DIRECTORS' REPORT ON THE OPERATIONS OF THE PGNIG GROUP

for the six months ended
June 30th 2022

2022

Financial highlights of the PGNiG Group and PGNiG

Table 1 Financial highlights of the PGNiG Group for H1 2022, H1 2021 and at year end 2021

Consolidated financial data	PLNm		EURm	
	6 months ended Jun 30 2022	6 months ended Jun 30 2021	6 months ended Jun 30 2022	6 months ended Jun 30 2021
Revenue	78,372	24,985	16,881	5,495
Operating profit before interest, taxes, depreciation and amortisation (EBITDA)	15,067	5,195	3,245	1,142
Operating profit (EBIT)	11,917	3,417	2,567	751
Profit before tax	11,414	3,336	2,458	734
Net profit attributable to owners of the parent	4,839	2,434	1,042	535
Net profit	4,839	2,434	1,042	535
Total comprehensive income attributable to owners of the parent	(1,576)	2,371	(339)	521
Total comprehensive income	(1,576)	2,371	(339)	521
Net cash from operating activities	3,325	4,750	716	1,045
Net cash from investing activities	(2,785)	(2,878)	(600)	(633)
Net cash from financing activities	576	(1,065)	124	(234)
Net cash flows	1,116	807	240	177
Basic and diluted earnings per share (in PLN and EUR, respectively)	0,84	0,42	0,18	0,09

Consolidated financial data	PLNm		EURm	
	As at Jun 30 2022	As at Dec 31 2021	As at Jun 30 2022	As at Dec 31 2021
Total assets	120,967	101,576	25,844	22,085
Total liabilities	78,556	57,197	16,783	12,436
Non-current liabilities	24,959	20,107	5,332	4,372
Current liabilities	53,597	37,090	11,451	8,064
Total equity	42,411	44,379	9,061	9,649
Share capital	5,778	5,778	1,234	1,256
Weighted average number of ordinary shares (million)	5,778	5,778	5,778	5,778
Book value per share and diluted book value per share (PLN/EUR)	7,34	7,68	1,57	1,67
Dividend per share declared or paid (PLN and EUR)	-	0,21	-	0,05

Table 2 Financial highlights of PGNiG for H1 2022, H1 2021 and at year end 2021

Data from the separate financial statements	PLNm		EURm	
	6 months ended Jun 30 2022	6 months ended Jun 30 2021	6 months ended Jun 30 2022	6 months ended Jun 30 2021
Revenue	43,745	12,413	9,422	2,730
Operating profit before interest, taxes, depreciation and amortisation (EBITDA)	3,115	1,836	671	404
Operating profit (EBIT)	2,671	1,427	575	314
Profit before tax	2,893	2,140	623	471
Net profit	2,291	1,870	493	411
Total comprehensive income	(4,235)	1,779	(912)	391
Net cash from operating activities	(6,587)	(257)	(1,419)	(57)
Net cash from investing activities	(323)	738	(70)	162
Net cash from financing activities	2,375	(28)	512	(6)
Net cash flows	(4,535)	453	(977)	99
Earnings and diluted earnings per share attributable to holders of ordinary shares (PLN/EUR)	0,40	0,32	0,09	0,07

Data from the separate financial statements	PLNm		EURm	
	As at Jun 30 2022	As at Dec 31 2021	As at Jun 30 2022	As at Dec 31 2021
Total assets	80,503	69,690	17,199	15,152
Total liabilities	49,560	34,120	10,588	7,418
Non-current liabilities	12,676	7,270	2,708	1,580
Current liabilities	36,884	26,850	7,880	5,838
Equity	30,943	35,570	6,611	7,734
Share capital and share premium	7,518	7,518	1,606	1,635
Weighted average number of shares (million) in the period	5,778	5,778	5,778	5,778
Book value per share and diluted book value per share (PLN/EUR)	5,36	6,16	1,14	1,34
Dividend per share declared or paid (PLN and EUR)	-	0,21	-	0,05

Table 3 Average currency exchange rates

Average EUR/PLN exchange rates quoted by the NBP	Jun 30 2022	Jun 30 2021	Dec 31 2021
Average exchange rate for period	4.6427	4.5472	4.5775
Exchange rate at end of period	4.6806	4.5208	4.5994

Calendar of corporate events in the first half of 2022

January 2022

January 5th – Execution of a credit facility agreement with Societe Generale SA Oddział w Polsce for an amount of PLN 750m, for a period of up to nine months

January 31st – Polish antitrust authority's clearance of the establishment of a biomethane SPV with ORLEN Południe.

February 2022

February 2nd – Gazprom's call for arbitration regarding EuRoPol GAZ.

February 11th – PGNiG's response to PAO Gazprom and OOO Gazprom Export's call for arbitration before Ad Hoc Arbitration Tribunal in Stockholm

February 23rd – Execution of credit facility agreements with a syndicate of Bank of China Limited and Bank of China (Europe) and with Deutsche Bank Polska and Credit Agricole Bank Polska for a total amount of PLN 1.8bn, for a period of nine months

February 28th – Execution of an amendment to the settlement agreement between Elektrociepłownia Stalowa Wola S.A. and Abener Energia S.A.

March 2022

March 2nd – PGNiG's response to Gazprom's call for arbitration concerning EuRoPol GAZ

March 7th – Receipt of compensation from Price Difference Payment Fund for PGNiG Obrót Detaliczny

March 8th – Satisfaction of conditions precedent to the settlement agreement between Elektrociepłownia Stalowa Wola S.A. and Abener Energia S.A.

March 9th – Dismissal of Gazprom's complaint for reversal of the final award issued by the Court of Arbitration on March 30th 2020

March 16th – Conditional decision by the Polish antitrust authority regarding concentration between PGNiG and PKN ORLEN

March 18th – Execution of an agreement on maintaining emergency gas stocks with Government Agency for Strategic Reserves

March 25th – Resignation by President of PGNiG S.A. Management Board Paweł Majewski

March 30th – Regasification services ordered by PGNiG in FSRU Gdańsk Open Season

April 2022

April 5th – Withdrawal of Gazprom's call for arbitration regarding EuRoPol GAZ

April 7th – Appointment of Iwona Waksmundzka-Olejniczak as President of PGNiG S.A. Management Board

April 11th –The judgment of the Stockholm Court of Appeals of March 9th 2022, dismissing Gazprom's petition for reversal of the Arbitration Court's final award of March 30th 2020 issued in the arbitration proceedings instigated by PGNiG against Gazprom for reduction of the contract price for gas supplied under the Yamal Contract, became final

April 26th – PGNiG's refusal to perform its settlement obligations by making payments for natural gas supplied by Gazprom under the Yamal Contract in Russian roubles in accordance with the Decree of the President of the Russian Federation

April 26th – Halt of natural gas supplies under the Yamal contract

May 2022

May 11th – Revision of natural gas and crude oil production forecasts for 2022–2024

May 16th – Execution of an agreement setting out the key terms of the LNG supply contract with Sempra Infrastructure Partners

May 25th – Notice of making the final investment decision for Plaquemines terminal to be built by Venture Global LNG

June 2022

June 30th – Execution of a credit facility agreement with the Sumitomo Mitsui Banking Corporation Group for an amount up to EUR 170m, for a period of nine months

