

Chapter 10

The condition of the Polish energy sector in a post-pandemic environment

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10.1. The energy market in the face of Covid-19 pandemic

Worldwide, the energy market shapes the framework conditions and the course for developing economies. The protection of the interests of economic operators and citizens focuses on ensuring the security of energy supply, which is made possible by maintaining the capacity of the electricity system to ensure the continuity and security of the electricity grid and to balance electricity supply with electricity demand (The Energy Law of April 10, 1997).

In addition to the significant blackout risks, there were others. The turnaround of 2019 and 2020 brought about an emergency caused by the emergence of a new virus in China: Sars-CoV-2. It triggered the pandemic that continues to this day. It had socio-economic effects (Ambroziak, Gniadek, Strzelecki, & Wąsik, 2021), restricting economic activity, particularly by SMEs, to varying degrees. Large enterprises were also the subject of the study. An assessment of the economic situation of listed energy companies operating in Poland, which generate 70% of domestic electricity generation, found that companies investing in new solutions and technologies were best prepared for crises. The pandemic, which has severely weakened other economic sectors worldwide, has not significantly disrupted their production and supply chains

(Todo, Oikawa, Ambashi, Kimura, & Urata, 2021; Zhan & Lu, 2021). At the same time, the capital groups that had made the most significant investments reached the financial ratios at an appropriate level and, thanks to effective change management, were prepared to trade under the terms of the pandemic and had the highest stock market valuation (Rutkowska-Tomaszewska, Łakomiak, & Stanisławska, 2022). The conclusions drawn from the studies and the many limitations indicated the need for further research (Rutkowska-Tomaszewska et al., 2022). However, widespread uncertainty's indirect impact on the energy sector's condition was questionable. It was unclear whether these effects might be significant or what direction they would take. The stability of revenues and the ability to generate EBITDA could be affected, resulting in a reduction in resources for planned investments in the energy sector, thereby delaying the objectives of the energy mix and the reduction of CO₂ emissions (Ministry of Climate and Environment [MCE], 2021) or the need to change assumptions of the existing strategies of energy companies. The scale of the pandemic's impact limits the number of solutions introduced in response to social and economic phenomena occurring during the pandemic's development by public authorities and management (International Monetary Fund [IMF], 2021; Mączyńska & Pysz, 2021; OECD, 2022), including in the Polish energy market. Taking into account the volume of data analysed (Rutkowska-Tomaszewska et al., 2022), relating to the first year of the pandemic, the difficulties in predicting the duration of the pandemic, and the role of energy companies in the national economy, the analysis of the state of the energy sector actors is continued.

10.2. Research methodology

The study's main objective is to verify the economic situation after the end of the second year of the epidemic of energy market participants that was economically favourable in the first year of the pandemic. The author hypothesised that the continued state of the pandemic did not affect the ability of energy companies to continue the investments they had started before the outbreak of the pandemic and to make new investments in infrastructure (equipment investments), including the generation of electricity from renewable energy sources (RES).

Achieving the objective requires a spatial and temporal perspective of the study. The situation of energy companies is related to the macroeconomic situation. Studies from the Energy Regulatory Authority (Urząd Regulacji Energetyki [URE]), the Energy Market Agency (Agencja Rynku Energii) on electricity consumption and production, and the Central Statistical Office (Główny Urząd Statystyczny [GUS]) are used. The economic data of the largest capital groups in the energy sector, including Polish Energy Group (Polska Grupa Energetyczna [PGE]), TAURON and ENEA, and their operating seg-

ments are analysed. These capital groups have the largest share of the national electricity generation and installed capacity market and have at least two of the ten largest power plants in Poland. Groups are located in the entire energy value chain. The actors included in the study are active in the sub-sectors of energy generation, transmission, distribution, and distribution in the wholesale and retail markets.

Financial and operating data from the consolidated financial statements of the groups of companies, the annual reports of the parent companies, and the current reports were used to determine the economic situation of the energy companies.

The methods employed include a comparative analysis of changes in quantitative technical parameters, like gross electricity production, gross electricity consumption, installed power in the national electricity system (NES), and RES installed capacity in 2014–2021. Another method was obtaining financial data from companies and analysing selected economic efficiency indicators like sales, fluidity, profitability, debt ratio, EBITDA, and ROA. The strategy of capital groups in capital expenditure was analysed (CAPEX). The duration of this part of the study extends to the years 2019 and 2021.

10.3. The impacts of the pandemic on the European and national economy

After the first coronavirus case was reported in Poland on March 4, 2020, classes in schools, kindergartens, and crèches were suspended on March 12. Two days later, restrictions were imposed: in the operation of shopping centres, the ban on assembling more than 50 people in public, state, and religious events, restaurants were only allowed to offer takeaway food, gymnasiums, swimming pools, dance clubs, fitness clubs, museums, libraries, and cinemas were closed.

