

PGE

A briefing for investors, insurers and banks

This briefing paper presents analysis and recommendations to assist investors, insurers and banks in achieving a coal phase-out from PGE in line with the climate targets of the UN Paris Climate Agreement and protecting citizen's health.

The briefing gives an overview of the utility's power mix and existing coal plant fleet, the financial risks facing these power assets, pathways for how the utility might re-align its coal plant fleet to the UN Paris Climate Agreement, and the actions being taken already or recommended to investors, insurers and banks.

PGE at a Glance:

- PGE is currently building two new coal power plants: 2 units at Turow and a unit at Opole and plans to extend lignite mining.
- The company has the highest share of coal in its power mix compared to other major European utilities.
- PGE has been buying up other coal plants. PGE significantly increased its coal capacity by buying EDF's coal assets,
- High reliance on coal means PGE has more difficult access to finance and services by banks, investors and insurers.

Investors, insurers and banks should require PGE to:

- Commit to align its business model with the Paris Agreement and, more concretely, to adopt a time-bound climate science-based target built on forward-looking climate-scenario analysis.
- Put an immediate end to capital expenditure for new coal plants and coal mines.
- Publish a clearly articulated and detailed roadmap for the gradual closure (not sale) of existing coal plants, ending at the latest in 2030.
- Join and report according to the TCFD guidelines.
- Investors, insurers and banks should also adopt 'no coal policies' along the lines of the 'principles and approaches for impactful public coal policies' that were developed As PGE appears unwilling to close its coal assets commensurate with what the Paris Agreement requires, we recommend divestment from PGE.

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1. Introduction

In the Paris Climate Change Agreement, 195 countries committed to curb the current emissions trajectory in accordance with climate science. This commitment translated into an objective to ‘hold the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C,’ and ‘make finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development’.

The implications of the Paris Agreement for coal and renewable power are clear. Investors have recently acknowledged climate science research that support the need to phase out coal by 2030 in the Organisation for Economic Co-operation and Development (OECD) countries and in the European Union; by 2040, in China; and by 2050, in the rest of the world. More recent analysis by the IEA ‘beyond 2°C scenario’ indicates that non-OECD countries should phase out production from coal power even earlier, by 2040.

There is a growing consensus amongst leading financial institutions globally that as the world is moving irreversibly towards a low carbon economy, coal power assets are going to be stranded, and hence constitute growing financial and reputational risks.

The recent Intergovernmental Panel on Climate Change (IPCC) report reminded us that there is no time to waste if we want to stop runaway climate change and that significant efforts are required if we are serious about limiting global warming to 1.5°. According to the report, the primary energy from coal must be reduced by 61-78 % globally in 2030 (% rel to 2010) globally in the scenarios with limited or no overshoot.

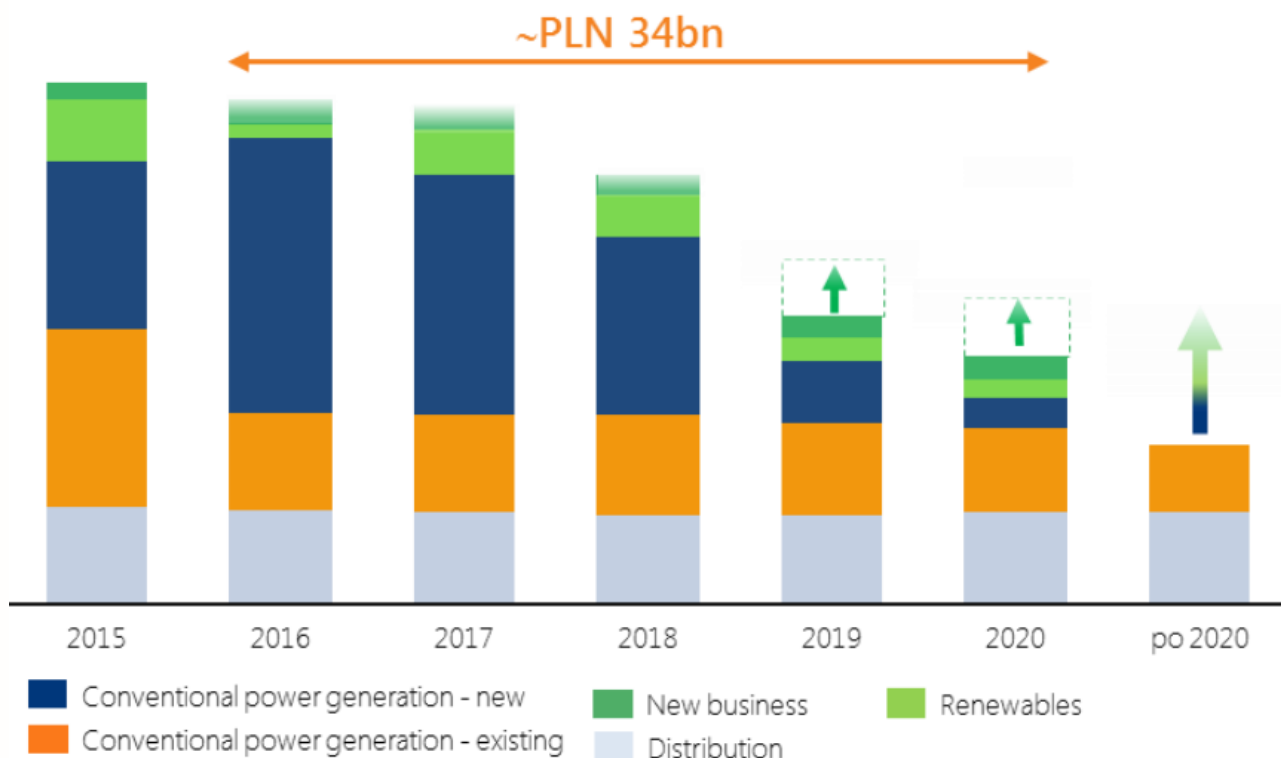
2. Power mix and coal plant fleet of PGE

PGE's strategic plans

Polska Grupa Energetyczna (PGE) has an ambitious 5-year investment programme. It says it will invest over €8 billion (34 billion Polish Zloty, PLN) from 2016 to 2020 (see Figure 1). Roughly two-thirds of this investment will go into hard coal and lignite. PGE is not only investing in extending the lives of existing hard coal and lignite plants; it is also building new ones.