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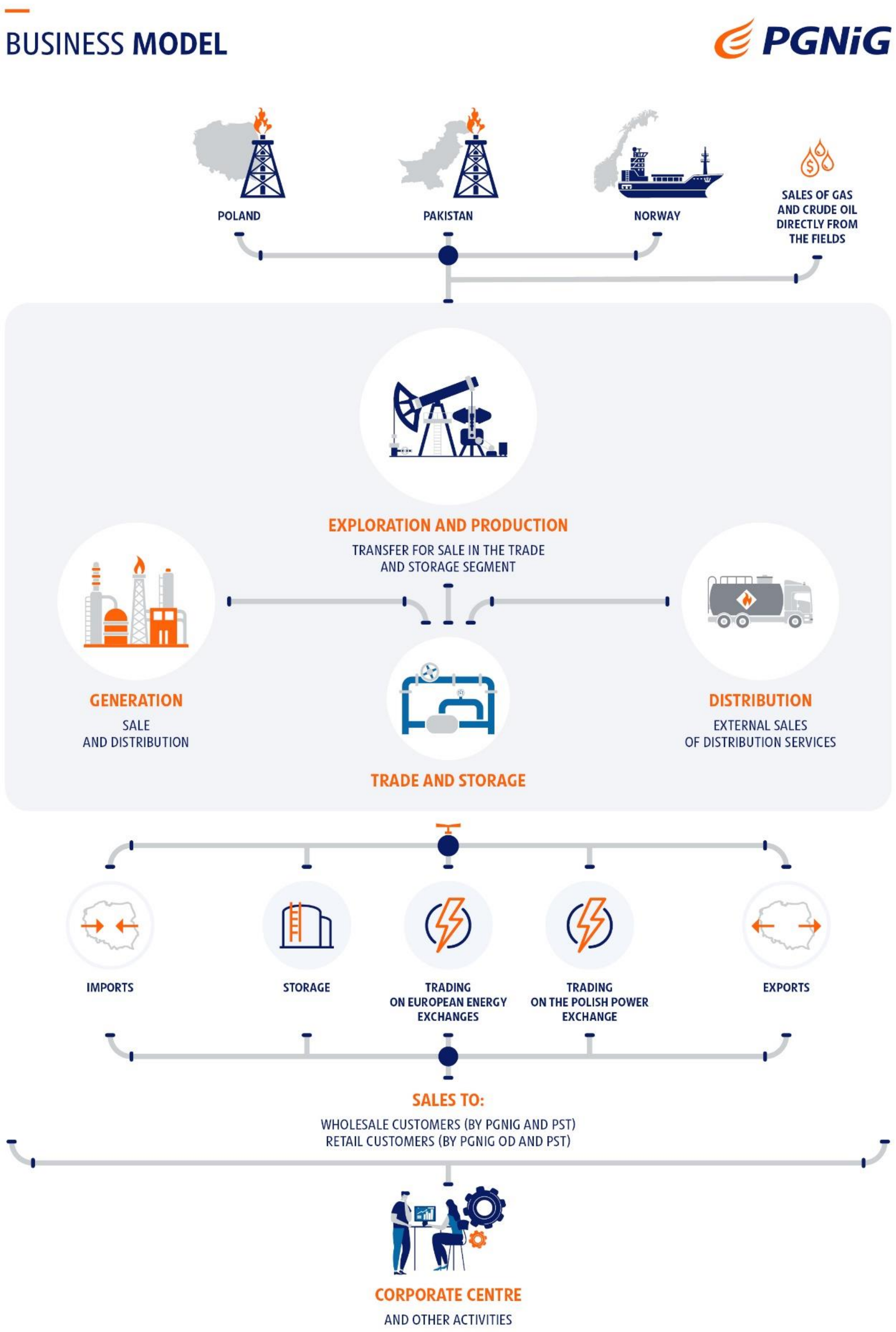
Business model and organisation of the PGNiG Group

1.1 Business profile – business model

Figure 1 Business model of the PGNiG Group



(in PLN million unless stated otherwise)

1.2 Organisation of the PGNiG Group

As at June 30th 2022, the following companies were consolidated using the full method: PGNiG as the parent company and 22 subsidiaries. PGNiG comprises The Wholesale Trading Branch, Geology and Hydrocarbon Production Branch (Sanok Branch, Zielona Góra Branch, Odolanów Branch), Central Measurement and Research Laboratory, Well Mining Rescue Station, and Foreign Branches (the Operator Branch in Pakistan and the UAE Branch).

Figure 2 Fully consolidated companies of the PGNiG Group

1.3 PGNiG shareholding structure and shares on the WSE

1.3.1 Shareholding structure

As at June 30th 2022, the share capital of PGNiG was approximately PLN 5.78bn.

Table 4 Shareholding structure as at June 30th 2022

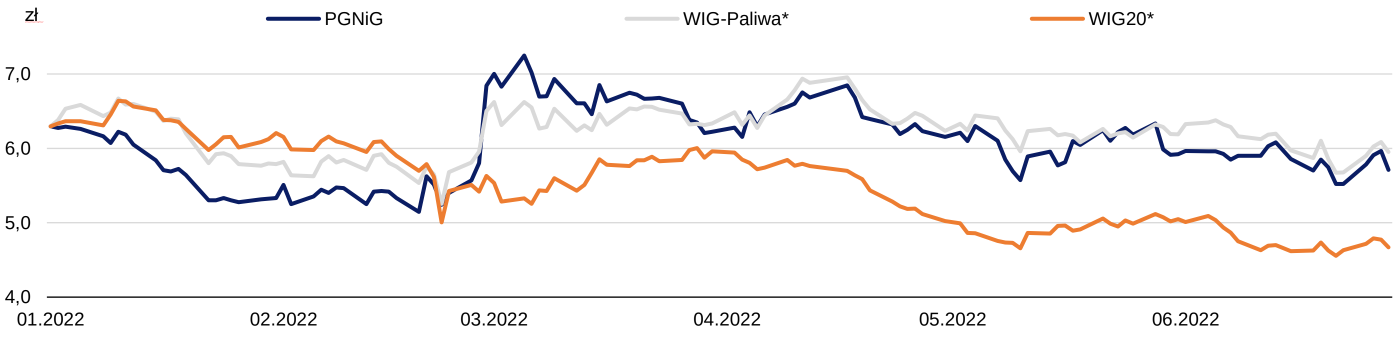
Shareholders	Number of shares/voting rights as at Dec 31 2021	Percentage of share capital/voting rights at GM as at Dec 31 2021	Changes in 2022	Number of shares/voting rights as at Jun 30 2022	Percentage ownership/voting interest in the Company as at Jun 30 2022
State Treasury	4,153,706,157	71.88%	-	4,153,706,157	71.88%
Other shareholders	1,624,608,700	28.12%	-	1,624,608,700	28.12%
Total	5,778,314,857	100.00%	-	5,778,314,857	100.00%

For information on shares in PGNiG and its related companies held by members of the Management and Supervisory Boards, see section 6.5.

1.3.2 Price performance of the PGNiG shares

Since September 23rd 2005, the PGNiG shares have been listed in the continuous trading system of the main market on the Warsaw Stock Exchange. The issue price per share in the Company's public offering was PLN 2.98. In the first half of 2022, PGNiG shares were included in the following indices: WIG, WIG20, WIG30, WIG-Poland, WIG-ESG, WIGdiv, WIG-PALIWA sectoral index and WIG. MS-PET macrosectoral index.

Chart 1 PGNiG share price vs WIG20 and WIG-Paliwa in the first half of 2022



Source: WSE – Warsaw Stock Exchange.
** Rebased to PGNiG share price.*

1.3.3 Dividend policy

The PGNiG Group's Strategy for 2017–2022 provides for distribution of up to 50% of consolidated net profit as dividend, with the proviso that in recommending dividend payments the PGNiG Management Board must always take into account the PGNiG Group's current financial condition and investment plans.

Table 5 Dividend from net profits for 2016–2021

	2021	2020	2019	2018	2017	2016
Dividend for financial year (PLNbn)	-	1.21	0.52	1.04	-	1.16
Dividend per share (PLN)	-	0.21	0.09	0.18	-	0.2
Average annualised share price (PLN)	6.2	4.4	5.59	6.12	6.33	5.16
Dividend yield*	-	4.77%	1.61%	2.94%	-	3.88%

** Dividend yield – dividend per share divided by the average annual share price.*

On May 10th 2022, the PGNiG Management Board resolved to recommend that the General Meeting, having received an assessment from the PGNiG Supervisory Board, allocate PGNiG's entire net profit for 2021 of PLN 5,120,798,108.45 to increase the Company's statutory reserve funds. The PGNiG Management Board's decision was prompted by the situation on European commodity markets which has not changed since 2021, that is higher gas prices and their increased volatility compared with previous years. In the performance of its strategic task of ensuring Poland's energy security by importing gas from alternative sources after PAO Gazprom and OOO Gazprom Export halted gas supplies under the Yamal Contract, PGNiG identified increased working capital requirement in 2022.

In line with the recommendation of the PGNiG Management Board, the Annual General Meeting (AGM) held on June 22nd 2022 unanimously resolved to allocate the entire net profit for 2021 to increase the statutory reserve funds.

(in PLN million unless stated otherwise)

2. Strategy of the PGNiG Group

2.1 Mission and vision

Mission statement	**Trustworthy** – the customers can depend on premium quality and reliability of our services
We are a trustworthy supplier of energy for households and businesses	**Energy supplier**– our customers are offered a full range of energy products (gas + electricity + heat + other/services)
	Households and businesses – we care for and value all our customers: households, businesses, and institutions
Vision	**Responsibly** – we act transparently, in line with the principles of corporate social responsibility
We are a responsible and effective provider of innovative energy solutions	**Effectively** – we have implemented process and cost optimisation measures
	Innovative solutions – we are an innovation leader in the energy sector
Primary objective	**Value growth** – our primary ambition is to create added value for our shareholders and customers
	Financial stability – we seek to secure long-term financial stability and creditworthiness

2.2 PGNiG Group Strategy for 2017−2022 with an Outlook until 2026

The PGNiG Group's Strategy for 2017–2022 with an Outlook until 2026 (the "Strategy") was adopted by the PGNiG Supervisory Board on March 13th 2017. The pursuit of sustainable development as the Group's priority will be driven by parallel investments in riskier business areas yielding relatively high rates of return (upstream) and in regulated areas offering considerable safety of the investments (gas distribution, power and heat generation). The PGNiG Group implements an ambitious investment programme, which is to lay foundations for a long-term and stable growth in value.

2.2.1 Capital expenditure in 2022

The Group intends to maintain a high level of capital expenditure in 2022. Spending will focus primarily on projects involving maintenance of hydrocarbon production rates, as well as projects in the exploration for and appraisal of crude oil and natural gas deposits, and development of the generation segment.

