4B PLN in one month.

Energy regulators should look into windfall profits of coal utilities

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"An interesting piece of research. Yet another polemic voice against current politics and propaganda from the government circles that should be sound and serious. ***I fully recommend all actions needed to counteract information manipulation*** *(...). That's why it is so crucial to provide right access to data and information.*

"Monopolists offer their maximum price, which is not fully reflected in real costs and contract terms. This is yet another ***argument against the establishment of the National Energy Security Agency (NABE)."***

Maciej Bando
President of the Energy Regulatory Office (2014-2019)

Energy bills are rising astronomically, not only for an average Kowalski, but also for business and industry. Are we paying more due to EU climate policy? Not at all – electricity prices have risen dramatically above the reasonable costs incurred by power utilities. In December 2021 alone, Poland's coal power producers could make more than 4 billion PLN.

- Rising energy prices come as a result not only of the energy crisis across Europe and gas shortages but also of many years of delays in the implementation of climate policy by the Polish government and the excessive energy market concentration, dominated by coal.
- Instrat has calculated indicative profits of Polish coal power utilities. A typical power plant reached a margin as high as 70% of generation costs in December 2021. In that one month alone, it totalled as much as 4.01 billion PLN.
- In 2018, when margins reached 50 PLN/MWh, the Energy Regulatory Office initiated "proceedings to investigate possible market manipulation". By the end of 2021, margins had increased to 340 PLN/MWh - a level almost 7 times higher. Therefore, Instrat Foundation recommends further investigation of possible information manipulation on the energy market under Article 23p(1) of the Energy Law and Article 5 of the REMIT Regulation.
- Establishment of the National Energy Security Agency as suggested by the Ministry of State Assets and further concentration of coal-fired power plants into one single entity will only make the problem on the energy market even worse. So has warned the Ministry of Climate within intergovernmental consultations[1]. Instrat has been covering this topic in November 2020, and March 2021 proposing a 3 times cheaper mechanism for taking the unprofitable power plants off the system[2].

A Christmas gift for the Polish power sector

Poland is the infamous leader of the energy mix emissivity ranking in the EU. Therefore, along with the increase in CO2 costs, energy prices have also been rising for the past 4 years. But throughout 2019 and 2020, coal power utilities have reported margins (Clean Dark Spread, CDS) far from high - these have oscillated around zero or even been negative. In 2021, however, the power sector has more than made up for those few years of underperformance[3].

The wholesale electricity market price shot up from 200-300 PLN/MWh in the first quarter of 2021 to 824 PLN/MWh in December 2021. Naturally, costs have also increased, but not to the same extent. We decided to investigate, based on publicly available data (online platform energy.instrat.pl), how the margin of coal, lignite and natural gas (CDS) energy producers evolved over the period 2018-2021. In the second half of 2021, energy prices shot