Two coal plants are currently under construction – a lignite unit at Turow (Unit 11, 490 MW) and a hard coal plant at Opole (1800MW). However, the Polish Energy Minister in 2017 said that no further coal plants will be built¹. And PGE postponed a decision to develop its mega-project at Gubin (3000MW) until 2020². This may mean that no further new coal plants will be initiated by PGE.

Picture 1: PGE Group strategy (Source <https://www.gkpge.pl/Investor-Relations/PGE-Group/Strategy>)



¹ <https://visegradpost.com/en/2017/11/03/poland-will-end-coal-investments-move-toward-nuclear/>

² <https://www.cire.pl/item,145666,1,0,0,0,0,0,pge-decyzja-o-budowie-elektrowni-jadrowej-po-2020-roku.html>

PGE's strategy beyond this is far from fixed. In 2016, it released its long-term strategy, which was to create options for (a) new lignite mines; (b) new nuclear plants; (c) offshore wind³. Since then, it appears to have revised the idea of building new lignite and new nuclear installations in favour of offshore wind and new gas. However, the plans remain fluid.

- **Investment in offshore wind?** PGE has made the most progress developing 2.5GW of offshore wind plans for 2030⁴. Meanwhile, the Polish grid operator says that up to 8GW of offshore wind could be built in Poland⁵, and Wind Power Europe has estimated that a 750TWh/year of electricity from offshore wind in the Baltic Sea⁶ would be economic, now that costs have fallen so much.
- **No new nuclear?** Acknowledging the above opportunity, PGE seems to have prioritised wind over nuclear, and dropped plans to build new nuclear on the basis that it would not have the financial capital for both⁷. The Polish state may also give up on its nuclear ambitions, or else PGE could yet be forced to develop plans for new nuclear.
- **New gas plants?** Since its 2016 strategy document, PGE has also developed plans to expand Dolna Odra as a gas power plant⁸. It is not yet clear how pro-actively it plans to develop other new gas plants.

Perhaps the biggest uncertainty is PGE's strategy around new lignite mines. More than anything, its investment strategy for these may determine how quickly its two larger lignite plants – Bełchatów and Turów – are retired. As the main Bełchatów pit runs out, PGE is looking to supply Bełchatów from the Szczerców pit, even though the latter's lignite is of poorer quality. PGE will likely still need to retire some units, however, as Szczerców cannot meet the demand. Plans are being made for a mine expansion at Turów. It is, however, uncertain how successful this will be, as developing new mines usually incurs substantial costs.

Shareholder questions to management in spring 2018 about future plans for its coal power plants revealed that PGE has no clear plans to decarbonise. The questions and answers are available here: <https://www.gkpge.pl/Investor-Relations/Current-reports/20-2018>

³ See <https://www.gkpge.pl/Investor-Relations/PGE-Group/Strategy>

⁴ <https://af.reuters.com/article/commoditiesNews/idAFL8N1S271L>

⁵ <https://windeurope.org/newsroom/press-releases/ambitious-8gw-of-offshore-wind-planned-that-will-put-poland-back-on-wind-energy-map/>

⁶ <https://windeurope.org/newsroom/news/more-regional-cooperation-key-to-unlocking-offshore-wind-potential-in-the-baltic-sea/>

⁷ <https://uk.reuters.com/article/uk-poland-energy-exclusive/exclusive-pge-picks-baltic-wind-over-nuclear-as-poland-embraces-green-power-idUKKBN1B0LG>

⁸ <https://www.gkpge.pl/Biuro-Prasowe/Komunikaty-prasowe/korporacyjne/Blok-gazowy-wiodacym-wariantem-dla-nowych-mocy-w-Elektrowni-Dolna-Odra>

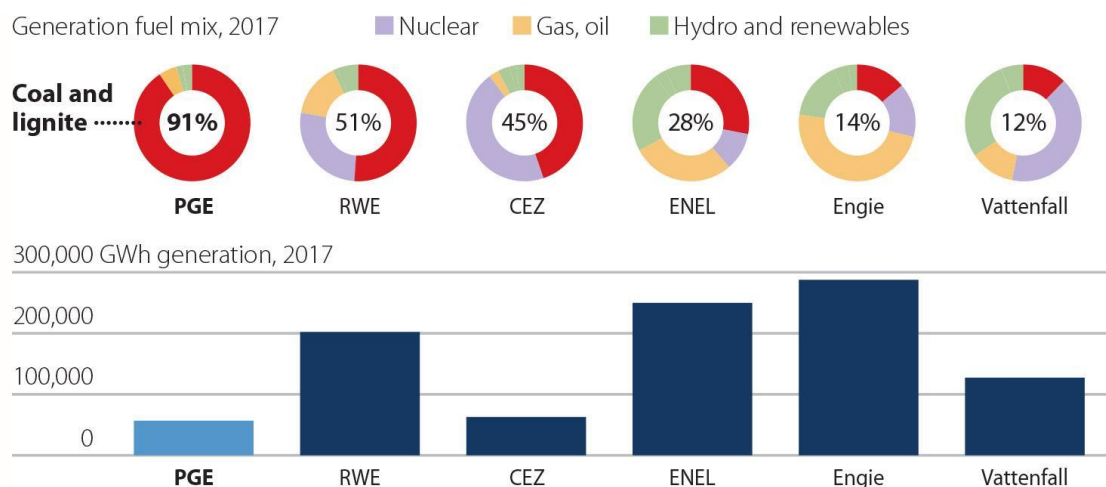
PGE's power mix and coal plant fleet

91% of PGE's electricity is generated from lignite and hard coal – by far the highest proportion of any major European utility (see table 1).