Exploration and Production

Working towards its strategic objective of increasing total hydrocarbon production, in 2022 PGNiG will continue to develop and tie in wells in Poland at the Zielona Góra and Sanok Branches. In 2022, PGNiG plans to produce in Poland 3.7 bcm of natural gas (measured as high-methane gas equivalent), the same as in 2021, and 0.6m tonnes of crude oil and condensate.

Through its subsidiary PGNiG Upstream Norway ("PGNiG UN"), PGNiG will also work towards ensuring stable and predictable long-term gas supplies to Poland. These include both support for the construction of infrastructure to physically bring Norwegian gas to Poland and potential acquisitions of production and/or pre-production assets on the Norwegian Continental Shelf.

In May 2022, PGNiG UN and Wellesley Petroleum signed an agreement to purchase a 40% interest in the PL942 licence, covering the Ørn gas field in the Norwegian Sea. From 2026, the field will provide PGNiG with additional 0.25 bcm of natural gas per annum.

The field's documented recoverable reserves are approximately 6.75bcm of natural gas, 0.17m tonnes of crude oil, and 0.79m tonnes of NGL. Ørn is located approximately 20 km from the Skarv field, in which PGNiG UN also holds interests. This will enable the use of the existing production infrastructure, including the Skarv FPSO (floating production, storage and offloading) unit, to reduce the time and costs of production launch. As at the end of June 2022, the Company awaited clearance from the Norwegian authorities to close the transaction. The transaction is expected to be closed in late August 2022.

The Company is also actively looking for new acquisition targets to further increase its own gas production in Norway.

PUN will continue to produce hydrocarbons as a licence partner in the Skarv, Ærfugl, Ærfugl Nord, Morvin, Vilje, Vale, Gina Krog, Skogul, Kvitebjørn, Ormen Lange, Alve, Marulk, Duva, Tambar Øst and Valemon fields, develop the Tommeliten Alpha field and implement the third development phase on Ormen Lange. Development of the Shrek, Alve Nord, Fogelberg, King Lear, Alve Nord East and Gjok fields, for which the investment decision is planned to be made in the second half of 2022, is at the concept phase.

PGNiG carries out exploration and production operations in Pakistan. Gas from the Rehman and Rizq fields is produced via facilities located in the Rehman field. The Rizq-4 and Rehman-8 wells were drilled as part of field development. The Rizq-4 well is being cleaned after fracturing. Due to technical problems while drilling, the Rehman-8 well was temporarily secured and the drilling is planned to resume in 2023.

The Rayyan-1 exploration well is planned to be drilled as part of the continuing exploration work within the Kirthar licence area in the fourth quarter of 2022. Work is under way to process and interpret seismic data for the W2 prospect. In 2022, design and preparatory work is carried out to acquire seismic data for the Musakhel licence area.

Appraisal and production work is scheduled for 2023 to finish drilling and tie in the Rehman-8 well, while the drilling of the Rayyan – 1 well is planned to be completed as part of the exploration work. In parallel with the drilling campaign, the Branch will work on expanding and maintaining the capacity of the production infrastructure.

Seismic surveys are scheduled to commence on the Musakhel licence in 2023 to decide whether to proceed with the drilling of the first exploration well. In parallel to the work planned for the Kirthar and Musakhel licence areas, steps are being taken to identify and possibly acquire further attractive assets in Pakistan.

Trade and Storage

As regards wholesale, PGNiG has secured long-term regasification and transmission capacities to cover import requirements of the Polish wholesale market. Regardless of the suspension of gas supplies by Gazprom under the Yamal contract, the Company imports gas based on a diversified portfolio of purchase contracts. PGNiG also cooperates with PGNiG Group companies operating in the European wholesale and LNG markets and strengthening the Group's position as a gas producer on the Norwegian Continental Shelf.

Notwithstanding supply curtailments and price hikes on the energy market in the first half of 2022, the PGNiG Group will continue to develop its business especially in LNG trading, procurement of gas from the North Sea and Norwegian Sea area and gas trading in Central and Eastern European markets.

To achieve strategic objectives and tackle the challenges posed by the fast evolving situation on the gas market, PGNiG Obrót Detaliczny (PGNiG OD) is carrying out a number of operational activities and projects designed to maintain and improve the effectiveness and efficiency of processes critical to customer service.

PGNiG OD continues the initiatives designed to improve the efficiency of sale and customer service processes through the implementation of a central billing system, development of CRM and Contact Centre, development of remote customer service tools and offered products, such as sale of insurance solutions, continuation of the Stop Smog project, whose scope in 2022 includes adaptation to developments on the natural gas market, as well as enhancing cooperation with a PGNiG Group company in PV projects and home heating solutions. The sale of heating equipment (gas boilers) started and the second quarter of 2022 saw the launch of a programme to subsidise the replacement of heating equipment or equipment for domestic water heating, addressed to consumers living in single-family buildings.

Additionally, in 2022 PGNiG OD will be involved in extensive measures taken as part of the anti-inflation shield and dedicated solutions to protect selected groups of gas fuel buyers. The implementation of these measures was given priority in the first half of 2022, including with regard to aligning internal procedures, processes and tools to meet new billing and reporting requirements.

As regards storage, with the commissioning of five chambers in Cluster B at the end of 2021, 10 storage chambers with a working capacity of 299.7 mcm are active at the Kosakowo CGSF. Gas Storage Poland ("GSP") plans to expand its storage business, in particular storage of energy (in the form of hydrogen), hydrogen, biomethane, compressed air and liquid fuels, in order to broaden its customer base and secure new revenue streams. Moreover, as part of non-regulated activities, a new service will be continued in 2022 relating to the operation of a gas drying system in Mikanowo.

In the first half of 2022, work was continued on the H2020 project to construct underground hydrogen storage facilities at the Mogilno CGSF and Kosakowo CGSF. A decision was made to continue work on the project to construct the Mogilno Large-Scale Energy Storage Facility. The main objective of the project is to build storage capacities for methane and renewable and low-emission gas fuels ((biomethane, hydrogen and compressed air) by constructing a large-scale energy storage facility that meets the challenges of energy transition.

Distribution

In the short term, Polska Spółka Gazownictwa ("PSG") is taking steps which, through the roll-out of the gas network and connection of end customers (mainly as part of "network densification", i.e., connection of new service lines to the existing gas network), are part of the anti-smog measures. In parallel, PSG participates in the 'Connect, because every breath matters' campaign.

In the medium term, PSG is taking steps to convert, modernise and build a new gas network in order to maintain the security and continuity of gas fuel supplies and the long-term capacity to connect new industrial customers, including in particular district heating accounts below 50 MW.

The Company recognises business potential in the development of the market for new renewable gas products and the target volumes of these gases to be transported, which can offset (to an extent dependent on economic and regulatory factors) the declining significance of natural gas in the energy mix of the Green Deal economy. Therefore, PSG continuously monitors R&D&I projects to investigate the impact of hydrogen and biomethane additives on the operation of the network system and to optimise the management of gas infrastructure, enabling safe and efficient transport of these green gases via the distribution network operated by the Company.

In the first half of 2022, PSG completed multi-faceted analyses on a project basis, covering technical aspects of the concept of biomethane plant connection to the distribution network, its impact on the tariff, the methodology for assessing the economic viability of connecting gas fuel sources to the network in the event of switching from a non-renewable to a renewable fuel. As a result, two preferred options were developed for biomethane plant connection to the medium- and high-pressure gas distribution network.

In view of the long-term policy of the European Union, known as the European Green Deal, which envisages achieving climate neutrality by 2050, and the priority for the generation of energy from renewable energy sources (RES), PSG will continue to analyse, both in technological and regulatory aspects, further issues related to extension of the functionality of gas infrastructure to transport natural gas mixtures containing other gases.

PSG also engages in cooperation with the PGNiG Group and entities from the fuel sector to develop a business model which, taking into account the prevailing market conditions and the policy of the state, will enable the development of alternative fuel infrastructure and create conditions to offer vehicle users a viable CNG refuelling option.

Projects to construct 23 CNG refuelling stations, including two LCNG facilities, are under way. By the end of June 2022, 21 CNG stations, including two LCNG stations, were commissioned. At the same time, seven CNG refuelling stations, including two LCNG stations, underwent final acceptance.

Generation

In the first half of 2022, capital expenditure incurred by PGNiG TERMIKA were mainly on modernisation and construction of generation units. The main assembly and construction work was completed and work related to the construction of gas infrastructure for a peak-load boiler house at the Żerań CHP plant commenced, a permit to construct a gas and oil-fired boiler house at the Pruszków CHP plant was obtained, and an application was submitted for a building permit for a gas engine house at the Pruszków CHP plant. In the six months ended June 30th 2022, in order to adapt the Kawęczyn heat plant to the BAT requirements, a final zoning permit was obtained and applications for building permits were filed with the authorities. The concept for the construction of a gas-fired boiler house (KG2) at the Kawęczyn heat plant was also adopted. At the same time, construction of a gas pipeline to the Kawęczyn heat plant is in progress. The entire project is being implemented pursuant to the Act of April 24th 2009 on Investment Projects for the Świnoujście LNG Regasification Terminal.