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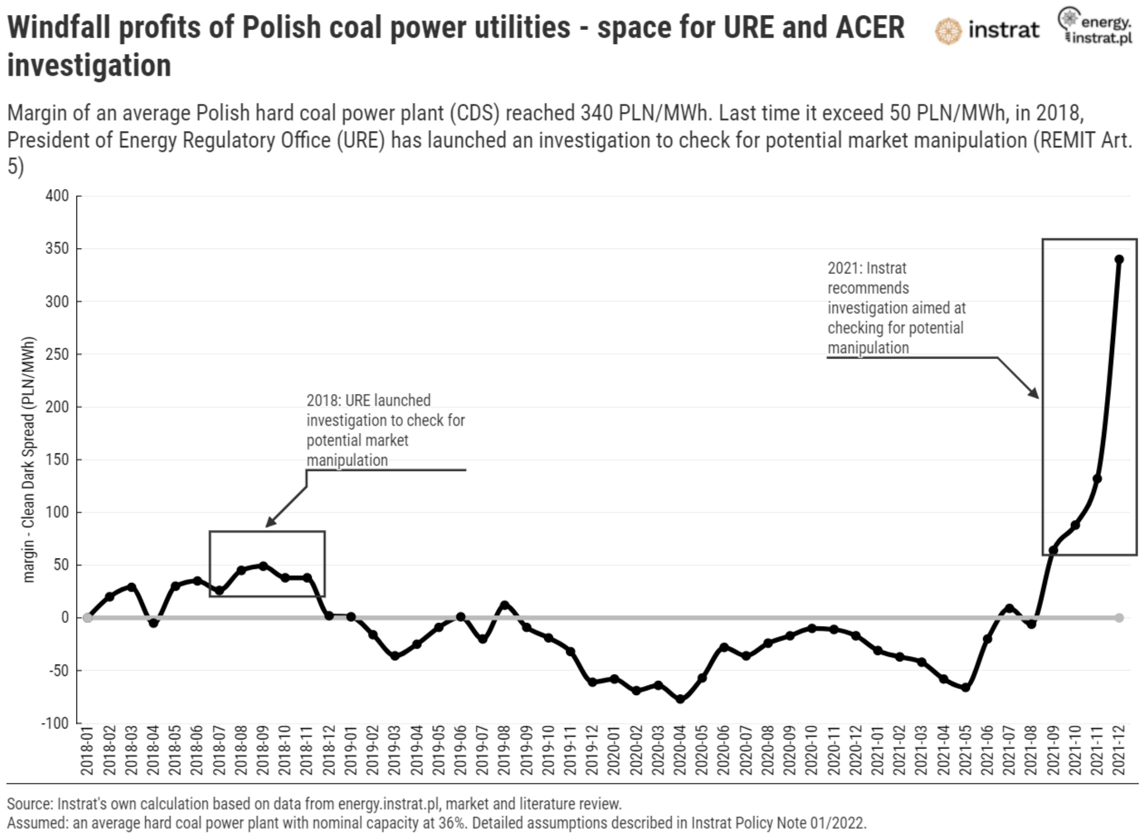
[1] WysokieNapiecie.pl, NABE crushed in government consultations, December 2021, https://wysokienapiecie.pl/42799-nabe-zmiazdzone-w-konsultacjach-rzadowych

[2] P. Czyżak, W. Kukuła (eds.), Poland's planned coal monopoly – who pays the price? Analysis of the restructuring of the Polish power sector, ClientEarth & Instrat, November 2020, www.instrat.pl/en/restructuring-plan.
Czyżak, P., Wrona, A. (2021). Achieving the goal. Coal phase-out in the Polish power sector. Instrat Policy Paper 01/2021, www.instrat.pl/en/coal-phase-out.

[3] Regularly, CDS estimates are published, among others, by the Jagiellonian Institute in the publication "Energetyka w liczbach", e.g:
Jagiellonian Institute, Monthly Journal of the Jagiellonian Institute 02/2022, February 2022, https://jagiellonski.pl/news/878/miesiecznik_instytutu_jagiellonskiego_02_2022.

up to record levels, as did the margins of coal-fired power plants. Clean Dark Spread, i.e. the profit calculated as the difference between the pool price of electricity (TGeBase) and variable costs (cost of fuel and its transport, CO2 emissions) in December 2021 reached the value of ca. 340 PLN/MWh.