Table 1: PGE power mix compared to other utilities (source: IEEFA⁹)

Poland's PGE is far more dependent on coal than other big European utilities

PGE depended on coal and lignite for more than 90 percent of its generation in 2017; its power company peers used far less. Two others, EDF and Iberdrola, used coal for less than four percent of their generation.



Source: IEEFA interpretation of utility company 2017 annual reports

PGE is continuing to invest in existing coal: It is investing 2.2 billion PLN (€500 m) into its plants just to comply with the latest air pollution limits, according to media reports in October 2018¹⁰.

PGE is building two new coal plants: Opole, a 1 800MW hard coal 2 units, will be built at a cost of €2.7 billion (11.6 billion PLN), the largest infrastructure project in Poland since 1989. In February, it was announced it would be delayed and commissioned in 2019, a year late¹¹. Meanwhile, with PGE's other project – Turow 11 – it had to alter the contract to comply with new pollution limits due in 2021, adding to the project's cost¹². This is now scheduled to be completed in 2020¹³.

PGE has not yet officially cancelled its 3 000MW mega-project at Gubin. Even though the Energy Minister said in 2017 that no further coal plants would be built¹⁴, PGE postponed a decision regarding the project, until 2020¹⁵, rather than cancelling it.

PGE has a stake in Polish hard coal mining group PGG (Polska Grupa Górnicza). In 2016, PGE and other state-owned companies were obliged by the government to invest 500 m PLN each

⁹ http://ieefa.org/wp-content/uploads/2018/06/Decision-Time-at-Polands-PGE_June-2018.pdf

¹⁰ <https://www.money.pl/gielda/wiadomosci/artukul/pge-szacuje-naklady-na-dostosowanie-jednostek,172,0,2417580.html>

¹¹ <https://af.reuters.com/article/energyOilNews/idAFL8N1QD0V8>

¹² <http://www.modernpowersystems.com/features/featureworld-first-turow-11-a-lignite-plant-that-meets-bref-standards-5653442/>

¹³ <https://elturow.pggielk.pl/Aktualnosci/Chlodnia-nowego-bloku-energetycznego-w-Elektrowni-Turow-jak-drapacz-chmur>

¹⁴ <https://visegradpost.com/en/2017/11/03/poland-will-end-coal-investments-move-toward-nuclear/>

¹⁵ <https://www.cire.pl/item,145666,1,0,0,0,0,0,pge-decyzja-o-budowie-elektrowni-jadrowej-po-2020-roku.html>

in a share of PGG, to help rescue the country's hard coal mining sector. This may lead to future losses for the PGE group¹⁶.

PGE is planning to start excavating Zloczew lignite deposit, a 600 million tonnes of lignite reserve, which could supply feedstock for its 5.3 GW Belchatow plant.¹⁷

PGE has been buying up other coal plants. It significantly increased its coal capacity by buying EDF's coal assets, adding 3.3 GW of coal capacity in 2017.¹⁸

PGE has not announced a closure date for any of its plants. Having said that, five units are promised for retirement, with a total 1 600MW of capacity. These include Unit 1 at Belchatow (closure planned for June 2019), in part because Belchatow is constrained regarding the amount of lignite available. The remaining 4 units are hard coal: two units each at Opole and Dolna Odra. But these represent only 12% of PGE's total coal capacity; 88% is without a retirement plan.

Here are some insights into PGE's coal fleet (see table 2):

- Belchatow is the biggest single CO₂ emitter in Europe. In 2017, it emitted almost 38 million tonnes of CO₂.
- In 2016, based on modelling with 2016 pollution data, air pollution caused by PGE's coal power plants contributed to an estimated 1179 premature deaths, the third highest in the EU. The costs of health impacts due to PGE's coal pollution are estimated at € 1 789 million (median).

¹⁶ See <https://dziennikzachodni.pl/jakie-straty-przyniesie-polska-grupa-gornicza-gornictwo-wciaz-na-minusie/ar/10757384>

¹⁷ <https://www.spglobal.com/platts/en/market-insights/latest-news/coal/032918-poland-approves-environmental-license-for-new-lignite-deposit>

¹⁸ 91% of the EDF assets was coal, the other 9% was gas

Table 2: PGE operational coal plant fleet (Source: Europe Beyond Coal database; Last Gasp report¹⁹)

Plant name	Capacity (MW)	Fuel	# Units operational	Age of oldest operational unit	2017 CO2 emissions (EU ETL)	Premature deaths (modelled, 2016 emissions)	Health cost, median, mEUR (modelled, 2016 emissions)	Retirement date
Belchatow	5 400	Lignite	13	37	37 646 220	489	740	Possible retirement of some units due to lignite shortage after 2020
Turow	1 488 excl unit under construction	Lignite	6	55	7 108 058	209	322	Yet to announce; depends on mine expansion
Rybnik	1 775	Hard coal	8	46	6 484 111	175	265	Yet to announce
Opole	1 532 excl unit under construction	Hard coal	4	25	6 278 862	60	91	Yet to announce
Dolna Odra	1 362	Hard coal	6	44	3 849 980	85	128	Yet to announce
Krakow	350	Hard coal	3	48	1 775 841	29	44	Yet to announce
Gdansk 2	217.3	Hard coal	4	45	1 236 591	19	29	Yet to announce
Wroclaw	263	Hard coal	3	48	1 167 224	14	21	Yet to announce
Bydgoszcz II	192	Hard coal	4	47	726 992	30	46	Yet to announce
Gdynia	105.2	Hard coal	2	38	668 579	16	23	Yet to announce
Pomorzany	134	Hard coal	2	59	399 017	30	46	Yet to announce
Czechnica	132	Hard coal	3	63	355 460	16	25	Yet to announce
Szczecin	68.5	Hard coal	1	61	1 129	6	10	Yet to announce
TOTAL	13 019				67 698 064	1179	1789	