PGNiG TERMIKA S.A. will proceed with its strategic projects and will actively seek acquisition opportunities in the heat and power generation sector. The company intends to markedly scale up the volume of electricity sales by implementing projects aimed at building new, cost-effective generation capacities and upgrading the existing sources using low-carbon technologies.

In 2022, the Company will continue work on several projects, including the construction of a peak-load boiler house at the Żerań CHP plant and preparations for the construction of a CCGT unit at the Siekierki CHP plant.

Capital expenditure planned for 2022 in the area of environmental initiatives will cover adaptation of the Kawęczyn heat plant to the BAT conclusions, upgrade of the Pruszków CHP plant, upgrade of absorbers 1 and 2 at the Siekierki CHP plant, a programme to reduce noise generated by the plants and upgrade of the sanitary sewage system.

Steps will also be taken to expand the company's business and R&D&I projects focusing on the use of hydrogen in the energy sector, the construction of heat and electricity batteries, increased use of renewable energy sources in generation units as well as the use of Power-to-Heat technologies (electrode boilers, heat pumps), as well as the use of waste heat, both in and outside of production facilities. All these projects and technologies will be evaluated, described and developed as concepts of investment projects as part of the PR40+ project.

Other development projects

In the first half of 2022, design work continued under the "Hydrogen – a Clean Fuel for the Future. Building Hydrogen Capabilities at the PGNiG Group" programme, initiated in 2020. Its objective is to assess and start the implementation (pilots/demonstrations) of hydrogen technologies within specific areas of the PGNiG Group's business, including in particular distribution as well as large-scale storage and production.

InGrid, P2G was another project continued in the first half of 2022. Its objective is to investigate the possibility of injecting hydrogen into existing gas networks and using them by terminal units. The construction of Poland's first power-to-gas demonstration unit will make it possible to produce green hydrogen through the electrolysis process and facilitate off-grid operation supported by an energy reservoir and production of hydrogen using electricity from the power grid.

In the first six months of 2022, the large-scale cavern energy storage facility project applying for the IPCEI (Important Projects of Common European Interest) mechanism received a positive pre-notification decision and was submitted to the European Commission to obtain notification, i.e., the final decision on the possibility of co-financing with public funds. The purpose of the project is to construct underground hydrogen storage facilities with the use of salt caverns in Kosakowo and Mogilno.

The Blue H2 project was also initiated. The purpose of the project is to develop a blue hydrogen production technology (with parameters meeting the transport requirements) based on reforming natural gas integrated with a CO_2 capture unit – adaptable to the characteristics of the market product and enabling hydrogen storage. The project is to deliver a technology enabling local production of hydrogen for industrial use while maintaining carbon neutrality through CO2 sequestration for further use or storage.

In the second half of 2022, further efforts will be made to step up the development of the PGNiG Group's hydrogen technologies, to continue working on digitalisation of the business and to apply new solutions to PGNiG's core business, especially in the Exploration and Production and Storage areas. Priority will be given to the completion of ongoing R&D&I projects and to the commercialisation of further products. At the same time, new business areas that can increase the competitiveness of the companies and strengthen their market position will be constantly analysed. New projects will also be gradually identified and pursued in key development areas: Renewable Energy Sources (including development of photovoltaic offering and construction of own RES portfolio), alternative fuels and energy efficiency.

3. Business environment

3.1 Changes in the PGNiG Group's environment in the first half of 2022

3.1.1 Natural gas market

In the six months to June 30th 2022, gas prices in Europe were highly volatile. The second half of 2021 saw a gradual increase in the TTF spot price, which was attributable to the tense supply-demand situation and concerns about gas shortages in winter. Low storage levels after winter 2020/2021, declining gas production in Europe and, especially, lower volumes of gas transported from Russia, buoyed TTF spot prices to an all-time high of EUR 183/MWh (on December 21st 2021). This price spike led to more LNG shipments entering Europe, as a result of which the supply of LNG in Europe began to recover, supported by a relatively mild winter. In consequence, at the end of 2021 and beginning of 2022, the long-term price growth trend reversed and the price volatility declined. Between January 1st and February 23rd 2022, the average spot price on the TTF market was EUR 80.7/MWh.

Since the Russian Federation's invasion of Ukraine on February 24th 2022, gas prices on European energy exchanges rose again above EUR 120/MWh. Another record spot price (EUR 216/MWh) was recorded on March 7th 2022. In mid-March 2022, prices returned to below EUR 100/MWh thanks to continuing gas supplies from Russia to EU countries and higher LNG volumes. On the futures market, gas prices on the Dutch TTF exchange, with delivery for subsequent periods, were relatively stable, following an upward trend. In December 2021, the average price under contracts with delivery in 2023 (Y-23) was EUR 45/MWh. It reached EUR 85/MWh (on March 7th 2022) soon after Russia's invasion of Ukraine.

Following the Russian Federation's invasion of Ukraine, the European Union, the United States and other countries imposed a range of sanctions against Russia. In retaliation, Russia demanded that as of April 1st 2022 payments for natural gas supplied to countries "hostile to the Russian Federation" (including Poland) be made in accordance with Decree No. 172 of the President of the Russian Federation, i.e., in the rouble using settlement accounts in banks in the Russian Federation. PGNiG decided to continue settlements in accordance with the existing terms of contracts. In response, Gazprom halted gas supplies under the contract with PGNiG, as well as to countries such as Bulgaria, Finland, Denmark, and the Netherlands. As a result, PGNiG is in dispute with Gazprom concerning the stoppage of supplies and the related contractual consequences, and has to bear the costs of contracts for the supply of gas from other sources.

At the beginning of the second quarter of 2022, spot prices of gas on the TTF and THE markets fell from approximately EUR 125/MWh at the beginning of April to approximately EUR 81/MWh on June 14th 2022, when a fire at the US Freeport LNG terminal and the announcement to reduce gas transmission from Russia to Germany via Nord Stream 1 to 60% of the pipeline's nominal capacity gas sent prices in the European market soaring. As at June 30th 2022, the spot price of gas on the TTF and THE markets was more than EUR 144/MWh and the Y-23 contract price exceeded EUR 106/MWh.

Since the beginning of the second half of 2022, there have been further reductions of gas supplies from Russia to Europe due to, among others, lower gas volumes transported from the Russian Federation to Germany via Nord Stream 1 (halt of gas supplies caused by technical works between July 11th and July 21st 2022 and their subsequent resumption, but at 40% of the capacity), discontinuation of supplies via the Yamal pipeline and reduced transit through Ukraine. Spot prices of gas on the TTF and THE markets reached all-time highs of approximately EUR 200/MWh on July 28th 2022, while the prices of gas under contracts for delivery in 2023 ranged between EUR 150–EUR 154/MWh. Higher prices on the spot and futures market drove up gas trading sector entities' demand for working capital and increased the risk of mismatch between tariff prices and gas procurement costs.

3.1.2 Crude oil market

The situation caused by the armed conflict in Ukraine triggered an abrupt spike in commodity prices and significant turbulence on the hydrocarbon and other markets. Given the global importance of crude oil as a production factor for the entire economy, its prices are the first to rise. From February 24th to March 8th 2022, crude oil prices surged 36% (from USD 95 to 129/bbl). The United States, United Kingdom and Canada already imposed a full embargo on Russian crude oil. Some European Union countries (including Poland) also declared their readiness to immediately stop all imports of Russian commodities. On June 2nd 2022, the European Union adopted a sixth package of sanctions, including a partial ban on seaborne import of Russian crude oil.

A number of economic sanctions have been imposed on Russia in response to its aggression against Ukraine. Consequently, buyers fear a reduction or complete stoppage of deliveries as the military conflict escalates. In view of the uncertain supply situation, further sharp price fluctuations are to be expected on the exchanges over the coming periods.

3.1.3 Changes in legislation

December 10th 2021 and January 29th 2022 saw the entry into force of legislative measures for the protection of certain categories of end users from significant rises in gas fuel prices attributable to the accumulation of a number of market factors, including supply disruptions caused by the dominant gas supplier to the EU. The Act of December 7th 2021 Amending the Energy Law allows sellers of gas fuel to households to take advantage of a mechanism whereby the price tariff approved by the President of URE can cover only a part of the cost of gas fuel purchase with recovery of the actually incurred cost spread over three consecutive years from the end of the effective period of the tariff approved under these regulations. The mechanism was applied by PGNiG Obrót Detaliczny sp. z o.o., whose tariff will remain in effect until the end of 2022.

The Act of January 26th 2022 on Special Measures to Protect Gas Fuel Customers in View of the Situation on the Gas Market, provides for the following mechanisms:

a) A compensation mechanism for natural gas sellers:

- Compensation in respect of gas sales to households to cover the difference between the actual cost of gas supply to tariff customers and revenue derived from tariff prices, and in respect of other vulnerable customers – the difference between the price applied on January 1st 2022 and the tariff price.
- The compensation is settled by dedicated entity Zarządca Rozliczeń S.A. (as in the case of electricity compensation) and financed from the sale of carbon dioxide emission allowances and the COVID-19 Fund.