On March 23, the disease was declared in Poland, and from the following day, there was a restriction on freedom of movement other than for domestic, health, and professional purposes. The number of places available in public transport has been limited. A complete ban on assemblies was imposed, and the remaining restrictions were maintained. Further restrictions were introduced on March 31: limiting the number of customers in shops, closing wholesale shops on weekends, and applying senior citizens' hours. Hotels and short-term rentals, all hairdressing, cosmetics, tattoo, and piercing studios have been closed. In addition, staying on beaches and green areas was forbidden.

In April 2020, mass events were banned in most European countries, schools, kindergartens, and other educational and care facilities were closed, and mobility,

trade and service restrictions, and flight bans were imposed. In most countries, the regions with the highest infection rates (European Council and Council of the European Union, 2022; Stawicka & Stawicki, 2020) are exacerbated.

The economic impact of the restrictions and limitations justifies the allocation of funds from the EU 2020 budget to combat them. The new rules aim to ensure the immediate availability of cohesion funds to support small and medium-sized enterprises and to strengthen investment in products and services that help the health sector to respond more effectively to the crisis. In the coming months, the Eurogroup will support the labour market on the side of employment, employers, and the Member States. As part of the common strategy to reduce handicaps, it was decided that the Member States would be able to transfer funds between the funds and redirect them to the most disadvantaged regions as needed. Member States were able to apply for 100% financing from the EU budget programs to deal with the pandemic's effects and to apply for loans on favourable terms.

In May 2021, the epidemiological situation in Europe recovered. In Poland, restrictions on services, trade, and educational and cultural facilities were relaxed while respecting hygiene rules and limits for vaccinated persons.

The economic impact of the ongoing pandemic has been described as far more severe than the recession following the global financial crisis in 2009. The pandemic crisis of the European economy is also far greater than the oil shocks of 1973 and 1979 (Marcus, Poitiers, Guetta-Jeanrenaud, & Grzegorzczuk, 2021).

The overnight bans on business in Poland resulted in entrepreneurs being deprived of their source of income, which was often the only source of livelihood for entire families. The legislation created in extreme haste during the pandemic has led in practice to the great confusion of interpretation (Kosiedowski et al., 2021). The so-called 'anti-crisis shield' (The Act of September 7, 2020) was to improve the business situation, which soon proved insufficient and required additional shields. By the end of 2021, nine 'anti-crisis shields' were implemented, including industry shields (The Act of September 7, 2020).

The rush and the lack of proper recognition of the needs of entrepreneurs resulted in legislative shortcomings in the creation of the new law. Consequently, this led to further legislative changes. It turned out that the degree of complexity of the procedures and the dynamic changes in legal regulations also adversely affect the work of officials and institutions responsible for granting financial subsidies. Therefore, the law was not applied uniformly, and the waiting time for support was extended. The biggest problem was the dispersion of aid programs and the resulting confusion of entrepreneurs about the possibility of using state financial support or the lack of it. In addition, it turned out that the adopted solutions deprived units that

started operating shortly before the outbreak of the pandemic support. Unclear legal regulations and imposing on entrepreneurs' obligations that are difficult to enforce, such as shifting the rules of verifying vaccination confirmation on them, in a situation where they are not equipped with appropriate legal instruments, is a problem that remains to be solved. The progressing pandemic also resulted in the need to adapt tax regulations to the new conditions. As part of successive anti-crisis shields, the legislator introduced multi-faceted changes relating to the taxpayers' situation and the tax authorities' position. Along with the large number of amendments made at very short intervals and in a hurry, many questions have arisen in practice regarding the correct interpretation and scope of application of the new provisions (Kosiedowski et al., 2021).

The pandemic outbreak in 2020 brought a significant decline in many macroeconomic categories. In 2020, compared to the previous year, the value of investment outlays (in constant prices) incurred in the national economy decreased by 5.0% in most sections of the Polish Classification of Activities (an increase in only six sections). The total cost estimate of newly started investments in 2020 was 18.3% lower than in 2019, and the key role in newly started investments in terms of value was played by: transport and storage, industrial processing as well as electricity, production and supply of energy, gas, and steam. The share of these sections in the estimated value of all investments was 38.5, 20.9, and 13.1%. In the number of newly started investments, investments in electricity, gas, and steam generation and supply – 68.6%, and information and communication services – 10.4% – accounted for the dominant share.

In both years of the pandemic, pessimism also accompanied individual consumers – consumer confidence indicators in 2020 and 2021 were negative (Statistics Poland, 2022b). In 2020, the number of consumer bankruptcies increased by 64.5% YoY, and in the following year, the growth rate was 39.14%. In the last month of 2021, large enterprises assessed the negative impact of the pandemic's effects on their operations as insignificant or non-existent. There were also noticeable differences in the assessment of the impact of the pandemic on other spheres and parameters of activity depending on the size of enterprises. Large entities from the industrial processing sector declared problems with financial liquidity in 2021 more than four times less often than small ones and more than two times less often than medium-sized enterprises in this market segment. Entrepreneurs also experienced the impact of the pandemic on staff availability and management. In addition to organisational changes, such as the introduction of remote work, there were unplanned absences (leaves, childcare related to the transition to distance learning or other family members) and quarantine periods (Statistics Poland, 2020).