¹⁹ <https://beyond-coal.eu/last-gasp/>

3. Policy, financial and legal risks

The risk taxonomy

The industry-led Financial Stability Board (FSB) Task Force on Climate-related Financial Disclosures (TCFD) has forged unprecedented convergence across industry and G20 governments on climate-related financial risks. The coal power sector is particularly sensitive to risk that arises from the transition to a low-carbon economy – which is defined by the FSB TCFD in terms of policy changes, legal challenges, technology shifts, market developments and reputation.

The paragraphs below highlight how PGE's coal fleet is exposed to such risks.²⁰

Rising carbon prices

Prices have quadrupled from about €5/tonne in May 2017, to over €20/tonne in October 2018. Based on PGE's CO₂ coal emissions of 68 million tonnes in 2017, **this would have quadrupled PGE's annual carbon costs from €340m to €1 700m.**

This comes at a time when PGE's free allocation is being phased out. It had almost complete protection up to 2012, and then from 2013-2016 received almost half its permits for free. But from 2017, it will receive permits for less than 1% of its annual emissions, offering almost no protection as the carbon price starts to rise for the first time. PGE, unlike utilities such as RWE and CEZ, has almost no "portfolio" offset from CO₂-free nuclear or hydro plants, leaving it more exposed than any other utility.

For PGE's hard coal plants, the impact on profitability has been large, as they have been hit with higher costs for both hard coal and carbon.

PGE's lignite plants have so far not been impacted, because higher prices for hard coal and gas have pushed electricity prices higher than would be expected, but this is unlikely to last. Carbon prices will continue to stay high, and there are additional pressures on electricity prices.

First, more wind and solar power are being built in Poland and neighbouring countries, which will reduce electricity prices. The more wind and solar power is generated, the better consumers are insulated from higher CO₂ prices, and the worse this is for coal generators like PGE.

Second, self-generation will reduce electricity prices. 60% of electricity in Poland is bought by industry, many of the larger players of which are investing in their own energy sources, as they are faced with a wholesale electricity price that is the highest in the region. PKN Orlen, for example, has built two CCGT's with 1GW capacity.

²⁰ For more general information see: WWF (2017), . WWF (2017), Asset owner guide on coal and renewable electric power utilities. WWF (2018), .

What is more, CO₂ prices could rise even further. A report, *Carbon Countdown*, released on 21 August 2018 by Carbon Tracker Initiative, forecasts that CO₂ prices will rise to €25 by year-end, and €40 by 2020.

This raises a lot of questions around PGE's sizeable investment strategy. A recent blog by think-tank IEEFA discusses some of these concerns, and the apparent lack of concern by PGE for higher carbon prices²¹.

National coal phase-out commitments constitute a policy risk

Poland is likely to be one of the last countries in Europe to phase out coal. However, coal phase-outs in other countries will put pressure on the Polish government. Already, the Energy Minister has promised that Ostrołęka C will be the last new coal plant.²² The momentum for phasing out coal could also put pressure on future permits for coal mines and pollution limits, both of which could significantly curtail PGE's lignite activities.

The coal phase-out momentum is broader than Europe, as further underscored by the Powering Past Coal Alliance. The alliance was launched in November 2017 and currently counts 26 national governments, 8 subnational governments and 24 private partners – each recognising and working towards a coal phase-out 'no later than by 2030 in the OECD and EU28, and no later than by 2050 in the rest of the world'.²³

The Dutch case presents a compelling example of associated policy risks. In October 2017, the incoming Dutch government announced in its coalition pact that all coal plants would shut by end of 2029. Three of the five remaining plants in the country have only recently been completed, meaning that they will operate for less than half of their expected lifetime. The electricity utilities affected (Engie, RWE and Uniper) will suffer large write-downs.²⁴

Table 3: Overview of coal phase-out plans by European governments
(Source: Europe Beyond Coal Campaign)

2021	2025	2029/30	Under discussion
France	UK	Finland	Germany
	Italy	Netherlands	Spain
	Austria	Portugal	Slovakia
	Ireland	Denmark	Hungary

²¹ <http://ieefa.org/ieefa-europe-polands-pge-would-do-well-to-accelerate-plans-to-diversify-away-from-coal/>

²² <https://wysokienapiecie.pl/2529-minister-ostroleka-to-ostatnia-elektrownia-weglowa/>

²³ UK Government (2017), .

²⁴ IEEFA (2017), .

Investment needed to meet future air pollution targets

Toxic pollutants from the burning of coal, such as sulphur oxides (SO_x), nitrogen oxides (NO_x), and particulate matter (PM), have detrimental effects on public health. Modelling research has shown, for instance, that PGE coal plants in the EU caused an estimated 1789 premature deaths in 2016. This made PGE the third biggest polluter of all European utilities.

In April 2017, European Union member states agreed to a Best Available Techniques (BAT) Reference Document (BREF) that imposes revised pollution controls on large combustion plants, including power plants larger than 50MW. The underlying goal of these pollution controls is to improve air quality by cutting emissions of toxic pollutants

EU member states must incorporate the new, stricter pollution rules into permitting criteria for new and existing power plants, with full implementation no later than 2021. Since installation time of the relevant technologies can take up to 45 months – almost 4 years – electric power utilities will need to assess immediately if it makes financial and strategic sense to upgrade coal power plants to comply with BREF.