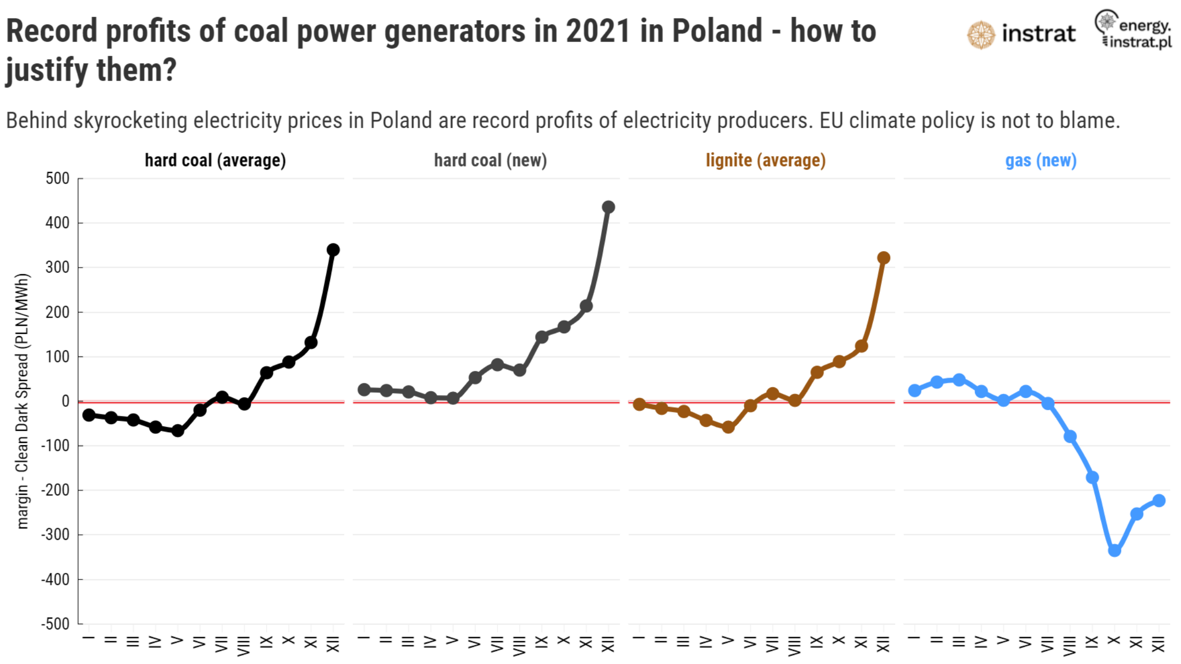
In Poland, three-quarters of total electricity is still produced from coal and lignite (energy.instrat.pl and entsoe data for 2021). In December 2021, the average market price of energy was 824 PLN/MWh and the variable cost was 484 PLN/MWh (for a typical hard coal-fired power plant with a nominal efficiency of 36%). Thus the profit is the difference, i.e. 340 PLN/MWh or about 70% of the production costs or 41% of the total market price.

We included in our analysis 4 power plants typical of the Polish power system that represent more than 90% of the conventional available operating reserve, namely:

- hard coal (HC) with a nominal efficiency of 36%,
- hard coal (HC) with a nominal efficiency of 45 %,
- lignite (L) with a nominal efficiency of 38%,
- natural gas with a nominal efficiency of 58%.

We reached an estimation of their share in energy generation in each month of 2021 (energy.instrat.pl data based on entsoe) and we calculated the nominal value of profit for coal-fired power plants (without gas units). **In December alone it was, according to our estimates, 4.01 billion PLN.**

The phenomenon of rising margins applies to almost all types of power plants – both older hard-coal and lignite units, new hard-coal units, but also other types, such as RES with lower variable generation costs. Due to rising natural gas prices on the wholesale markets, gas-fired power plant operators in Poland, small in number, had negative margins at the end of last year.



Source: Instrat's own calculation based on data from energy.instrat.pl, market and literature review.
Detailed assumptions described in Instrat Policy Note 01/2022.

Instrat Foundation, on the basis of a preliminary data analysis on estimated profits of coal-fired power plants, recommends that the President of the Energy Regulatory Office (URE), once again as in 2018, investigate the existence of possible manipulation on the wholesale electricity market[4]. The basis for initiating such proceedings is Article 23p(1) of the Energy Law and Article 5 of the REMIT Regulation. We are also submitting the relevant notification to the EU Agency for the Cooperation of Energy Regulators, an institution that has legal and technical capacity to support URE on this case.