In the first half of 2022, PGNiG OD recognised PLN 2.964bn in compensation income. The compensation mechanism applies throughout 2022. The fund set up for this purpose under the Act amounts to PLN 10bn.

b) Extension of the list of entities covered by tariff protection:

- Tariff protection has been extended until December 31st 2023 to cover customers performing public service tasks (such as hospitals, schools, nurseries, pre-schools, night shelters, etc.).
- Clarification of the scope of tariff protection afforded to customers providing gas fuel (or gas-derived heat) to households in multi-apartment buildings (such as housing communities, cooperatives and other collective entities).

On July 15th, the government issued a draft law amending certain acts to strengthen national gas security in view of the situation on the gas market. It provides, among other things, for extension of the period for delivering emergency stocks of natural gas to the gas system, and extension of the tariff protection afforded to households and strategic public service institutions, such as hospitals, schools and pre-schools, until 2027.

c) Possibility of providing the ticketing service also by the Government Agency of Strategic Reserves:

- In parallel to the existing methods of holding gas stocks (either on one's own or by using services provided by other energy companies, such as PGNiG).
- Conclusion of a ticketing service agreement with the Government Agency of Strategic Reserves will involve transfer to the State Treasury, for a consideration, of existing gas stocks and associated storage capacities.

On March 18th 2022, PGNiG executed an agreement engaging the Government Agency for Strategic Reserves to perform tasks related to maintaining emergency stocks of natural gas for the period from March 18th 2022 to September 30th 2022, with an option to extend its effective term until September 30th 2023. Under the Agreement, PGNiG sold 10,063,104 MWhm of natural gas constituting emergency stocks, with a value of PLN 5,955m.

d) Introduction of State Treasury guarantees for energy companies:

- Possibility for the State Treasury to guarantee bank loans or bond issues to ensure continuity of the comprehensive service provided to households by the last resort supplier of gas fuels (PGNiG OD) and of natural gas supplies to Poland by PGNiG S.A.

PGNiG concluded with Bank Polska Kasa Opieki S.A. (on July 28th 2022) and Bank Gospodarstwa Krajowego (on August 16th 2022) credit facility agreements for up to PLN 4.8bn each for a term of 24 months from the date of the credit agreement. Both agreements are secured by State Treasury guarantees. On August 5th 2022, the Sejm (lower house of the Polish Parliament) passed the Senate's amendments to the Act Amending Certain Acts to Strengthen National Gas Security in View of the Situation on the Gas Market, including an increase (to PLN 55bn) of the total amount of potential State Treasury guarantees for liabilities under bond issues or bank loans contracted by energy companies.

e) Changes in the methods of providing non-cash collateral by members of the Commodity Exchange Clearing House (IRGiT):

- Extension of the effective period and scope of the temporary arrangements for the provision of non-cash collateral until March 31st 2023 (currently until June 30th 2022).

f) Possibility for the State Treasury to grant loans to energy companies:

- The solution enables the State Treasury to grant loans to the last resort supplier of gas fuels, as referred to in Art. 62c.1 of the Energy Law (i.e., PGNiG OD), so it can secure the continuity of gas fuel sales to households (including funds for balancing, purchase and settlement of purchased gas fuel) and to the entity discharging the obligation to sell a portion gas fed into the national transmission system through the exchange market (PGNiG S.A.) so it can guarantee the supply of natural gas to Poland (including funds for purchase and settlement of gas fuels, and for transmission, storage, distribution and gas fuel storage services).
- The total amount of such loans may not exceed PLN 20bn. The Minister competent for state assets will specify, by way of a regulation, the detailed procedures to be followed with respect to granting the loans.

3.1.4 Assessment of the impact of changes in external environment on the PGNiG Group's operations in 2022

The unprecedented surge in commodity prices observed since September 2021 and the level of price tariffs approved for the fourth quarter of 2021 and for 2022 cause the cash requirements of PGNiG Group companies to rise as a result of an increase in liabilities under gas purchases, the need to maintain high volumes of gas stocks held in underground storage facilities, and increased margin requirements for gas trading exchange and financial transactions.

In December 2021, PGNiG entered into three new credit facility agreements with Bank Gospodarstwa Krajowego, PKO Bank Polski S.A. and CaixaBank S.A. Poland Branch, increasing its ability to mobilise short-term finance for a period of nine months by a total of PLN 2.7bn. Further short-term credit facility agreements were executed in January 2022 with Societe Generale SA Polish Branch (for PLN 750m) and in February 2022 with a bank syndicate of Bank of China Limited, acting through Bank of China Limited Luxembourg Branch, and Bank of China (Europe) S.A., acting through Bank of China (Europe) S.A. Polish Branch (for PLN 1.2bn), with Deutsche Bank Polska S.A. (for PLN 400m) and with Credit Agricole Bank Polska S.A. (for PLN 200m). On June 30th 2022, a credit facility agreement was signed with entities of the Sumitomo Mitsui Banking Corporation group, for up to EUR 170m, for a period of nine months from the agreement date.

On July 28th 2022, PGNiG concluded a PLN 4.8bn credit facility agreement with Bank Polska Kasa Opieki S.A. for a term of 24 months from the agreement date, using the State Treasury guarantee – a mechanism provided for in Art. 14.1.2 of the Act of January 26th 2022 on Special Measures to Protect Gas Fuel Customers in View of the Situation on the Gas Market (the "Gas Act"). On August 16th 2022 credit facility agreement for up to PLN 4.8bn for a term of 24 months from the date of the credit agreement with Bank Gospodarstwa Krajowego were concluded. The agreement is secured by State Treasury guarantees.

As a result, as at the date of this Report, PGNiG had access to sources of financing totalling approximately PLN approx. 25.6bn.

The Company monitors the price and regulatory environment and will take further steps to increase the available financing sources, including to continue using financing secured with State Treasury guarantees and other forms of working capital financing support based on the solutions provided for in the Gas Act. The PGNiG Group's financial results and liquidity will depend on the development of commodity prices, which are strongly affected by reduced supply of gas fuel in Europe and changes in the scope of sanctions imposed on the Russian Federation.

PGNiG is also monitoring the situation related to natural gas supplies to the Polish transmission system. Following the suspension of supplies under the Yamal contract, the Group purchases gas on LNG markets and foreign exchanges, while maintaining stock levels in Poland almost in full nominal capacity of the available facilities. Thanks to the reserved transmission capacity, PGNiG can source natural gas from various directions, including via the LNG Terminal in Świnoujście, from the west and south of Poland, and since May 2022 also from Lithuania. Depending on its balancing needs, the Company books additional interconnector capacities and makes supplementary purchases of gas.

The PGNiG Group's priority is to ensure continuous gas supplies to customers in and outside of Poland.

In Ukraine the PGNiG Group operates through the PGNiG SA Representative Office in Kiev, the Exalo Drilling Group (Exalo Drilling Ukraine LLC) and LLC Karpatgazvydobuvannya (exploration and production activities carried out in cooperation with ERU Management Services). As at the date of this Report, the value of assets engaged in Ukraine did not represent a material part of the Group's total assets. Employees of the PGNiG Group and their families were evacuated from areas at risk of being affected by the military conflict, and the PGNiG Group is actively involved in providing humanitarian aid.

(in PLN million unless stated otherwise)

4. Operating activities in the first half of 2022

4.1 Exploration and Production

The segment's operations consist in exploring for and extracting natural gas and crude oil from deposits, starting from geological surveys, geophysical research and drilling, to development and production of hydrocarbons from gas and oil fields. Its core activities are carried out in Poland, Pakistan, the United Arab Emirates and on the Norwegian Continental Shelf, while support activities are conducted worldwide. The segment also relies on storage capacities available at the Bonikowo and Daszewo UGSFs.

4.1.1 Key operating metrics

Table 6 Volume of the PGNiG Group E&P segment's natural gas production by country

mcm	H1 2022		H1 2021		2021	2020	2019
	PGNiG Group	PGNiG	PGNiG Group	PGNiG	PGNiG Group	PGNiG Group	PGNiG Group
Poland	1,783	1,783	1,778	1,778	3,648	3,746	3,815
high-methane gas (E)	652	652	636	636	1,284	1,337	1,337
nitrogen-rich gas (Ls/Lw as E equivalent)	1,131	1,131	1,142	1,142	2,364	2,409	2,478
Other countries	1,697	160	558	168	1,746	773	674
Norway (high-methane gas (E))	1,537	0	391	0	1,420	478	481
PGNiG Pakistan Branch (nitrogen-rich gas (Ls/Lw as E equivalent))	160	160	168	168	326	295	193
TOTAL (measured as E equivalent)	3,480	1,943	2,336	1,946	5,394	4,520	4,489

Table 7 Volumes of E&P segment's natural gas sales to non-PGNiG Group customers by country

mcm	H1 2022		H1 2021		2021	2020	2019
	PGNiG Group	PGNiG	PGNiG Group	PGNiG	PGNiG Group	PGNiG Group	PGNiG Group
Poland	313	313	337	337	667	667	679
high-methane gas (E)	9	9	12	12	23	25	25
nitrogen-rich gas (Ls/Lw as E equivalent)	304	304	326	326	644	642	654
Other countries	154	154	164	164	318	296	192
Norway (high-methane gas (E))	0	0	0	0	0	7	0
PGNiG Pakistan Branch (nitrogen-rich gas (Ls/Lw as E equivalent))	154	154	164	164	318	289	192
TOTAL (measured as E equivalent)	467	467	502	502	985	963	871

