcome the severe impact of the coronavirus pandemic. Applying the company's 2030 strategy, plus updated exchange

¹ We updated all market prices as of November 17, 2020.

² As reported in PGE's Q3 Management report, published September 30 2020.

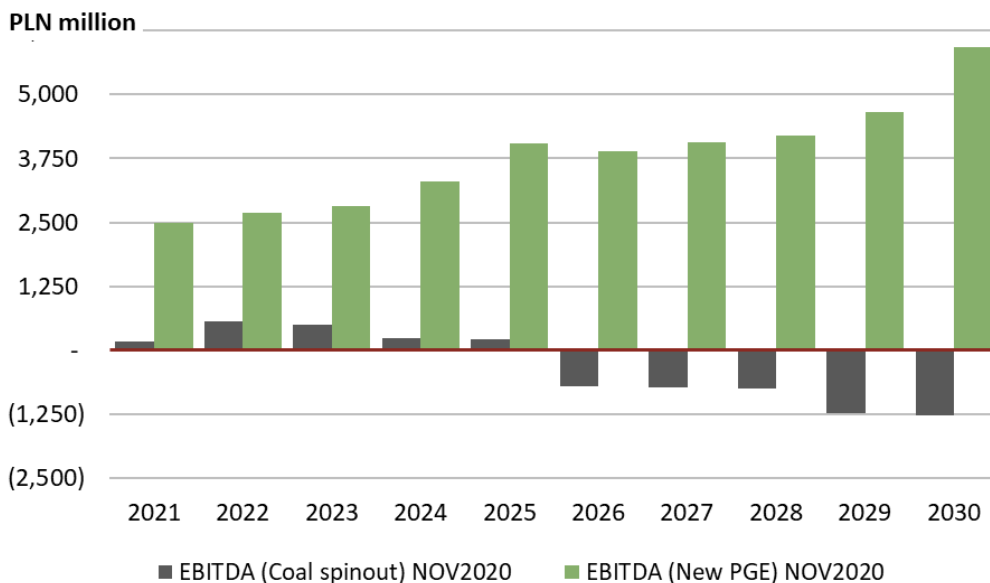
³ As published in January 2020 in the company's *PGE in Transition* document.

rates, commodity prices and renewables capacities, PGE’s EBITDA collapses by two-fifths in 2030, to PLN4.7 billion from PLN8.2 billion.

- Focusing on fossil fuel generation, post-COVID, the EBITDA of PGE’s combined coal and lignite generation is negative from 2026, when capacity payments to these fuel sources start to fall significantly. This is an extraordinary finding: The vast majority of PGE’s generation today will lose money in six years. These findings illustrate why it is unlikely that a buyer will emerge for these assets, and that a coal asset spinout will have to be subsidised by Polish citizens. A lower cost option may be to access private and public capital to fund coal power retirements, by radically revising the company strategy to align better with a low-carbon transition, and thus appealing better to investors and EU funds supporting a low-carbon transition.
- Focusing on the rest of PGE’s power generation—renewables, gas and CHP—EBITDA more than doubles, to PLN5.9 billion in 2030, from PLN2.5 billion in 2021 (see Figure 1).

We conclude that PGE must be more ambitious. Most importantly, the company must accelerate its offshore wind programme significantly, since it is the biggest opportunity to drive rapid capacity additions. In combination, there should be a parallel programme of coal power retirements, whether by PGE or a new spinout entity. Illustratively, PGE might target 10GW of offshore wind by 2030, and a parallel retirement of 10GW of coal and lignite (the majority of its 13GW installed today). Such an intervention would end the impression of a company that is trying to do the minimum, and constantly misjudging how fast the bar is rising.

Figure 1: Relative EBITDA Performance of PGE’s Coal Generation vs the Rest (Renewables, CHP and Gas)



Sources: PGE and IEEFA.

Introduction

PGE is Poland's biggest energy company. The company is majority state-owned. Despite significant talk of a renewables revolution, the company's electricity generation mix remains overwhelmingly biased towards coal and lignite, which accounted for a combined 86% of its total generation in the first half of 2020. Wind and solar power accounted for less than 3%.