DNV-GL has analysed the impact of BREF on the EU coal fleet.²⁵ It found that 82% of operational coal plants in 2021 would not comply with pollutant controls for SO_x, NO_x and PM. The share of non-compliant lignite plants (89%) would be even higher than the share of hard coal plants (78%). **The total capital expenditure required to make these coal plants compliant with BREF could amount to €14.6 billion.** This raises the question of whether uncompliant plants need to be retrofitted to become BREF-compliant or closed to save high compliance costs.

PGE has been continuously investing into its existing coal plants in recent years, yet even so, many plants are not BREF-compliant. Table 5 is research from IEEFA that shows the status of PGE units and BREF compliance.

Table 4: BREF status of PGE coal fleet (Source: IEEFA²⁶)

Units	Overview			NOX			SOX			Dust		
				Emissions, mg/m3	Limit, mg/m3	Compliant?	Emissions, mg/m3	Limit, mg/m3	Compliant?	Emissions, mg/m3	Limit, mg/m3	Compliant?
	Fuel	Capacity MWe (gross)	Start date	2017 / when comes online	2016 (actual)	BREF (from 2021)	2017 / when comes online	2016 (actual)	BREF (from 2021)	2017 / when comes online	2016 (actual)	BREF (from 2021)
NEW BUILD												
OPOLE II												
5-6	Coal	1,800	mid-2019	65		85	80		75	7		5
						YES			NO			NO
TUROW II												
	Lignite	448		70		85	60		200	4		5
						YES			YES			YES
ORIGINAL PGE												
BELCHATOW												
1	Lignite	370	1981		294.9	175		376.9	320		3.6	12
						NO			NO			YES
2-6	Lignite	1,904	1983-1985		180.2	175		130.5	200		3.2	8
						NO			YES			YES
7-12	Lignite	2,340	1985-1988		159.3	175		151.8	200		2.8	8
						YES			YES			YES
14	Lignite	858	2011		167.5	175		114.2	200		0.4	8
						YES			YES			YES
DOLNA ODRA (ZEDO)												
1-2	Coal	454	1974	402	420	150	115	122	130	5	4.7	8
						NO			YES			YES
5-8	Coal	908	1975-1977	154	144	150	73	75	130	3	4.1	8
						YES			YES			YES
OPOLE												
1-4	Coal	1,532	1993-1997		189.8	150		96	130		7	8
						NO			YES			YES
TUROW												
1-6	Lignite	1,533	1963-2000	183	182	175	243	347	200	24	23	8
						NO			NO			NO
POMORZANY												
A & B	Coal	134	1959	501	504	180	789	823	200	42	54	14
						NO			NO			NO
ACQUIRED FROM EDF												
RYBNIK												
1-8	Coal	1,775	1972-1978	326	333.2	150	141	391.8	130	19	14	8
						NO			NO			NO
GDANSK-2												
5, 7, 9 & 10	Coal	217	1973-1994		187.5	150		130.2	130		4	8
						NO			YES			YES
KRAKOW LEG												
1-4	Coal	460	1970-1985		348	150		79	130		11	12
						NO			YES			YES

²⁵ DNV-GL (2016), Hard coal/lignite fired power plants in EU28: fact-based scenario to meet commitments under the LCP BREF.

²⁶ http://ieefa.org/wp-content/uploads/2018/06/Decision-Time-at-Polands-PGE_June-2018.pdf

PGE has said its total bill for BREF upgrades is PLN 1.9 billion, equal to €475m. PGE's PLN 1.5 billion (€367m) investments into Turow and Bydgoszcz are particularly noteworthy (see table 6). The IEEFA report flags these investments as the most questionable of all PGE's investments, and suggests that they should be shelved because they are likely uneconomic, and would put too high a reliance on coal, at a time when the financial risks of coal are higher than ever.

Table 5: Selected PGE BREF expenditure (Source: PGE via IEEFA²⁷)

Plant	Unit	Aim of capex project	Upgrade	Description of works planned/undertaken	Budget
Turow	1-3	Adaptation to future BAT conclusions requirements regarding permissible emissions of SO ₂ , NO _x and particulate, increase of availability and efficiency, as well as expansion of each turboset's nominal capacity by approximately 15 MWe	Various, no BAT identified by PGE	Comprehensive reconstruction and modernisation, including an upgrade of generator and steam turbines. The upgrades will result in a combined 45-megawatt (MW) output increase, and an increase in efficiency of up to 1,4%.	759
	4-6	To decrease the SO ₂ emission level to standard required in IED (<=200 mg/Nm ³).	Wet FGD	Construction of desulphurization installations	530
Bydgoszcz	3-4	Reduction of SO ₂ emissions to a level allowing for further use after 2017	Semi-dry FGD, FGD	Construction of flue-gas desulphurisation	125 [1]
	3-4	Reduction of NO _x emissions to a level allowing for further use after 2017	SCR	Construction of flue gas denitrification installation	53
Source: PGE Management reports (2015-17)					Total 1467 PLN mln
Notes: [1] Includes 73 PLN M for the original FGD instalation by Alstom in 2016, and 52 PLN mln for the 2018 works					367 EUR mln

Environmental organizations are working to ensure that PGE abides by European pollution limits and gets no special exemptions. Public pressure for cleaner air also presents a risk to PGE: tighter air pollution limits in the future may further accelerate the closure of PGE's older, more polluting units.

As well as the tightening of air pollution laws, water pollution laws are also becoming more stringent²⁸. These can mean additional costs for PGE's lignite mines, which need investment to reduce the quantity of pollutants that enter local water systems.

In June 2018, IEEFA released a report entitled, **Decision Time at Poland's PGE: Why a High-Risk, Fossil-Heavy Strategy Doesn't Add Up**²⁹. In the report, IEEFA cast doubt on PGE's large investment programme into coal, and asked five key questions that shareholders should be putting to PGE management.