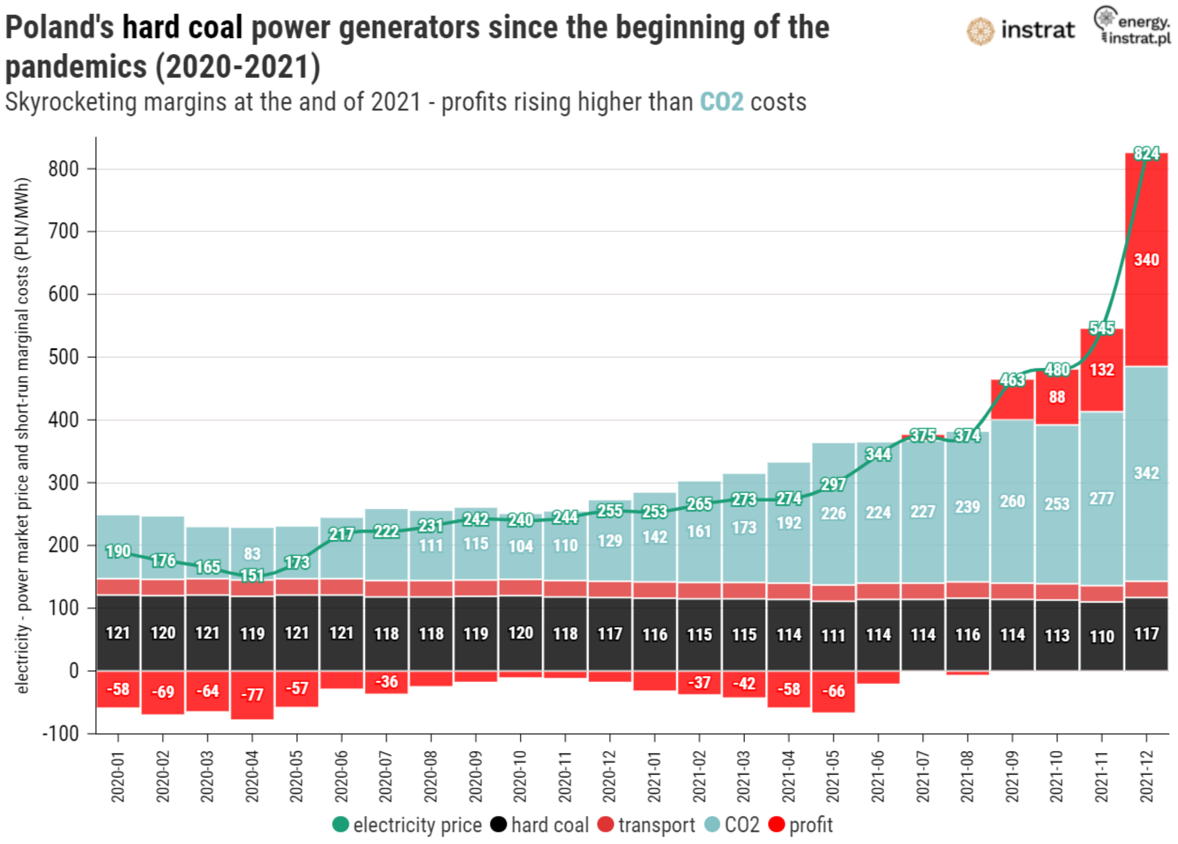
Does EU climate policy drive electricity prices up?

Fundamental factors are responsible for part of the increase in wholesale electricity prices – the economic rebound after the pandemic, gas shortages in Western Europe, fluctuations in energy generation from other sources and, of course, the increase in the price of CO2 emission allowances.

[4] Energy Regulatory Office, Further investigation by the President of the Energy Regulatory Office into possible market manipulation, December 2018, https://www.ure.gov.pl/pl/urzad/informacje-ogolne/aktualnosci/7956,Kolejne-postepowanie-Prezesa-URE-dotyczace-badania-ewentualnych-manipulacji-na-r.html.
Energy Regulatory Office, URE President filed another notice to the Prosecutor's Office on suspicion of a crime of manipulation in the wholesale energy market, May 2019, https://www.ure.gov.pl/pl/urzad/informacje-ogolne/aktualnosci/8257,Prezes-URE-zlozyl-kolejne-zawiadomienie-do-Prokuratury-o-podejrzeniu-popelnienia.html.