In December 2021, the employment situation in enterprises improved significantly. The percentage of employees performing remote work increased in this period

along with the size of the enterprise (medium and large, 4.7 and 6.9%, respectively), while the number of employees with unplanned absenteeism decreased by 43% in the analysed period in medium-sized entities in the analysed period, and in large enterprises – by 27%.

In 2021, the total turnover of non-financial corporations was 23.5% higher than in the previous year, with the cost of obtaining them increasing by 20.6%. The cost ratio improved from 95.6% in the previous year to 93.3%. 84.4% of all companies (compared to 80.4% in the previous year) achieved a net profit (Statistics Poland, 2022a). In 2021, investments by non-financial companies were the same as in 2020, when they fell by 7.3% in 2020. Decreased investments included mining and mining (7.8% compared with 16.0%) and electricity, gas, steam, and hot water production and supply (down 4.2% compared with 10.9% in the previous year).

10.4. Characteristics of the energy market

The Polish energy system is one of the largest within the European Union. It is among the top 10 in terms of the most important macro-energy indicators (Ministry of Climate and Environment, 2019). Access to electricity is ensured by companies operating in the sub-sectors of generation, transmission, and distribution and selling electricity in the wholesale and retail segments. Table 10.1 shows the selected parameters of the electricity market in Poland.

Table 10.1. Characteristics of the electricity market 2014–2021

Parameter	2014	2015	2016	2017	2018	2019	2020	2021
Gross electricity consumption (TWh)	158.7	161.4	164.6	165.9	170.9	169.4	165.5	174.4
Gross electricity production (TWh)	156.6	161.8	162.6	168.1	165.2	158.8	152.3	173.6
Installed power KSE (GW)	38.5	40.4	41.4	43.4	45.9	46.8	49.2	53.7
RES installed power* (GW) by URE	6.0	4.0	8.4	8.6	8.6	9.1	10.0	11.5
RES installed power (GW) by ARE							12.5	16.9

* The data include installations that have received a concession to produce electricity, the entry in the Register of Regulated Activities of the President of the Energy Regulatory Authority (Register of Small Plant Electricity Producers), the entry in the Register of Regulated Activities of the Director-General of the National Agency for Agricultural Promotion (Register of Agricultural Biogas Producers); and microinstallations covered by the certificate of origin system guaranteed or by an auction support scheme.

Source: own study based on (<https://www.ure.gov.pl/pl/energia-elektryczna/charakterystyka-ryнку/9659,2020.html>; https://www.pse.pl/dane-systemowe/funkcjonowanie-kse/raporty-roczne-z-funkcjonowania-kse-za-rok/raporty-za-rok-2021#t6_1; <https://www.are.waw.pl/>).

The figures presented in Table 10.1 show a systematic increase in electricity consumption in the country from 2014 to 2018 and a decrease by 0.9% in 2019 and 2.3% in 2020. Among other things, industrial production and investment fell, leading to a fall in domestic electricity consumption and thus a reduction in electricity generation. In 2021, electricity consumption and electricity generation far exceeded the level reached so far. In 2021, production improved significantly compared to 2020 by 13.97% and 9.33% compared to 2019. Over the period considered, electricity consumption increased by 5,36 and 2,96%, compared to 2020 and 2019.

Installed capacity in the national electricity grid is also steadily increasing. Over the past four years, installed capacity has increased by 5.8, 1.9, 5.2, and 8.97% compared to the previous year. The increase in installed capacity can be attributed to the renewable energy market, where growth rates between 2018 and 2021 were 0.65, 5.79, 9.59 and 15.43%, respectively. This means that the share of installed RES capacity in the installed KSE capacity was 21.47% in 2021¹.

The installed capacity of all renewable energy sources in Poland increased by 35.8%, from 12,471.2 MW at the end of December 2020 to 16,935.4 MW in the same period in 2021. Poland's most significant renewable energy source at the end of 2021 is photovoltaic with 7,670.0 MW (+93% YoY), followed by wind energy (7,116.7 MW) and 5,860.20 MW power comes from over 845.5 thousand prosumers (99.95% of the power from prosumer installations comes from photovoltaic sources).

The situation is somewhat different in the structure of energy production by raw material over time. According to the analysis of the production structure, while the year 2020 brought a decrease in the production of electricity from conventional sources, in 2021, there was a significant increase in production from hard coal (+30.4% YoY) and lignite (increase by approx. 19.5%). Their share in the energy mix, after a slight decrease in 2020 compared to 2019 (by 2.27 and 1.21%, respectively), increased again in 2021: the share of coal production in total electricity production increased in the case of coal stone to 53.60% (+6.62% YoY), and brown to 26.14% (+1.21% compared to 2020), which was caused by increased demand for electricity resulting from an increase in industrial production is due to the economy recovery from the third wave of the pandemic, long and cold winter and weather conditions unfavourable for wind farms in 2021 (Wiśniewski, 2022)². If the transformation

¹ If the installed capacity in the national system (KSE) takes into account the total installed RES capacity (i.e., also installations not included in the registers of regulated/licensed activity, i.e., the installed capacity in all RES sources in Poland according to Energy Market Agency, ARE data), then the share of RES capacity in the total installed capacity in the years 2020 and 2021 would be 24.1 and 28.7%, respectively.