Liability and reputational risks

Strong resistance has made it harder to develop lignite reserves: there was a negative decision on ZE PAK's new mine in March 2017³⁰ and no EIA permit since then. Almost 2GW of ZE PAK's lignite is threaten with closure ahead of its economic lifetime. Arguably, this resistance has proved more troublesome in Poland than in Germany.³¹

²⁷ http://ieefa.org/wp-content/uploads/2018/06/Decision-Time-at-Polands-PGE_June-2018.pdf

²⁸ [http://www.europarl.europa.eu/RegData/etudes/IDAN/2017/599280/EPRS_IDA\(2017\)599280_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/IDAN/2017/599280/EPRS_IDA(2017)599280_EN.pdf)

²⁹ http://ieefa.org/wp-content/uploads/2018/06/Decision-Time-at-Polands-PGE_June-2018.pdf

³⁰ <http://ri.zepak.com.pl/en/reports/current-reports/1033-decision-of-the-regional-director-of-environmental-protection-in-poznan-on-the-oscislowo-opencast.html>

³¹ https://www.banktrack.org/download/what_ze_pak/whatzzepak_final.pdf

PGE will be expecting significant payments from Poland's new capacity market. In the first capacity payment auction in November 2018, PGE was granted capacity payments from 2021 for 11 652 MW ³². At EU level, the European Commission made a proposal that prevents capacity payments to coal plants. The Commission is concerned that countries like Poland might use capacity payments as state aid to coal plants. These capacity payments are therefore likely to be a temporary feature if the Commission rules are approved. In the future, payments may also be smaller than expected, with the capacity price depressed not only by the new Ostroleka C coal plant, but also new non-coal investment that it will attract. Moreover, in November 2018, the European Court of Justice has suspended the UK capacity market scheme, creating further uncertainty for the Polish scheme.³³

³² https://energetyka.wnp.pl/pge-zakontraktowanych-nie-mniej-niz-11-652-mw-obowiazku-mocowego,334396_1_0_.html

³³ <https://www.energylivenews.com/2018/11/15/uk-must-halt-capacity-market-payments-after-eu-court-ruling/>

4. PGE alignment with the Paris Agreement

FSB TCFD: the case for forward-looking climate assessments

The Task Force on Climate-related Financial Disclosures (FSB TCFD)³⁴ provides important guidance on how companies and investors can assess and disclose climate-related financial risks. It notably recommends companies to undertake and disclose forward-looking climate scenario analysis, which it considers instrumental to understanding how vulnerable organisations are to climate-related financial risks, and how such vulnerabilities can be addressed.

To our knowledge, PGE has not committed to these guidelines.

What climate science means for coal power globally and in Europe

According to the latest climate science, limiting warming to 2°C by 2100 means that the net emissions of greenhouse gases need to be reduced by 40-70% by the time we reach 2050, and brought to zero by the end of the century.³⁵ Respecting the more stringent limit of 1.5°C will require reducing emissions of greenhouse gases even more rapidly in the coming years and decades, and bring them to zero around mid-century.³⁶

This has two implications for coal power. First, research has shown that no new investments in fossil electricity infrastructure – notably coal – are feasible from 2017 at the latest.³⁷ Second, existing coal infrastructure needs to retire early: even with no new coal plant construction, emissions from coal power generation in 2030 would still be 150% higher than what is consistent with the well below 2°C limit.³⁸

The implications of the Paris Agreement for coal and renewable power are clear. Investors have recently acknowledged climate science research that supports the need to phase out coal by 2030 within member countries of the Organisation for Economic Co-operation and Development (OECD) and the European Union; by 2040, in China; and by 2050, in the rest of the world. More recent analysis by the International Energy Agency (IEA) ‘beyond 2°C scenario’ indicates that non-OECD countries should phase out production from coal power even earlier, by 2040. In the European Union, a quarter of the coal plants already in operation will need to be switched off before 2020, and a further 47% should go offline by 2025.³⁹

³⁴ <https://www.fsb-tcfd.org/about/>

³⁵ IPCC (2014), AR5

³⁶ Climate Action Tracker (Climate Analytics, Ecofys, NewClimate Institute, Potsdam Institute for Climate Impact Research)

³⁷ Pfeiffer, Millar, Hepburn, Beinhocker (2016), The ‘2°C capital stock’ for electricity generation: Committed cumulative carbon emissions from the electricity generation sector and the transition to a green economy, in Nature.

³⁸ ClimateAnalytics (2016), Implication of the Paris Agreement for coal use in the power sector

³⁹ ClimateAnalytics (2017), A stress test for coal in Europe under the Paris Agreement: scientific goalposts for a coordinated phase-out and divestment.

The analysis underscores how ambitious climate action is incompatible with continued coal-fired power generation in developed economies. That in turn illustrates the risk of investing in new coal plants or upgrading existing coal plants, both of which run a risk of becoming stranded assets. Investors, insurers and banks that wish to minimise financial risks and maximise returns should therefore re-align its involvement with PGE, pending PGE developing and implementing a business strategy that is aligned with the Paris Agreement.

Well below 2°C pathways for PGE: planning the coal phase-out

Climate Analytics

Climate Analytics developed a methodology to determine a phase-out schedule for coal power units in the European Union, published in 2017.⁴⁰ It builds on a well below 2°C pathway consistent with the Paris Agreement, which is tighter than the IEA 2°C scenario (450S).

The research provides two closure dates for each coal unit based on two perspectives: the **regulator perspective** prioritises shutting down the most carbon-intensive plants first, while the **market perspective** prioritises shutting down the least valuable plants in terms of revenue generation potential.

Both methods evaluate units on emissions performance and profit generation potential.⁴¹ The table below provides an overview of PGE's main lignite units closure dates under both perspectives. This analysis does not take into account national coal phase-out plans, as for instance in the UK: investors, insurers and banks should be wary that the actual phase-out timeline will be more stringent than what is presented by the modelling.