Actual profits may be even higher than our estimates. Energy producers source CO2 emission allowances not on an ongoing daily basis, but up to one year in advance. This means that the effective purchase price of EUA certificates is not equal to the current market price (as we assumed in our calculations). With rising CO2 allowance prices (rising from around 30-40 €/t to over 80 €/t by the end of 2021), **the wholesale electricity market, to the benefit of energy producers, reflects current higher CO2 prices rather than the lower prices from at least several months ago**. Thus, we conservatively underestimate in our calculations the profits that power plants may earn, due to the lack of data on the effective purchase price of allowances in the last quarter of 2021. These will appear in the interim reports summarizing Q4 and all of 2021 in March and April 2022.

The costs of the "EU climate policy" are a significantly smaller part of the wholesale electricity price as falsely suggested by the information campaigns launched by the power sector associations. The cost of CO2 emission allowances was about 41.5% of the wholesale market price in the record December 2021, with a further about 17.2% being the cost of coal and its transportation for a typical coal-fired power plant. The producer's profit was 41.3 percent, or nearly half the price of electricity, with only 58.7 percent being variable costs.



Source: Instrat's own calculation based on data from energy.instrat.pl, market and literature review.
Assumed: an average hard coal power plant with nominal capacity at 36%. Detailed assumptions described in Instrat Policy Note 01/2022.

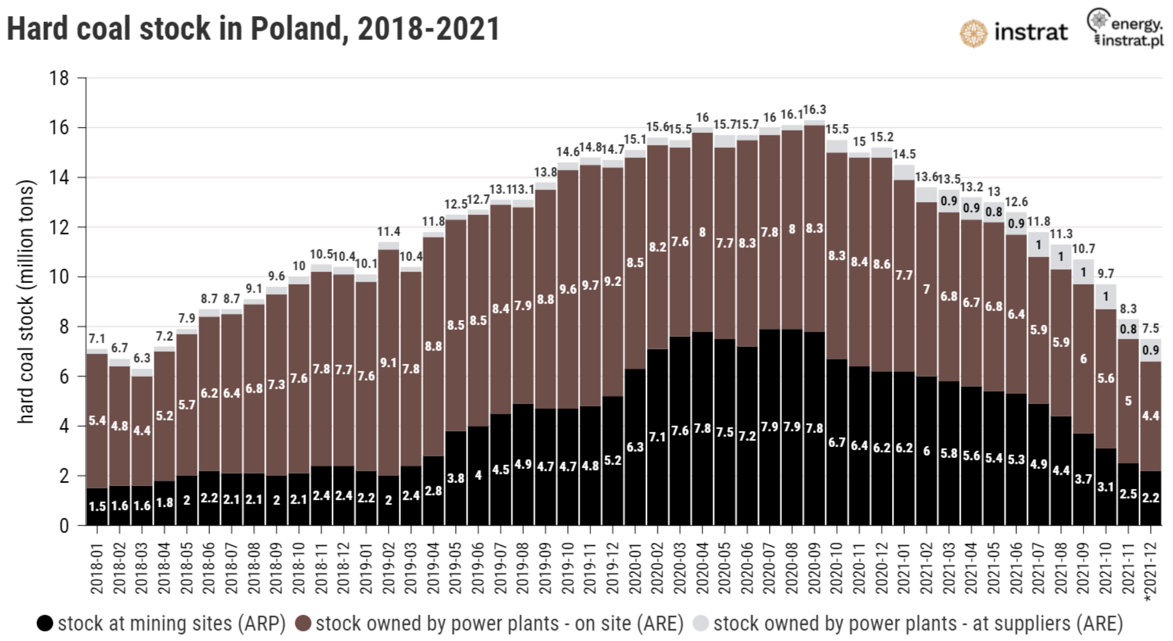
A detailed breakdown of electricity prices into different categories (CO2, fuel) from the consumer perspective are not subject of this report. According to a recent analysis by

Forum Energii, the share of CO2 costs in total electricity bill for an average household in 2022 will be up to 23% when taken all its components into account[5].