In October, PGE announced its long-awaited strategy for 2030. However, regarding renewables, PGE's new strategy looks rather similar to its previous direction, as set out in its latest "PGE in Transition" document in January 2020.⁴ PGE's most significant renewables target, for offshore wind, was left unchanged. The company upgraded its solar and onshore wind targets. But we calculate that the new 2030 targets for solar PV and onshore wind still trail the country's national targets under the National Energy and Climate Plan (NECP) published last year (Table 1).

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Under the new strategy, PGE does set out ambitious plans to spin out its entire coal and lignite portfolio. But these plans are at present officially undated, unfunded and with no agreed mechanism. Critically, the new strategy has no new targets for actual, individual coal power plant retirements.

For more than two years, IEEFA has repeatedly stated that PGE is facing a strategic choice that will determine its financial stability. Through a series of reports, we have shown how the introduction of coal power subsidies via a new capacity market in Poland is unlikely to offset the impact of rising carbon prices on coal profits. We have shown how PGE's capital expenditures have become more focused on coal, risking shrinking cash flows on a rising debt load. Higher carbon prices pose a particular short-term risk. Access to capital is also emerging as a short- to medium-term threat. Financial regulators and investors now accept that the financial sector must play a significant role in driving a low-carbon transition.

PGE's longer term revenues are uncertain because the utility is exposed to a variety of risks it cannot control. These uncertainties exist over different periods of time, are driven by fundamentally different sources of risk, and build upon each other. For example, the European Union is constantly modifying energy policy to favour

⁴ PGE, 2020. *PGE in Transition*.

renewables, while the cost of renewables is also falling; these two trends are independent of each other, and as such, add up. Many of these risks would not exist or would be largely mitigated if PGE elected to close some of its most polluting units and divert freed-up capital to EBITDA-positive renewables.

Table 1: Impact of PGE's "Strategy 2030" on Installed Renewables Capacity

Year [A]	New 2030 Strategy*			Vs 'PGE in Transition' Document			Vs NECP Alignment**		
	Onshore	Offshore	Solar PV	Onshore	Offshore	Solar PV	Onshore	Offshore	Solar PV
	Wind (MW) [B]	Wind (MW) [C]	(MW) [D]	Wind [E]	Wind [F]	[G]	Wind [H]	Wind [I]	[J]
2021	650	0	434	0%	0%	0%			
2022	650	0	652	0%	0%	0%			
2023	750	0	977	16%	0%	13%			
2024	750	0	1270	16%	0%	17%			
2025	750	1000	1588	16%	0%	22%			
2026	750	1000	1906	16%	0%	23%			
2027	800	1000	2249	24%	0%	25%			
2028	900	1000	2608	39%	0%	27%			
2029	1000	1000	2974	55%	0%	29%			
2030	1250	2500	3271	93%	0%	28%	-76%	23%	-16%

Notes:

* Yearly MW deployment assumed by IEEFA in the absence of details in PGE's 2030 Strategy document.

** As estimated by IEEFA in February 2020 report by applying PEP40 to PGE: linearly changing PGE from 2020 to meet PEP40 % energy mix in 2030, as applied to PGE's estimated total generation in 2030.

Sources:

[B] : [D] = PGE Strategy 2030 - October 2020 (<https://www.gkpgge.pl/investor-relations/PGE-Group/pge-group-s-strategy>)

[E] : [G] = PGE in transition - January 2020 (<https://www.gkpgge.pl/investor-relations/PGE-Group/pge-in-transition>)

[H] : [J] = IEEFA February 2020 - (https://ieefa.org/wp-content/uploads/2020/02/How-to-Create-a-Profitable-Polish-Electricity-System_February-2020.pdf)

Method and Findings

In this report, we show how the performance of PGE's coal and lignite assets has underperformed expectations, as a result of a coronavirus pandemic that has exposed PGE's lack of diversification in electricity generation.

Regarding the coronavirus pandemic, we focus on three key market impacts relevant to PGE. First, an economic lockdown has reduced power demand, leading to lower power prices. We find that wholesale power prices have fallen as much as 14% across the forward curve from 2021-23. Second, the pandemic triggered a flight to low-risk assets, including low-risk currencies such as the euro. We find that the Polish zloty (PLN) has depreciated by 5% against the euro, while gaining 3%

against the dollar. This forex change has combined with the third impact, on commodity prices. The economic lockdown has reduced demand for certain commodities, leading to lower coal and natural gas prices and exacerbating current trends in lower fossil fuel prices. Meanwhile, carbon emissions prices (EUAs) have risen slightly, as a regulated market with a supply-demand dynamic somewhat insulated from energy markets. After taking account of forex moves, the PLN-denominated price for EUAs has risen strongly, by 15% on average across the traded forward curve (see Table 2).