Table 6: Phase-out schedule due to Climate Analytics study

Coal unit	Regulator closure	Market closure
Belchatow	2023	2024-25
Turow	2021	2021
Rybnik	2022	2022
Opole	2025	2025
Dolna Odra	2025	2024
Krakow	2025	2024
Gdansk 2	2025	2025

⁴⁰ ClimateAnalytics (2017), Coal Phase Out in the EU - Detailed Information.

⁴¹ ClimateAnalytics (2017), A stress test for coal in Europe under the Paris Agreement.

5. Investor, insurer and bank action

There is a growing consensus among leading financial institutions that as the world moves irreversibly towards a low carbon economy, coal power assets are going to be stranded, and hence constitute a growing financial and reputational risk. Many investors, insurers and banks have adopted coal policies that have started to affect the access to financing for PGE. Below is an overview of these impacts, but it also highlights what additional action investors, insurers and banks need to undertake to bring the PGE business model fully in line with the Paris Agreement.

Tool: the Global Coal Exit List (GCEL)

The 'Global Coal Exit List' (GCEL) is the world's largest coal company database, providing key statistics on 775 companies and their subsidiaries. The database was developed by Urgewald, is open-source, free and can be consulted on <https://coalexit.org/>.

The GCEL includes three categories of coal companies: mining, utility and service companies (i.e. companies that provide services throughout the coal value chain such as dedicated trade, infrastructure, port terminals, finance, etc.). It provides data, key statistics and identifiers (ISIN codes, if available) for each company.

The GCEL includes utilities that qualify for one or more of the 3 following criteria:

- They are planning coal power expansion;
- They have a coal share of revenue/power generation above 30%;
- They operate more than 10 gigawatt of coal capacity.

PGE is included in the GCEL, which shows PGE as having 47 million tonnes of coal production, 9.6GW of installed coal capacity, 91% of its power production from coal, more than 50% of its revenue from coal, and coal expansion plans.

Impact of investor policies on PGE

A significant number of mainstream European investors have adopted public coal divestment policies. The majority of these policies identify thresholds for revenues or power production from coal. Some investors have also adopted divestment criteria based on companies' entire activity or development plans in the coal sector. Below are some examples:

- **Norges**, the Norwegian Sovereign Wealth Fund, blacklisted PGE back in 2015 because of its reliance on coal⁴².

⁴² <https://www.nbim.no/en/responsibility/exclusion-of-companies/>

- Half the **global reinsurance industry** has a restriction on coal in place⁴³ which mainly cover its investment for its own account. This includes Allianz, AXA, Generali, Hannover Re, Lloyd's, Munich Re, SCOR, Swiss Re, Zurich and the Markel Corporation, which together controlled 45% of the \$257.5 billion global reinsurance premiums in 2016.
- In addition to identifying companies based on their relative exposure to the coal sector, **Axa, Allianz, Candriam, Generali, Storebrand** and a growing number of smaller investors also screen companies that are planning new coal plants. This would include PGE.
- **AXA** has also disposed of companies that produce more than 20 million tonnes of coal a year; all these criteria would include PGE.

Coal policies of investors are getting more stringent over time, so it can be expected that they will affect PGE even more seriously going forward. Investors are also adding pressure through public engagement – as opposed to only engaging in dialogues behind closed doors. PGE is listed as one of the target companies of the **Climate Action 100+ Coalition** that asks companies (amongst others) to *'take action to reduce greenhouse gas emissions across their value chain, consistent with the Paris Agreement's goal of limiting global average temperature increase to well below 2-degrees Celsius above pre-industrial levels'*.⁴⁴

Impact of insurer policies on PGE

Within a very short period of time, all leading European coal underwriters, except for Hannover Re, Mapfre and the Lloyd's insurance market, have adopted public criteria restricting their insurance coverage to the coal sector.

- **Allianz, AXA, Generali, Swiss Re and Zurich** have ended underwriting support to stand-alone new coal plants and mines. **Munich Re** has ended similar support in industrialized countries.
- **SCOR** has ruled out facultative reinsurance coverage to new mines and to new lignite plants.
- **AXA** will not provide insurance packages in which more than 50% of premiums are linked to coal. This is relevant for existing coal plants and is expected to impact companies such as PGE that are strongly exposed to coal.
- **Swiss Re and Zurich** are committed to not provide coverage to companies generating more than 30% or 50% of their power production from coal.
- **Generali** will not provide coverage to new clients that generate more than 30% of their revenues or power production from coal, produce more than 20 million tonnes of coal a year, or are planning new coal plants. Generali is also engaging with existing clients, "monitoring their plans to reduce environmental impacts, their strategy to shift to low-carbon activities and the measures envisaged for protecting the community and

⁴³ <https://unfriendlycoal.com/2018/06/19/close-to-half-global-reinsurance-market-divests-from-coal/>

⁴⁴ <http://www.climateaction100.org/>

citizens”⁴⁵. Depending on the outcomes of the engagement dialogues in Q1 2019, Generali will decide to either end property coverage for coal-related activities of these companies or will renew them.

- **Allianz** has committed to fully phase out coal-based business models across its property and casualty portfolios by 2040. This implies that the insurer will have to reduce its exposure to coal companies over time and that clients will have to demonstrate their capacity to fully phase out their coal assets by 2040 or will lose Allianz’s underwriting support.