² Also in Europe, the share of lignite and hard coal in energy production in 2021 increased by approximately 1.1%, while its consumption in the case of hard coal increased by 28.5%, and lignite by 19%.

towards 'net zero' emissions in Poland continues at the pace of the last three years, we will achieve the goal of climate neutrality in 2130. Poland, according to current trends, in 2030, will only reach a 20.8% share of renewable energy.

10.5. Energy sector: Finance data analysis

Operational parameters and sales

Changes in the parameters of production capacity, distribution, and sales are, in addition to market conditions, including demand for electricity, heat, and raw materials, the level of energy sales prices, the regulatory environment in the energy segment or consumer sentiment, factors that could have influenced the ability of the surveyed capital groups to generate sales revenues in 2021.

In 2020, in the first year of the impact of the pandemic on the economy, the generation units of the PGE Group generated approximately 41%, and in 2021 approximately 43% of electricity in Poland. The Group's gross electricity production in 2021 was approximately 18% more YoY. The share of RES production in the Group's total production in 2021 reached the level of 3.28%, which did not significantly change year on year. The lack of increases in the value of production from renewable sources meant, with the increase in total production recorded in 2021, a decrease in the share of renewable energy sources in the Group's mix by 15%. The achieved production growth was based on the increased consumption of lignite and hard coal: electricity production from these two raw materials increased year on year by 24 and 20%, respectively. The continued increase in energy demand due to the increase in industrial production in 2021 was reflected in an increase in the distribution level by 6% YoY. With the use of distribution lines with a length of approx. 296,000 km in 2020, PGE Group supplied electricity to customers in approximately 40% of the territory of Poland. In 2021, there were no significant changes in the Group's operations parameters.

TAURON Group is a leader in the Polish market in terms of the number of distribution clients and the volume of distributed electricity. It is the second-largest electricity supplier in Poland. In 2021, the volume of electricity distribution increased by 7% compared to 2020. In 2021, the Group produced 25% more energy than in 2020, with a 12% decrease in RES production. In 2021, the total sales volume increased by 3% YoY.

In 2021, the ENEA Group produced nearly 20% more than in 2020. The total energy generated from renewable sources increased by 1% YoY). The Group's total installed capacity in 2021 did not change compared to 2020. In 2021, nearly 47,000 people

were connected to the distribution network of ENEA Operator renewable sources, including microinstallations, and the total number of renewable energy sources connected to the company's distribution network was almost 109,000 at the end of 2021 (compared to 63,000 in 2020). Electricity distribution volume in 2021 increased by 4.6% YoY.

In 2021, the sales volume of electricity and gaseous fuel to retail customers was higher by approximately 16% compared to 2020. This increase resulted from a change in the customer portfolio in the segment of business customers between 2020 and 2021 and higher customer energy consumption after the first year of the pandemic. The volume of gas fuel sales also increased compared to the same period last year – by approximately 18%. The level of total revenues achieved by the studied groups in the years of the pandemic and the year preceding its outbreak is presented in Table 10.2.

Table 10.2. Total sales revenues of the PGE, TAURON, and ENEA Groups in 2019–2021 (in PLN million)

Capital Group/Year	2019	2020	2021
PGE	37 627	45 766	52 730
TAURON	19 558	20 850	25 614
ENEA	16 401	18 195	21 211

Source: own study based on data from PGE (2022a, 2022b, 2022c), TAURON (2022a, 2022c), and ENEA (2022a, 2022b) groups CFS for 2019–2021.

As a result of the analysis of the total sales revenues (Table 10.2), each of the studied capital groups in the second year of the pandemic not only retained the ability to generate sales revenues but also recorded an increase. The most significant increase in revenues among the surveyed entities was recorded by TAURON Group (+23% YoY). The main factor behind the changes was a 22% increase in revenues from electricity sales (higher volume of retail electricity sales in the business and mass segments, higher electricity prices mainly on the balancing and exchange markets, higher revenues from trade fees), and also: revenues from the service Capacity market, increase in sales of distribution and commercial services (higher volume of distribution services), sales of heat, gas, and coal (higher volumes at higher prices) and CO₂ allowances.

The revenues of the ENEA Group and PGE also increased by 17 and 15%, respectively, compared to 2020. In the ENEA Group, after a decrease in revenues in 2020, mainly in the area of Distribution and Sales, and a decrease in production in the area of conventional generation, an increase was observed in 2021 demand for electricity – net revenues from its sale constituted 73.5% of the Group's net sales revenues and

increased by 12.4% YoY. The second most significant item in terms of value in the product sales structure was revenues from the Capacity Market (4% of total net sales, 29% of the total change value YoY). Year-on-year increases were also recorded in revenues from the sale of coal (+85%), heat, and gas (by 21.9 and 22.5%, respectively).

In the PGE Group in 2021, revenues in the Renewable Energy (+39%) and Heating (+33%) segments were the most dynamic but the largest nominal share in the increase in revenues due to their share in the Group's revenue structure (at the level of 42%) had the Trade segment (with a 21% change in the value of revenues YoY). Revenues from the Capacity Market in 2021 accounted for 5.2% of total revenues, and 39.8% of revenues change year on year, respectively.