Table 2: Summary of Changes in PLN-Denominated Commodity Prices, Before and After COVID

Year [A]	February 2020				November 2020				Percent change			
	Electricity (PLN/MWh) [B]	Natural Gas (PLN/MWh) [C]	Steam Coal (PLN/t) [D]	EUA (PLN/tCO2) [E]	Electricity (PLN/MWh) [F]	Natural Gas (PLN/MWh) [G]	Steam Coal (PLN/t) [H]	EUA (PLN/tCO2) [I]	Electricity ((F)/[B] -1) [J]	Natural Gas ((G)/[C] -1) [K]	Steam Coal ((H)/[D] -1) [L]	EUA ((I)/[E] -1) [M]
2021	261,0	90,8	241,3	107,8	223,5	71,0	215,4	123,5	-14%	-22%	-11%	15%
2022	260,8	93,1	247,4	107,8	239,5	74,9	221,7	124,8	-8%	-20%	-10%	16%
2023	267,3	95,4	253,5	110,6	246,0	76,8	232,3	126,2	-8%	-20%	-8%	14%
2024	274,0	97,8	259,9	113,3	252,2	78,7	238,1	129,3	-8%	-20%	-8%	14%
2025	280,8	100,2	266,4	116,2	258,5	80,7	244,0	132,6	-8%	-20%	-8%	14%

Notes:

Shaded cells represent forward prices for Calendar Year contracts as of February and November 2020.

Values for years where forward curves were not available at the time of analysis have been inflated at 2,5%/yr.

Sources:

[B] : [I] = The ICE (<https://www.theice.com>) and TGE (<https://tge.pl>) via Montel (<https://www.montelnews.com>)

[J] : [M] = Calculation

We use commodity and power prices in forward markets from 2021-23, and thereafter assume these rise by inflation (2.5%). Regarding foreign exchange prices, we assume these are unchanged, applying today's spot price through 2030. We apply changes to these prices to our calculation of PGE earnings before interest, taxes, depreciation, and amortisation (EBITDA). In calculating EBITDA, we focus solely on PGE's generation business, i.e., excluding electricity distribution and supply. We apply fixed capacity factors based on data from Poland's National Energy and Climate Plan. This is a largely static model: We do not account for hourly despatch or seasonality. We assumed installed fossil fuel and renewables capacities according to two core scenarios, before and after the publication of PGE's "Strategy 2030." We also introduced a high- and low-carbon price scenario, the latter based on the present forward market (c. €28 in 2024), and the former raising carbon prices to €35 in 2024 and €40 in 2030. We do not account for any corresponding power price inflation as a result of these higher carbon prices.

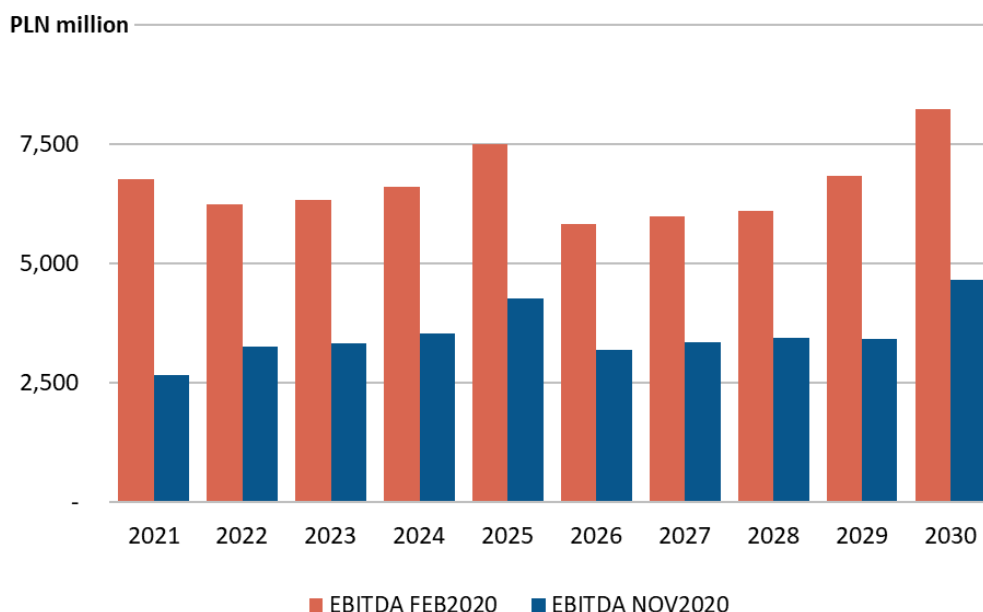
We note that by locking in today's forex prices to 2030, and escalating the forward curves rather than forecasting prices, we are penalising PGE, not least given the volatility of forex and commodity prices that could move back in PGE's favour. However, we justify this penalty to highlight PGE's own failure to diversify its