Coal shortages

Polish power plants regularly reported their inability to produce energy due to the lack of hard coal in their stockpiles, even though maintaining appropriate reserves is their obligation in accordance with Article 10(1) of the Energy Law, and the detailed rules for collecting and maintaining these reserves are specified in the provisions of Regulation of the Minister of Economy, Labor and Social Policy on fuel reserves in energy undertakings[6].

Energy producers should have used the market not only to make profits, but also to ensure energy security. Coal supplies are available from multiple suppliers via multiple carriers which should be employed in the event of a severe shortage. Many Polish power plants reported being unable to operate due to coal shortages, which probably had a significant impact on power prices and hence the profits they made[7].



Source: Instrat's own calculation based on data from ARP Katowice* and Energy Market Agency (ARE).
* Hard coal stock at mining sites estimated based on extrapolation due to lack of data for 2021-12 period at the moment of publication.

[5] Forum Energii, Lack of transformation elevates energy prices, not climate policy, February 2022, https://forum-energii.eu/pl/blog/ceny-energii-koszt-co2.
[6] Regulation of February 12, 2003 – Journal of Laws No. 39, item 338, as amended, hereinafter referred to as the Fuel Stock Regulation.
[7] Part of the supply shortage was due to the turmoil in the freight market, as reported by industry portals such as: WysokieNapiecie.pl, Modlimy się o łagodną zimę [We are begging for a mild winter], November 2021, https://wysokienapiecie.pl/42116-modlimy-sie-o-lagodna-zime.
WysokieNapiecie.pl, Zapasy węgla w elektrowniach i ciepłowniach na krytycznym poziomie [The coal reserves in power plants and heat generating plants are on a critical level], December 2021, https://wysokienapiecie.pl/43027-zapasy-wegla-w-elektrowniach-cieplowniach-na-krytycznym-poziomie.

Summary

(1) Skyrocketing wholesale electricity prices in Poland in 2021 translate into rising energy bills for consumers.

(2) Key driving forces behind high electricity prices were record profits of the coal power utilities, together with CO2 price increase or shortages of coal and gas. These were later reflected in energy bills of consumers not protected by the tariff system of URE - large industry, small business, but also vulnerable consumers such as hospitals or housing cooperatives.

(3) In December 2021, the margin of an average hard coal-fired power plant rose to 340 PLN/MWh, or about 41% of the power market price. CO2 emission fees amounted to the same amount – approx. 41% of the price. Thus, it is the increased earnings of energy producers and not the “EU climate policy” that has translated more into an increase in energy bills by the end of 2021.

(4) Instrat claims that high concentration in the energy market and the government's sluggish approach towards EU climate policy are to blame for rising energy bills. As indicated in the report, at the end of 2021, record margins of energy producers (CDS) reached nearly 340 PLN/MWh, almost seven times higher than in 2018 (50 PLN/MWh), when the President of the Energy Regulatory Office (URE) initiated proceedings to investigate potential manipulation on the energy market. Therefore, we recommend another investigation into possible manipulations.

Selected publication of Instrat Foundation within the research program Energy & Climate

- energy.instrat.pl - Power plant database
- energy.instrat.pl - Coal mining database
- Achieving the goal. Coal phase-out in the Polish power sector. (March 2021)
- A missed opportunity. Negligence in Poland's climate policy (PL) (April 2021)
- Wind in the sails. "10H" rule and onshore wind potential in Poland (PL) (May 2021)
- What’s next after coal? RES potential in Poland (June 2021)
- The missing element. Energy security considerations (December 2021)