EBITDA

In 2020, the PGE Group generated an EBITDA result lower than in 2019 by nearly 17% YoY), which significantly improved in 2021, achieving a 60% increase YoY. The EBITDA margin was 18.08%, increasing by 38.71% compared to 2020.

It should be noted that a one-off event positively influenced EBITDA: rehabilitation provision, while in 2020, EBIT was negatively impacted by impairment losses on assets in the Conventional Generation segment and the share in the loss of associates-PGG on net results. Other key factors of a positive impact on EBITDA in 2021 were: revenues from the capacity market, results in the sale of electricity by producers, and results in the sale of electricity to end-users (higher margin as a result of a low base in 2020), revenues from the sale of heat, result on distribution (higher volume of services) and employment optimisation.

The decrease in EBITDA was due to the change in price, the shortage of CO₂ emission allowances, and the change in fuel prices. Provisions for potential claims from contractors and lower capitalised costs are also significant. The highest YoY dynamics of EBITDA growth (236%) was achieved in the Conventional Generation segment, which accounted for 43% of the Group's EBITDA in 2021. The Distribution Segment also maintained a significant share of EBITDA overall in 2021. The third-largest absolute EBITDA segment became the Renewable Energy segment in 2021, growing by more than 70% *per annum*.

In 2021, TAURON Group did not manage to improve the EBITDA value year on year (a decrease of 2% compared to 2020). With a significant increase in revenues in 2021, the EBITDA margin ratio reached 16.2 and 4.1% below the level of 2020.

Higher operating costs were reported in the following items: consumption of materials and energy (mainly as a result of higher costs of fuel oil consumption and

other variable production costs with higher electricity and heat production and higher raw material prices), renovation and maintenance costs of mining, heating and renewable energy assets (greater scope and higher prices of services/inflation), costs of greenhouse gas emission allowances (increase in allowance prices and higher CO₂ emissions as a result of higher electricity production from conventional sources), costs of employee benefits (including those resulting from the reduction in Q2 2020 working time by a signed agreement with the community in the aftermath of the pandemic), costs of electricity sales year to year (e.g., provision for an onerous contract in connection with the shutdown of the 910 MW unit in Jaworzno).

The data analysis shows that the largest contribution to EBITDA 2021 of TAURON Group was, like in 2020, in the Distribution segment, although the largest YoY increase in EBITDA was recorded in the Generation segment (by 400%). The factors behind this growth were: the commencement of the capacity market and the realisation of a higher margin on the sale of electricity, including the impact of commissioning a 910 MW unit in Jaworzno for use at the end of 2020 and the implementation of transactions related to CO₂ allowances. A significant drop in EBITDA year on year, which neutralised the increase in the Generation segment, was recorded in the Sales segment. Despite the 25.5% increase in revenues in this segment in 2021, EBITDA decreased by PLN 1207 million. The reason for this decrease was mainly a lower margin on electricity sales, which was mainly influenced by higher costs of property rights, mainly due to the higher purchase price of green certificates (PMOZE) and a lower margin on gas sales (an increase in gas purchase price and a higher volume of its sale). The pandemic continued to affect the operational activities of individual Business Areas of the Group (increased absenteeism, increased operating costs due to the need to ensure epidemiological safety), but the impact was insignificant.

In 2021, the ENEA Group generated EBITDA at a level higher than 10% YoY. The growth factors were revenues from the capacity market and revenues from the sale of electricity, coal, gas, and heat, which were adjusted for the costs of electricity and gas, raw materials, and materials, which were higher than in 2020, employee benefits and provisions for onerous contracts. In 2021, the most significant increase in ENEA Group's EBITDA YoY was recorded in the Mining segment, resulting from the higher sales volume compared to 2020 (demand for coal increased by approximately 31%). The abolition of the restrictions caused by the course of the pandemic, which had a significant impact on the operating sphere of this segment in 2020, made it possible to increase production in response to the increased demand for raw material, with a positive impact on the segment's and Group's results. In the structure of the Group's EBITDA, the segments of Generation and Distribution had a leading position, with stable value year on year (4.7 and 6.1% growth in 2021, respectively). The most significant negative impact on the ENEA Group's EBITDA

in 2021 was the Trade segment – despite the positive impact of the adjusted margin and coverage (main factors of change: an increase in sales volume by 16%, adjusted for the result on gas fuel trading and the costs of environmental obligations, which increased by 29%). The segment’s result was significantly worsened by a change in provisions for an onerous contract – an increase in the provision due to settlement by ENEA as *ex officio* sellers, discounts on distribution fees for energy introduced into the grid by prosumers, reflecting the impact of the expected future losses incurred by the company in connection with the implementation of comprehensive contracts concluded with prosumers who, by the amendment to the Act on renewable energy sources, under the support system, acquired the right to 15-year billing with discounts (so-called net-metering), provided that the micro-installations are connected to the grid by March 31, 2022.