Table 8 Crude oil production volumes* at the PGNiG Group E&P segment (including condensate and NGL)

thousand tonnes	H1 2022		H1 2021		2021	2020	2019
	PGNiG Group	PGNiG	PGNiG Group	PGNiG	PGNiG Group	PGNiG Group	PGNiG Group
Crude oil production*	739	309	608	325	1 376	1 324	1 216
in Poland	309	309	325	325	643	709	776
in Norway	430	0	283	0	732	615	440

** Including condensate and NGL.*

Table 9 Crude oil sales volumes* at the PGNiG Group E&P segment (including condensate and NGL)

thousand tonnes	H1 2022		H1 2021		2021	2020	2019
	PGNiG Group	PGNiG	PGNiG Group	PGNiG	PGNiG Group	PGNiG Group	PGNiG Group
Crude oil sales*	666	317	617	320	1 340	1 332	1 210
including oil produced in Poland	317	317	320	320	643	713	771
including oil produced in Norway	349	0	297	0	697	619	439

** Including condensate and NGL.*

Table 10 Production volumes of selected products in the E&P segment

thousand tonnes	H1 2022		H1 2021		2021	2020	2019
	PGNiG Group	PGNiG	PGNiG Group	PGNiG	PGNiG Group	PGNiG Group	PGNiG Group
Propane-butane	17	17	18	18	37	36	39
LNG	9	9	10	10	22	20	20
mcm							
Helium	1	1	1	1	3	3	3

Table 11 Sales volumes of selected products to non-PGNiG Group customers in the E&P segment

thousand tonnes	H1 2022		H1 2021		2021	2020	2019
	PGNiG Group	PGNiG	PGNiG Group	PGNiG	PGNiG Group	PGNiG Group	PGNiG Group
Propane-butane	17	17	18	18	37	36	39
LNG	7	7	7	7	16	12	14
mcm							
Helium	1	1	1	1	3	3	3

4.1.2 Operations in Poland

Licences in Poland

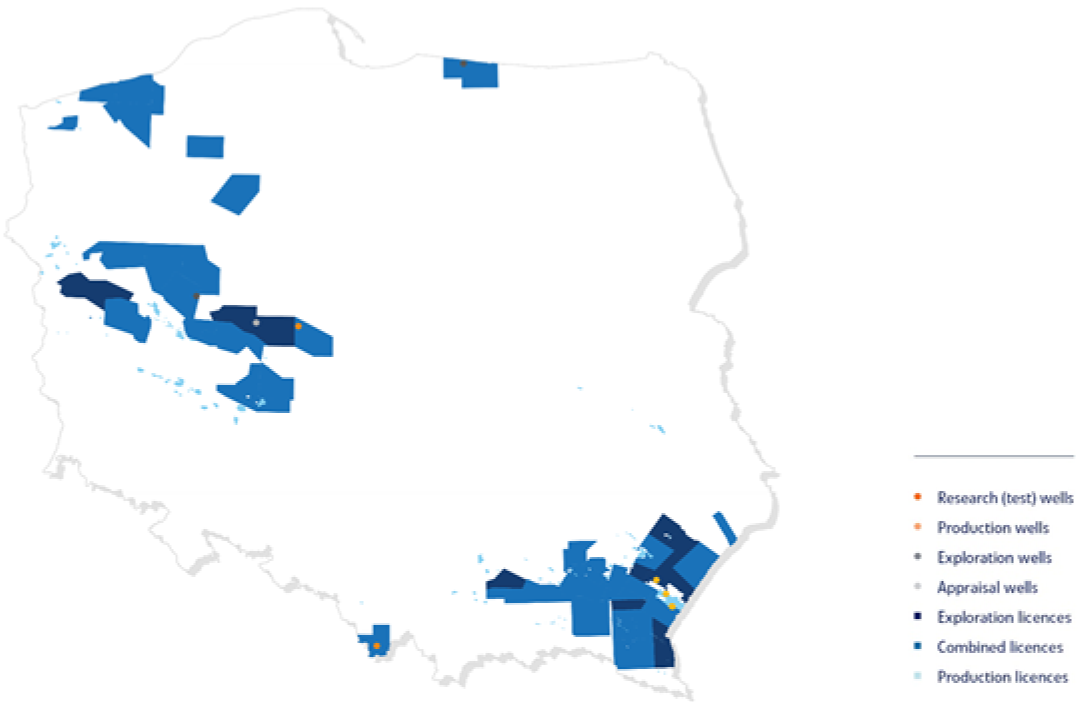
As at June 30th 2022, PGNiG held 199 mining licences, of which 187 were production licences, three – underground waste storage licences and nine – underground gas storage licences. In the first half of 2022, no new production licences were obtained, three licences (Mozów S, Sławoborze and Radoszyn) were amended, one investment decision (Rogoźnica) was amended, and one licence (Jeżowe NW) expired. As at June 30th 2022, PGNiG had six investment decisions in connection with the transition to the production phase. In the first half of 2022, three investment decisions were received for production of natural gas from the Dargosław, Koźminiec and Turkowo fields.

In addition, as at June 30th 2022, PGNiG held 45 licences, including: 11 licences for exploration for and appraisal of oil and gas deposits and 34 combined licences (for exploration, appraisal and production). In the period under review, two combined licences – Strumień-Kęty and Jarocin-Grabina (cooperation with Orlen Upstream) – were relinquished. No new licence areas were acquired.

In the first half of 2022, 35 administrative proceedings were concluded, including proceedings to obtain/amend licences (15 proceedings) and approve/adopt plans of geological operations and additions to such plans (20 proceedings). Currently, 10 administrative proceedings are still pending, of which one is aimed at obtaining a new licence area.

Operations under licences held by PGNiG

Figure 3 PGNiG's licences and wells in the first half of 2022



Source: In-house analysis based on data from the Geology and Hydrocarbon Production Branch.

In the first half of 2022, PGNiG continued crude oil and natural gas exploration and appraisal projects in the Carpathian Mountains, Carpathian Foothills, Przedsudecka Monocline, and Polish Lowlands, both on its own and with partners. Out of the five boreholes drilled in the first half of 2022, the target depth was reached by five, of which one was a test well, one was an exploration well, one was an appraisal well, and two were production wells.

As at the end of June 2022, formation results were obtained from seven boreholes (two test, one appraisal, and four production wells), including three wells (one test and two production wells) in which drilling was completed in 2021. The seven wells with known formation test results included four which returned positive results (including one appraisal and three production wells) and three dry wells (including two test wells and one production well) that did not yield any commercial flow of hydrocarbons. In the first half of 2022, workovers, formation tests and decommissioning operations were also performed on wells drilled in previous years, including on two test wells and one exploration well.

In addition, two new fields – Kamień Mały and Koźminiec – were brought on stream at the Zielona Góra Branch of PGNiG. In the first half of 2022, a total of four wells were tied-in at the Zielona Góra Branch of PGNiG.

At the Sanok Branch of PGNiG, six new wells on the Przemyśl field were brought on stream. In the first half of 2022, following expiry of the licence, production from the Jeżowe NW field was terminated.

Key projects and investments in Poland

The key exploration/appraisal/research projects in the first half of 2022 included:

- drilling work – formation and other tests, workovers Rycerka Dolna 1, Kramarzówka 3;
- drilling of the Miłosław 7H appraisal wells;
- upgrade of Przemyśl 226, Przemyśl 234, Jaksmanice 204, Mirocin 4, Mirocin 39 wells;
- drilling of Sierosław 2H exploration well.

The key investment projects completed in the first half of 2022 included:

- development of the following wells: Przemyśl 291K, 292K, 316K, 317K, 318K – Przemyśl Zachód Gas Production Site, Przemyśl 299K, 308K – Hurko Gas Production Site (Łuczyce area) and Koźminiec-1;
- installation of a gas compressor at Siedleczka I facility – Krasne Gas Production Site;
- tie-in of the Przemyśl 139 well – Przemyśl Zachód Gas Production Facility;
- development of the Kamień Mały crude oil field.

Recoverable reserves

As at June 30th 2022, the total recoverable reserves (including reserves covered by geological prospecting documentation as well as clearance documentation submitted to the Ministry of Climate and Environment, pending approval by the Minister) were 15.4 million tonnes of crude oil (approximately 113.2 mboe) and 87,289 mcm of natural gas (high-methane gas equivalent) (ca. 562.8 mboe).

4.1.3 Foreign operations

Norway

In the first half of 2022, the company produced a total of 429 thousand tonnes of crude oil with condensate and NGL (measured as tonnes of crude oil equivalent), and 1.5 bcm of natural gas from its producing fields. The increase in production was mainly attributable to the acquisition of INEOS E&P Norge on September 30th 2021, the launch of production in the Duva, Ærfugl and Ærfugl Nord fields (Phase 2), and the suspension of gas injection into the Gina Krog field in order to maximise gas production.