energy mix. This failure has made the company vulnerable to margin squeezes in the short to medium term, caused by factors outside its control, including moves in commodity and forex prices. Over the long term, unmitigated large exposures to variables such as adverse policy changes or technological advances in renewable energy sources (RES) could cause capital destruction and lead to stranded assets.

Our two core scenarios are before and after COVID, with PGE’s previous and new energy strategies, respectively. We call these two scenarios **EBITDA Feb 2020** and **EBITDA Nov 2020**. We find PGE’s EBITDA is severely affected by commodity price changes. PGE’s “Strategy 2030” is inadequate to offset this negative effect.

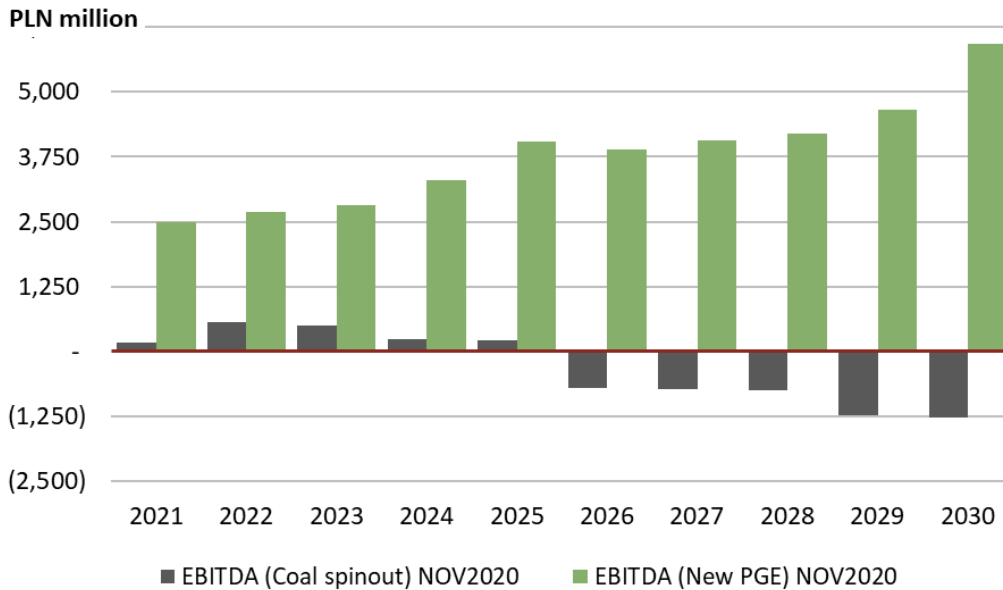
First, we compare PGE’s all-generation EBITDA before and after the new strategy and COVID. Figure 2 shows that EBITDA falls by about half through the next decade, in the EBITDA Nov 2020 scenario, a shocking impact.

Figure 2: PGE EBITDA Before and After COVID and “Strategy 2030”



Drilling into our updated EBITDA projections, we separate PGE’s coal and lignite from the rest of the business, i.e., renewables, CHP and gas. We show that the combined coal and lignite business loses money after 2026, an astonishing finding given that this accounts for 86% of PGE’s electricity generation today (see Figure 3). The EBITDA of the rest of PGE’s business rises to PLN5.9 billion in 2030, but still lags our projected pre-COVID EBITDA of the combined business (PLN8.2 billion, see Figure 2). Our main takeaway from Figure 3 is that PGE must radically accelerate both its renewables capacity additions and its coal power retirement.