The entities’ financial condition is also illustrated by the economic efficiency indicators achieved in 2019–2021. For the studied capital groups, the values of selected performance indicators for 2019–2021 are presented in Table 10.3.

Table 10.3. Selected economic efficiency indicators of PGE, TAURON and ENEA in the years 2019–2021

Economic efficiency indicators	PGE Group			TAURON Group			ENEA Group		
	2019	2020	2021	2019	2020	2021	2019	2020	2021
First coverage rate	0.66	0.65	0.73	0.54	0.50	0.49	0.65	0.60	0.68
Current ratio	1.01	1.00	1.04	0.87	0.86	0.63	1.39	1.20	1.06
Debt ratio	0.44	0.47	0.46	0.54	0.58	0.59	0.53	0.56	0.56
EBITDA profitability ratio (%)	-11.1	3.08	9.72	-11.46	2.30	11.77	21.55	-0.60	17.02
ROA (%)	-5.06	0.18	4.43	-0.03	-5.47	0.96	1.65	-7.48	5.16
ROE (%)	-9.11	0.34	8.17	-0.06	-12.99	2.33	3.49	-17.1	11.77
Net profit (%)	-10.4	0.32	7.48	-0.06	-10.42	1.50	3.41	-12.3	8.40

Source: own study based on PGE (2022a, 2022b, 2022c), TAURON (2022a, 2022c), and ENEA (2022a, 2022b) groups CFS data for 2019–2021.

The ratio analysis of the surveyed entities’ economic efficiency indicates that the entities’ liquidity position has not deteriorated and that the profitability of the conducted activity has improved significantly. The ratings obtained also confirmed the good condition of the surveyed companies (PGE, 2022c; ENEA 2021; TAURON, 2022c). The main factors positively influencing the Group’s assessment are strategies assuming development towards renewable and low-emission sources and achieving revenues from regulated businesses, such as electricity distribution and the Power Market.

CAPEX

The implementation of the strategies of individual groups in the area of capital expenditure in 2019–2021 in relation to EBITDA is presented in Table 10.4.

Table 10.4. Capital expenditure in terms of total value and relation to EBITDA of the PGE, TAURON and ENEA Groups

CAPEX CG	2019	2020	2021
PGE (in PLN million)	7 009	5 495	4 662
TAURON (in PLN million)	4 128	4 039	2 932
ENEA (in PLN million)	2 000	2 401	1 980
	CAPEX /EBITDA		
PGE CG	0.98	0.92	0.49
TAURON CG	1.15	0.96	0.71
ENEA CG	0.60	0.73	0.54

Source: own study based on PGE (2022a, 2022b, 2022c), TAURON (2022a, 2022c), and ENEA (2022a, 2022b) groups CFS for 2019–2021.

The analysis of the investment expenditure of the groups, as well as broken down by operating segments, indicates a reduction in investment activity in 2021, measured by the expenditure value and the ratio to the generated EBITDA in relation to 2020.

Capital expenditure of the PGE Group was the equivalent of 92% of the realised annual EBITDA. Moreover, the outlays in the second year of the pandemic were only partially developmental, and their significant value was spent on modernisation and replacement purposes. The Conventional Generation segment had the largest share in CAPEX in pandemic years (drop by 21% YoY), and the second-largest capital expenditure in the analysed period was the Distribution segment (mainly for modernisation and replacement of networks and connection of new customers). As part of this segment, the first electricity storage in Poland with a capacity of 2.1 MW and a capacity of 4.2 MWh was launched, which is in line with the Group's strategy and constitutes the first stage of the energy storage program. The investment expenditures on the development of the RES segment in the first year of the strategy implementation (2021) were limited compared to those implemented in 2020. However, in line with the Group's strategy, an offshore wind farm development project is being implemented. It has also obtained building permits for approximately 170 MW of photovoltaic farms.

Implementation of the TAURON Group's strategy with priorities towards transforming the energy mix and aiming at achieving over 65% share of low- and

zero-emission sources in the installed capacity in 2030, and optimisation of coal assets (adjustment of mining assets to the planned demand for fuel) or investment portfolio capital, there are, among other things, through several investment activities in the area of the Group's infrastructure. The Group's capital expenditures in 2021 were almost 1/3 lower in nominal terms than those incurred in 2020. They also accounted for a smaller share in EBITDA (from 96% in 2020 to 71% in 2021). The most significant decrease in investment exposure in relation to EBITDA was recorded in the Generation segment, wherein in 2021, almost half of the capital expenditure was replacement and renovation. In the Mining Segment, in 2021, more than half of the capital expenditure is expenditure on the preparation of future production, and approximately 30% is replacement expenditure. The year-on-year dynamics of expenses in relation to EBITDA were maintained in the Distribution segment, where half of the funds in 2021 were allocated to connecting new customers and over 30% for the modernisation and replacement of the grid, and increased only in the RES segment, in which funds were allocated for the construction of two wind farms. The analysis shows that in 2021 the directions in line with the Group's strategy will remain in line with the Group's strategy, while their dynamics (year on year and in relation to EBITDA) have significantly slowed down compared to the first year of the pandemic. The pandemic persisting in 2021 caused certain difficulties in implementing some strategic investment projects of TAURON Group, which was caused by, among other things, disruptions in the supply of materials and equipment.