Impact of bank policies on PGE

13 European banks have ended direct finance to new coal plants, which to date has been the main focus of banks’ coal policies.⁴⁶ Policies that restrict corporate loans and shares and bonds underwriting are less developed, but 11 banks have adopted such policies. The following banks have adopted policies relevant to PGE’s activities:

- **ING** has committed to ‘by 2025 no longer finance new and existing clients in the utilities sector that are over 5% reliant on coal’; this would include PGE.⁴⁷
- **Société Générale** has committed to ‘limit the coal-fuelled part of its financed energy mix (installed MW) at 19% at the end of 2020, in consistency with the IEA 2°C scenario’.⁴⁸ This implies that the bank has an internal decreasing ‘coal budget’ for new transactions with its clients, and either clients must change their share of energy mix quickly enough or it needs to stop financing them.
- **BNP Paribas** conditions its support to the adoption of a “diversification strategy to reduce the share of coal in its power generation”. This will directly impact companies such as PGE that are highly exposed to the coal and are still expanding their activity in the coal sector.
- **ABN Amro**, of the Netherlands, has adopted a directive imposing an "obligation not to increase coal capacity" on financed energy suppliers and has an exclusion criterion for companies with a coal power share of more than 50%. PGE fails on both criteria.
- **ABN Amro, BBVA, Commerzbank, Crédit Agricole, KBC, Natixis and RBS** blacklist companies that produce more than a specific share of their electricity from coal or which do not have the capacity to meet the threshold within a short timeframe; this would include PGE.

⁴⁵ Generali’s coal policy can be accessed from this page : <https://www.generali.com/our-responsibilities/our-commitment-to-the-environment-and-climate>

⁴⁶ Banktrack provides an overview of commercial banks’ coal policies on their website.

⁴⁷ ING (2017), Updated Environmental and Social Risk Framework.

⁴⁸ Société Générale (2016), Coal-Fuelled Power Sector Policy.

6. Recommendations

As PGE appears unwilling to close its coal assets commensurate with what the Paris Agreement requires, we recommend divestment from PGE.

Those that engage with PGE should ask it to:

- Commit to align its business model with the Paris Agreement and, more concretely, adopt a time-bound climate science-based target built on a forward-looking climate-scenario analysis.
- Put an immediate end to capital expenditure for new coal plants and the retrofitting of existing coal plants.
- Publish a clearly articulated and detailed roadmap for the gradual closure of PGE's existing coal plants, ending at the latest in 2030.

Investors, insurers and banks should also adopt 'no coal policies' along the lines of the 'principles and approaches for impactful public coal policies' that were developed by the Europe Beyond Coal campaign (see box below).

Europe Beyond Coal's principles and approaches for impactful and meaningful public coal policies for financial actors

In order to meet the UN Paris Climate Agreement goals of limiting "global average temperature to well below 2 °C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 °C", no new coal power capacity may be built and coal power will need to be phased out in the coming years. Investors have recently acknowledged climate science research that supports the need to phase out coal by 2030 in the European Union and in Organisation for Economic Co-operation and Development (OECD) countries; by 2040, in China; and by 2050, in the rest of the world. More recent analysis by the IEA 'beyond 2°C scenario' indicates that non-OECD countries should phase out production from coal power even earlier, by 2040.

A. Overall commitment: to mitigate climate and financial risks associated with the coal sector, finance actors* should adopt a public "no coal policy", which supports the alignment of their business models with climate science-based targets that are consistent with the goals of the UN Paris Climate Agreement. This implies that finance actors should commit to over time (2030 in OECD/Europe, 2040 globally) eliminate coal assets from all business lines, and that all coal companies in which they are involved should either be actively engaged with or divested from.

B. Exclusion criteria for coal projects: as a consequence, finance actors should not provide or renew direct support to coal plants/mines/infrastructures worldwide - including project finance and other dedicated finance support, advisory mandates, insurance underwriting, investment.

C. Assessment criteria for exclusion of coal companies: the criteria below capture companies that are currently either expanding or are highly exposed to coal, in relative as well as absolute terms:

- Companies with coal expansion plans, including the construction/development/expansion of coal plant/mine/infrastructure, and life extension of existing coal plants through retrofit, acquisition of existing coal assets;
- Companies producing more than 20 Mt of coal per year, or with over 10 GW of coal power capacity;
- Companies that generate more than 30% of revenues from coal mining or produce more than 30% of power from coal.

By applying these criteria to their financial universe, finance actors can identify which companies are currently unlikely to be able or be unwilling to transition rapidly enough to a 100% renewables-based energy system, and reconsider financial support** accordingly. These criteria should become stricter over time, as the deadline for a complete coal phase-out is approaching.

D. Criteria for engagement with coal companies: additional criteria need to apply to companies that own coal assets, but are considered to still have an opportunity to transition rapidly enough to a 100% renewables-based energy system. By applying targeted and impactful engagement*** finance actors should ask those respective companies to:

- Adopt, within one year maximum, a decarbonisation target to gradually align their business model with the UN Paris Climate Agreement.
- Publish, within two years maximum, a clearly articulated and detailed implementation plan for the gradual closure (not sale) of existing coal plants and mines, exiting coal at the latest in 2030 in the OECD and in Europe, and in 2040 in the rest of the world.

By applying these four recommendations, a finance actor will achieve zero coal exposure within the respective decarbonisation timeframes.

*Finance actors include banks, insurers and investors.

**Financial services include lending, underwriting, advisory, insurance coverage and investment with regards to own accounts as well as third parties.

***Financial institutions must gradually reduce/remove financial support within set timeframes (6, 12, 18, 24 months) if the engagement process does not lead to significant results.

This paper was issued by the Europe Beyond Coal campaign in December 2018.

Europe Beyond Coal is an alliance of civil society groups working to catalyse the closures of coal mines and power plants, to prevent the building of any new coal projects and hasten the just transition to clean, renewable energy and energy efficiency. Our groups are devoting their time, energy and resources to this independent campaign to make Europe coal free by 2030 or sooner. beyond-coal.eu

These organisations have contributed to the development of the paper:

- Banktrack
- Development YES – Open-Pit Mines NO
- Sandbag
- The Sunrise Project

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