In the first half of 2022, development work on the Tommeliten Alpha field was continued and the third development phase on Ormen Lange, where PGNiG UN is a partner, was started. The Tommeliten Alpha field operator is ConnocoPhilips and Ormen Lange – Shell. First oil from the Tommeliten Alpha field is expected in 2024, and an increase in production from the Ormen Lange field is expected following completion of the third development phase in 2025.

In May 2022, PGNiG UN and Wellesley Petroleum signed an agreement to purchase a 40% interest in the PL942 licence, covering the Ørn gas field in the Norwegian Sea. From 2026 onwards, the field will produce an additional 0.25 bcm of natural gas per annum. According to data of the Norwegian Petroleum Directorate, the Ørn field's documented recoverable reserves are approximately 6.75bcm of natural gas, 0.17m tonnes of crude oil, and 0.79m tonnes of NGL. Ørn is located approximately 20 km from the Skarv field, in which PGNiG UN also holds interests. This will enable the use of the existing production infrastructure, including the Skarv FPSO (floating production, storage and offloading) unit, to reduce the time and costs of production launch. PGNiG UN awaits clearance from the Norwegian authorities to finalise the transaction – expected at the end of August 2022.

In January 2022, APA (Awards in Predefined Areas) 2021 round was concluded, following which PGNiG UN was offered interests in four exploration licences:

- Licence PL941B (extension of the 941 licence), located near the Skarv field. The licence operator is Aker BP (80%), with the remaining interest held by PGNiG UN (20%). The consortium has two years for a drill or drop decision;
- Licence PL1055C, an extension of the PL1055 and PL1055B licences, located near the Ormen Lange field. The licence operator is PGNiG UN (holding a 60% interest) and Shell is the sole partner (with a 40% interest). A decision to drill concerning the Tomcat prospect, which extends over the area covered by all the three licences (PL1055/PL1055B/PL1055C), was made in April 2022;
- Licence PL1135, in which PGNiG obtained a 70% interest, located in the North Sea, some 45 km east of the King Lear field. PGNiG UN will act as the Operator, with LOTOS Norge as the sole partner. The interest holders have two years to decide whether to drill an exploration well;
- Licence PL1136, in which PGNiG obtained a 50% interest, located in the south-eastern part of the North Sea. PGNiG UN acts as the Operator, with Equinor as the sole partner (50% interest). The interest holders have one year to decide whether to drill an exploration well.

(in PLN million unless stated otherwise)

Jointly with its partners, PGNiG UN also continued work in other exploration licence areas. In the first half of 2022, it was involved in the drilling of two wells. Under licence PL209BS, in which PGNiG UN holds a 14% interest, the company drilled an exploration well to document the prospect under the Ormen Lange field. However, the well was classified as dry. A second well was drilled within the PL1064 licence area, in which the company holds a 30% interest. The well yielded non-commercial quantities of hydrocarbons; the discovery will be examined by the interest holders for further prospectively under the licence.

As at June 30th 2022, PGNiG UN held interests in 62 exploration and production licences on the Norwegian Continental Shelf, in ten of them as the operator.

Table 12 PGNiG UN deposits as at June 30th 2022

Licence	Operator	Interest	Type of deposit	Type of licence	Planned activities
PL19G (Tambar Øst)	Aker BP	34% (5.44% interest in the project)	Oil field	Production	Planned restart of production
PL029B (Gina Krog)	Equinor	20% (11.3% interest in the project)	Oil and gas field	Exploration/production	Production, exploration
PL029C (Gina Krog)		29.63% (11.3% interest in the project)			
PL036D (Vilje)	Aker BP	24.24%	Oil field	Production	Production
PL044 (Tommeliten Alpha)	ConocoPhilips	30% for exploration (42.1978% interest in Tommeliten Alpha)	Gas and condensate field	Exploration/development	Exploration, start of development
PL036 (Vale) PL249 (Vale)	Spirit	24.24%	Gas and condensate field	Production	Production
PL122 (Marulk) PL122B (Marulk) PL122C (Marulk) PL122D (Marulk)	Var Energi	30%	Gas field	Production	Production
PL127C (Alve Nord)	Aker BP	11.92%	Gas and condensate field	Development	Preparation of a development concept
PL146 (King Lear) PL146B (King Lear) PL333 (King Lear)	AkerBP	22.20%	Gas and condensate field	Exploration/development	Final work on a development concept
PL134B (Morvin) PL134C (Morvin)	Equinor	6%	Oil field	Production	Production, exploration
PL159B (Alve) PL159G (Alve)	Equinor	15%	Oil and gas field	Production	Production/development
PL157F (Osprey)	Equinor	7.50%	Gas field	Appraisal	Assessment of development potential
PL193 (Kvitebjorn) PL193B (Kvitebjorn) PL193C (Kvitebjorn)	Equinor	6.45%	Gas and condensate field	Production	Production, exploration
PL193D (Valemon)	Equinor	6.45% (3.225% in the project)	Gas and condensate field	Production	Production, exploration
PL208 (Ormen Lange)	PGNiG UN (Project operator – Shell)	45% interest in the licence (14.0208% interest in the project)	Gas field	Exploration/production/development	Exploration/ production/ development
PL250 (Ormen Lange)	Shell	9.44% (14.0208% interest in the project)			
PL212 (Skarv) PL212B (Skarv) PL262 (Skarv)	AkerBP	15% (11.9175% interest in the project)	Oil and gas field	Exploration/production	Production, exploration
PL261C (Skarv)		11.92%			
PL212E (Ærfugl Nord)	AkerBP	15%	Gas and condensate field	Production	Production
PL433 (Fogelberg)	Spirit	20%	Gas and condensate field	Appraisal	Preparation of a development concept
PL460 (Skogul)	Aker BP	35%	Oil field	Production	Production
PL636 (Duva) PL636C (Duva)	Neptune	30%	Gas and condensate field	Production	Production
PL636B	Neptune	30%		Exploration	Decision on drilling to be made in June 2022
PL838 (Shrek)	Aker BP	35%	Oil field	Appraisal	Preparation of a development concept
Op.PL838B	PGNiG UN	40%		Exploration	Decision on drilling to be made by March 2023
PL937 (Fat Canyon) PL937B (Fat Canyon)	PGNiG UN	65%		Exploration	Licence relinquished in March 2022
PL939 (Egyptian Vulter)	Equinor	30%	Oil and gas field	Appraisal	Assessment of development potential of the discovery made in 2021
PL941 (Gronlifielet)	AkerBP	20%		Exploration	Decision made to drill an exploration well in 2022
PL997 (Wheeljack)	Shell	30%		Exploration	Decision on drilling to be made by March 2023
PL1009 (Warka) PL1009B (Warka)	ConocoPhilips	35%		Appraisal	Drilling of appraisal well planned
PL1013 (Rafiki) PL1013B (Rafiki)	Petrolia	40%		Exploration	Decision made in March 2022 to drill an exploration well

(in PLN million unless stated otherwise)

PL1017 (Copernicus)	PGNiG UN	50%	Exploration	Decision made to drill an exploration well in 2022
PL1055 (Tomcat) PL1055B (Tomcat)	PGNiG UN	60%	Exploration	DoD* decision initially planned for February 2022. Decision expected to be delayed by several months
PL1064 (Peder)	ConocoPhilips	30%	Exploration	Well to be drilled in 2022
PL1065 (Skua)	Var Energi	30%	Exploration	Licence relinquished in February 2022
PL1088 (Timon South)	Aker BP	22.20%	Exploration	DoD* decision in February 2023
PL1101 (Wamba)	OMV	30%	Exploration	DoD* decision in February 2023
PL1103 (Condor)	Wintershall	30%	Exploration	DoD* decision in February 2023
PL1111 (Picual)	PGNiG UN	60%	Exploration	DoD* decision in February 2023
PL1123 (Nise South)	ConocoPhilips	30%	Exploration	DoD* decision in February 2023
PL1124 (Nise)	Aker BP	11.92%	Exploration	DoD* decision in February 2023

Table 13 Hydrocarbon reserves on the Norwegian Continental Shelf by licence, mboe, as at June 30th 2022

NO.	Licence	Crude oil	Natural gas	NGL	Total reserves
1	Skarv & Arfugl	4.99	23.57	5.33	33.88
2	Aerfugl Nord	0.23	2.15	0.33	2.72
3	Morvin	0.68	0.47	0.20	1.35
4	Gina Krog	3.81	8.17	1.36	13.35
5	Vilje	3.33	-	-	3.33
6	Vale	0.25	0.43	-	0.68
7	Skogul	1.75	0.07	-	1.82
8	Tommeliten Alpha	15.31	41.58	1.85	58.74
9	King Lear	14.80	21.44	3.48	39.72
10	Duva	5.83	11.81	2.73	20.37
11	Alve Nord	0.50	2.07	0.46	3.04
12	Shrek	2.96	1.94	0.43	5.32
13	Kvitebjorn	1.78	8.60	0.39	10.78
14	Valemon	0.21	1.33	0.02	1.56
15	Fogelberg	0.77	7.65	1.48	9.90
16	Ormen Lange	3.04	91.44	-	94.48
17	Marulk	0.15	2.37	0.42	2.94
18	Alve	0.39	3.53	1.08	4.99
19	Tambar Ost	0.02	0.00	0.00	0.03
	Total reserves	60.81	228.61	19.58	309.00

In April 2022, Norwegian Tax Administration presented a more precise proposal of changes to the tax system, including:

- under the special petroleum tax, the current six-year tax depreciation and four-year uplift will be replaced by direct recognition of the entire investment or the uplift as deductible expenses;
- the rate of the special petroleum tax will be raised to 71.8%, while the normal income tax will be deductible against the special petroleum tax base;
- the tax value of special petroleum tax losses is to be fully offset in cash in the following year;
- any losses under the normal income tax regime carried forward between years will be free of interest charged to date that increased the tax shield as a result of the losses carried forward;
- as regards projects subject to the temporary tax regime introduced in 2020, the uplift was set at 17.69% and is recognised in full in the year in which the capital expenditure was incurred. As regards projects outside the temporary tax regime introduced in 2020, the uplift was abolished;
- the announced tax changes will apply retrospectively from the beginning of 2022.