The strategy of the ENEA Group until 2030 with the perspective of 2040 is undertaken by another audited entity (ENEA, 2021). The key directions of development include the development of energy storage projects and the provision of external services, involvement in offshore wind energy, development of hybrid installations, conventional energy based on low-emission sources (gas – as a transition fuel; biomass), development of an intelligent energy network, development of a modern offer for prosumers, participation in the creation and management of energy islands (energy clusters). Detailed information on the level of investment expenditures made by ENEA Group in the years is presented in Table 10.4.

In 2021, the ENEA Group realised capital expenditures at 54% of the EBITDA generated in the year, which was a worse result than that achieved in the previous year (73%). In each of the segments, the dynamics of the share of capital expenditure relative to EBITDA were lower year on year. In absolute value, outlays in 2021 were 18% lower YoY, accounting for 79% of the plan implementation for a given year. Less than 8% of the total expenditure was spent on environmental protection (including 60% for adapting to the BAT conclusions). Half of the annual expenditure was related to the distribution infrastructure (construction and modernisation of several elements of the network infrastructure). Nominal expenses for the Mining segment

(machinery and equipment, preparation of excavations) and Generation (BAT modernisation) were almost equal, and for renewable sources – insignificant.

The allocation of funds between the areas of activity is partially in line with the implementation of the Group's strategy.

Risks analysis

All surveyed groups identify a pandemic as an element of risk activity. The PGE Group defined the pandemic as an element of risk in the operational area and related to implementing current economic processes. It sets employees' safety at a medium level in a stable perspective (PGE, 2022c). Even though no significant extension of the repayment period or liquidity problems resulting from the Covid-19 pandemic were not observed, the Group updated the models used to estimate the expected credit losses (PGE, 2022a).

The TAURON Group has identified the pandemic as distinct from high-severity but steady trend risks. The increase in employee diseases affects the reduction of economic activity, affecting the level of demand for products offered by the companies of TAURON Group, particularly the volumes of electricity distribution and sales.

Identified risks of high significance but with an increasing trend are market, climate change, and regulatory risks. Market risk is related to an unfavourable price change in the wholesale electricity market and related product markets, which hurts the entities' financial results. The risk of climate change is related to the tightening of the EU climate policy in terms of environmental requirements resulting from climate change, activities supporting energy efficiency (development of prosumers, support for thermal insulation, building own sources of energy and heat, abandoning coal as fuel). As a result of the realisation of the risks of obstruction or an increase in the cost of obtaining capital to finance activities based on fossil fuels, the need to incur additional investment outlays to adapt the property to environmental requirements, and an increase in the price of CO₂ emission allowances. Regulatory risk is associated with climate risk and the change of existing or new regulations regarding the entity's operations. This risk results from the need to adapt to regulatory changes, particularly those resulting from a significant increase in environmental requirements resulting from climate change, and support for pro-climate activities (development of prosumers, thermal insulation, development of own generation sources). The effects of the risk are mainly loss of revenues in individual business segments, and an increase in operating costs due to the need to adapt to legislative changes (TAURON, 2022c).

Despite the crisis related to the Covid-19 pandemic in 2021, no significant effects of its occurrence were recorded in the ENEA Group. Therefore, the situation in the

area of credit risk was considered to be stable (ENEA, 2022a). In 2021, the ENEA Group was exposed to an increased level of commodity risk, i.e., high price volatility in connection with the pandemic outbreak. The Group is noting a growing long-term risk in this area. It is related to the tightening of the requirements for climate protection by the European Union, which translates into significant increases in the prices of CO₂ emission rights, which determine the profitability of production activities.

10.6. Factors affecting the financial situation and investment decisions – summary

The response of the governments of the countries successively affected by the pandemic (European Council and Council of the European Union (2022)) to this new and sudden situation was varied (Bolesta & Sobik, 2020). Most of them introduced numerous restrictions (IMF, 2021), the duration and effects of which were not known at the decision to apply them. The pandemic and the reaction to it, to a varying degree, also limited the activities of the administration and units implementing its systemic tasks at the central and local levels (Stawicka & Stawicki, 2020). As a consequence of these activities, 2020 was characterised by numerous disruptions in Polish and world economic and administrative systems. Improving macroeconomic indicators in 2021 (Statistics Poland, 2022c, 2022d) did not calm the sentiment of small and medium-sized enterprises (Statistics Poland, 2021, 2022a). Due to the prolonged state of emergency for large economic units operating in the energy market, characterised by a significant degree of regulation (Nagaj, 2017), it was accompanied by uncertainty about their economic situation in the following months. However, large enterprises assessed the negative impact of the pandemic's impact on their business as insignificant or non-existent.

The study's main aim was to verify the economic situation of energy market entities maintaining a favourable financial situation in the first year of the pandemic after the second year of the extraordinary epidemic situation.