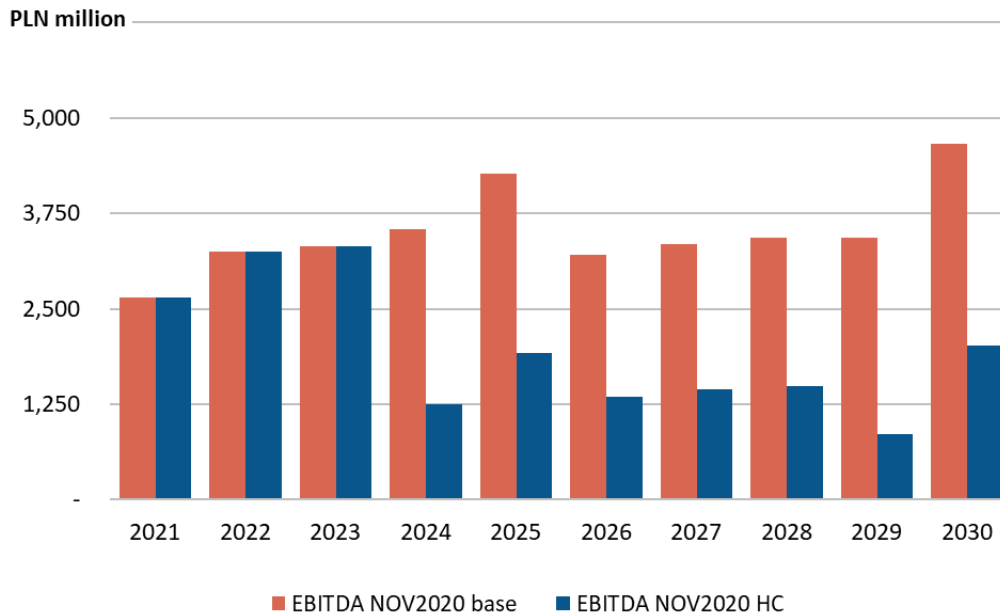
Figure 3: Relative EBITDA Performance of PGE's Coal Generation vs the Rest (Renewables, CHP and Gas)



Finally, we investigate the impact of a higher carbon price, rising to €35 in 2024 and €40 in 2030. We note that this "high-carbon price" scenario in fact is only 23% more than the base scenario and is entirely plausible, given that the European Commission in September announced plans to tighten its emissions reduction target in 2030. The plans call for a 55% reduction versus 1990 levels, compared to a previously planned 40% reduction.⁵ Under our high-carbon price scenario, PGE's generation business suffers even more, falling more than half when compared with our base-carbon price post-COVID scenario, to PLN2 billion from PLN4.7 billion (see Figure 4).

⁵ European Union. 2030 Climate & Energy Framework. October 23, 2014.

Figure 4: PGE EBITDA Post-COVID With “Strategy 2030,” Comparing High- vs Base-Carbon Price Scenario



PGE’s EBITDA is so deeply affected by high carbon prices because of its coal and lignite generation. We note that PGE has announced under its “Strategy 2030” plans for new combined cycle gas turbines (CCGT) and coal to gas CHP conversions. Although gas is less carbon-emitting than coal, it still faces carbon costs. In addition, the use of gas is coming under growing policy pressure. Financing or investing in combustion-based forms of generation today will have a potentially huge price tag if the transition to a cleaner, fossil-free EU is completed before such generation has fully depreciated. That transition is already in progress and jeopardizes future cash flows from gas generation. Supporting this view, the EU’s 2050 net-zero goal indicates that fossil fuels will be phased out quickly enough to strand gas assets being built today.

PGE’s current energy investment options are in a sense zero-sum, between fossil fuel and renewables—more of one means less of the other. In this context, and given the higher risks and uncertainties associated with fossil fuels, it is preferable for PGE to invest urgently today in profitable, cash-generating renewable power capacity and shift decisively from a legacy of under-performing assets.

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