Many economic categories, including capital expenditures, improved in the second year of the pandemic. A comparative analysis of changes in quantitative technical parameters characterising the energy market showed that in the second year of the pandemic, gross electricity consumption, gross electricity production and installed capacity in the national system increased significantly. A comparative analysis of selected economic efficiency indicators showed that the financial situation of the surveyed capital groups was stable and improved profitability. The study of strategic directions of development of entities confirmed the ability to implement new investments in infrastructure.

Therefore, the results of the research carried out confirmed the hypothesis that the prolonged state of the pandemic did not affect the ability of energy companies to continue investments in infrastructure (fixed assets) initiated before the outbreak of the pandemic, including those related to the production of electricity using renewable energy sources. Although the level of investment expenditures (in nominal terms and in relation to the generated EBITDA) fell year on year, it remained at the level of at least 50% of EBITDA. The reason for the limited investment activity should not be seen in the impact of the pandemic situation on the surveyed companies because the study did not show a change in the strategic directions of the surveyed capital groups – on the contrary, each consistently confirms the maintenance of the goals of the transformation towards low- and zero-emission energy sources and strengthening the segments in which they maintain a leading market position.

A pandemic is an environmental, sudden, and global factor that has a direct and indirect impact on the activities of the surveyed entities. From the analysis of the country's macroeconomic situation, it can be concluded that enterprises are highly adaptable and resistant to restrictions in 2021 (Statistics Poland, 2022a) and in the case of the analysed energy sector enterprises, this adaptation was confirmed both in the organisational and financial terms.

The surveyed entities in 2021 achieved revenues higher than in the first year of the pandemic by at least a dozen or so per cent. The increase in revenues resulted from the increase in the volume of electricity and coal sales (thanks to the gradual easing of restrictions resulting in the economic recovery and improvement in the economic situation), as well as the increase in energy prices and the expansion of the product portfolio with the services of the Capacity Market area. From the analysis of the financial data of the surveyed companies for 2021, it can be concluded that a significant factor of negative impact on the results achieved in 2021 (EBITDA) was the transactions of CO₂ emission rights (including a sharp increase in their prices in 2021) and changes in the prices of raw materials, including the increase in gas prices. The impact of the costs of burdensome contracts related to changes in the regulatory area, i.e. changes in the settlement rules for prosumers, was also highlighted.

The surveyed capital groups responded to the greater demand in terms of the available raw material resources (increasing production from conventional sources) and infrastructure, making full use of the attributes of the value chain in which they operate, including the fossil fuel sources available in the structures of the groups. Increasing the share of production from hard coal and lignite in the entry production structure should not be interpreted as a change in the direction of transformation or a deliberate slowdown but as a response to changes in the market environment. There is an apparent economic recovery with an insufficient supply of energy

from renewable sources. The stimulation of the domestic economy, an increase in energy prices, revenues from the capacity market, and the organisation's adaptation to operating under the sanitary regime allowed the audited entity to achieve total EBITDA in 2021 at a level higher or close to the previous year.

The verification of operating and financial ratios showed a significant improvement in the profitability of the business, a stable situation in the area of financial liquidity, and the ability to raise funds (debt ratios at levels similar to the previous year, significant improvement in profitability ratios). The good financial condition is confirmed by the ratings obtained by the companies in 2021.

Entities reported the impact of the pandemic on day-to-day operations. Risks in this area have been identified and dimensioned. However, ultimately the impact of the pandemic on the analysed organisations, in the opinion of their management, was insignificant for the financial results and did not threaten the continuity of these enterprises.

The study confirmed that the reduction in investment expenditure compared to the previous year did not stem from the ongoing pandemic or the surveyed entities' financial situation. The management of all surveyed groups confirmed the will to maintain the directions of the transformation strategy, which is confirmed by the decision to retain profits from 2021 to allocate funds for expenses related to transformation activities in the following years.

Limited investment activity in 2021 was also directly related to the process of separating from the structures of groups of energy companies, with the Treasury shareholding a significant part of their assets related to electricity generation in conventional coal units planned for 2022 (Narodowa Agencja Bezpieczeństwa Energetycznego [NABE], 2021) The concept provides for the separation of only coal-fired power plants while leaving heating and cogeneration units in the structure of concerns. The separation of coal assets and the mode of its implementation are further evidence of the state's strong influence, even interference, in the strategic decisions of the largest enterprises in the sector. Moreover, taking into account the government's decisions to take over shares from subsequent issues of the surveyed entities, the purpose of which is to obtain capital for the transformations of the surveyed entities adopted in the strategies, the influence of the state on the operation of the largest energy market entities in Poland seems to be increasing.

Due to the continuation of the pandemic: successive waves of disease, the risk of new mutations of the SARS-CoV-2 virus, and limited knowledge about the resistance to currently available vaccines, it cannot be clearly ruled out that in the future, it will not directly or indirectly affect enterprises the energy sector. Determining the directions and strength of this impact will be all the more difficult because the

previously identified changes (disturbances) in the global and national economy and the functioning of the energy sector have overlapped with further risks and influencing factors: inflation and the armed conflict in Ukraine with consequences that are extremely important for the functioning of the energy sector in the area of the raw materials supply chain (continuity, suppliers and prices) and several other key factors to the economy on a global scale.

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