Pakistan

Through its Operator Branch, PGNiG is engaged in exploration work in Pakistan under an agreement for hydrocarbon exploration and production in the Kirthar licence area. The work is conducted jointly with Pakistan Petroleum Ltd. (PPL), with production and expenses shared pro rata to the parties' interests in the licence: PGNiG (operator) – 70%, PPL – 30%. In addition, PGNiG acquired a 25% non-operator interest in the Musakhel exploration licence. The other shareholders are PPL as the operator, with a 37.2% interest, as well as Oil and Gas Development Company Limited (OGDCL) and Government Holding Private Limited (GHPL), with 35.3% and 2.5% interests, respectively.

Reserves as at the end of June 2022 (nitrogen-rich gas converted to high-methane gas, attributable to PGNiG) reached approximately 6.15 bcm (39.67 mboe), including the Rehman field with 4.57 bcm (29.45 mboe) and the Rizq field with 1.58 bcm (10.23 mboe).

Gas from the Rehman and Rizq fields is produced via facilities located in the Rehman field. PGNiG's share in production from the Rehman and Rizq fields from ten wells until the end of June 2022 was approximately 159.656 mcm of gas (measured as high-methane gas equivalent). The Rizq-4 and Rehman-8 wells were drilled as part of field development. The Rizq-4 well is being cleaned after fracturing. Due to technical problems while drilling, the Rehman-8 well was temporarily secured and the drilling is planned to resume in 2023.

The Rayyan-1 exploration well is planned to be drilled as part of the continuing exploration work within the Kirthar licence area in the fourth quarter of 2022. Work is under way to process and interpret seismic data for the W2 prospect. In 2022, design and preparatory work is carried out to acquire seismic data for the Musakhel licence area.

United Arab Emirates

In December 2018, PGNiG's bid for the acquisition of hydrocarbon exploration, appraisal and production rights in onshore block 5 in the Emirate of Ras Al Khaimah was selected. Following the selection of its bid, the Company acquired a 90% interest in the block, with an area of 619 km^2. Agreements between PGNiG and the Ras Al Khaimah Petroleum Authority and RAK GAS LLC were signed in January 2019. The PGNiG Branch was registered in the Emirate of Ras Al Khaimah and seismic surveys were commenced.

In 2021, intensive work was undertaken to process and interpret seismic data, whose acquisition in Block 5 was completed in May 2020. As a result of the analytical work, the existing geological structures and potential hydrocarbon accumulations were identified, and the location of the first exploration well was determined. In addition, preparatory work was carried out relating to market research and the outsourcing of well drilling services. Procurement procedures are under way to select well drilling services to start drilling the first exploration well in the third quarter of 2022. The drilling project plan was drawn up and approved by the partners. As part of the acquisition work, resource analysis and economic modelling of the viability of Block 7 investment in Ras Al Khaimah were carried out, as well as the possibility to commence seismic acquisition work within other blocks in the emirate of Ras al Khaimah. The PGNiG Branch in UAE is also engaged in ongoing negotiations concerning the acquisition of exploration rights in other emirates.

Ukraine

PGNiG and ERU Management Services signed an agreement providing for the purchase by PGNiG of a controlling 85% interest in Ukraine's Karpatgazvydobuvannya, the sole holder of the Byblivska licence located in Western Ukraine, in an area adjacent to the Polish border. Karpatgazvydobuvannya holds a licence to explore for and produce hydrocarbons in the western part of the Lviv Oblast. In terms of geology the area is an analogue of Przemyśl, Poland's largest natural gas field operated by PGNiG for more than 60 years. Its attractiveness and potential have been confirmed through PGNiG's preliminary analyses of geological and geophysical data.

Libya

PGNiG UNA is implementing a project to discover and develop hydrocarbon deposits in the 113 licence area, blocks 1 and 2, located in the Murzuq oil basin in south-western Libya, 700 km south of Tripoli. The project is implemented under the Exploration and Production Sharing Agreement ("EPSA") concluded in February 2008 with Libya's National Oil Corporation ("NOC").

Despite the continuation of a force majeure event, PGNiG UNA and PGNiG specialists carried out analyses confirming the geological prospectivity and high resource potential of the CA113 area. Field development scenarios were also prepared for transporting hydrocarbons to the European transmission system via a gas pipeline under the Mediterranean Sea. Based on these analyses, in April 2022 PGNiG determined that the project is economically viable. PGNiG UNA continuously monitors political developments in Libya, particularly the security of its operations in the country. As the political situation in Libya began to stabilise, preparatory steps were taken to resume exploration works as soon as the force majeure is revoked.

4.1.4 Growth prospects and challenges for the future

Poland

Work planned for the first half of 2022 in the Sanok Production Branch includes:

- development of Kramarzówka 1K, 2H, 3H gas wells;
- development of the following wells: Rogoźnica 3K, 4K, 5K – Zalesie Gas Production Facility, Korzeniówek 1 – Pilzno Gas Production Facility, Zalesie 7 – Zalesie Gas Production Facility, Draganowa 4K – Równe Oil and Gas Production Facility, Nowe Sioło-1, Mielnik-1, Blizna 5 and 11 and Ocieka 2 – Czarna Sędziszowska Gas Production Facility, Gnojnica 4, 5, 6 – Czarna Sędziszowska Gas Production Facility, Ryszkowa Wola 8 and Zapałów 3 – Jarosław Gas Production Facility, Tarnów 82K – Tarnów II Gas Production Facility; Korzeniówek 2K – Pilzno Gas Production Site, Mirocin 66, 67, 68, 69 – Mirocin Gas Production Site;
- tie-in of the following wells: Brzyska Wola 2 and Dąbrowica Duża 3, 6 – Żołynia Gas Production Site, Mirocin 50 – Jodłówka Gas Production Site; Przemyśl 196, 226, 234 – Przemyśl Wschód Gas Production Site after workover, Jaksmanice 64, 219 – Maćkowice Gas Production Site after workover, Tuligłowy 5, 32 – Tuligłowy Gas Production Site after workover.

Work planned for the first half of 2022 in the Zielona Góra Production Branch includes:

- expansion of Lubiatów Oil and Gas Production Facility to increase production output from the Międzychód field;
- development of the Różańsko field and construction of a cogeneration source for Dębno Oil and Gas Production Facility;
- development of the following fields: Rokietnica (including construction of a gas transmission pipeline from Grodzisk Wielkopolski to Kościan) – Młodawsko Oil and Gas Production Facility, Gryżyna – Radoszyn Oil and Gas Production Facility, Czeszów – Bogdaj-Uciechów-Czeszów Gas Production Facility, Zbąszyń – Zbąszyń-Babimost Gas Production Facility, Babimost – Zbąszyń-Babimost Gas Production Facility
- development of the following wells: Chwalęcin-1K – Radlin Gas Production Site, Borowo-5 – Kościan-Brońsko Gas Production Site, Granówko-1 – Kościan-Brońsko Gas Production Site, Szczepowice-1 – Kościan-Brońsko Gas Production Site, Turkowo-2 – Wielichowo Gas Production Site, Brońsko-30 – Kościan-Brońsko Gas Production Site, Brońsko-31H – Kościan-Brońsko Gas Production Site, Brońsko-32 – Kościan-Brońsko Gas Production Site, Paproć-66H – Paproć Gas Production Site;

PGNiG's production branches will also engage in other investment projects, focusing mainly on maintaining or ramping up hydrocarbon production. Such projects include, for instance, work related to the installation of gas compressors, conversion of the process units, and upgrade of flowline systems and gas pipelines.

PGNiG will also carry out a project to expand the Wierzchowice UGSF to increase its working capacity from the current 1.3 bcm to 2.1 bcm of gas, as well as to increase the rates of gas injection and withdrawal, which will ensure greater flexibility of the storage facility and the possibility of using it to accommodate a sudden spike in gas demand. The cost of the project, scheduled to be completed within 30 months, is expected to be over PLN 385m.

Norway

On the Norwegian Continental Shelf, PGNiG UN will continue, as a partner, to produce hydrocarbons from the Skarv, Ærfugl, Ærfugl Nord, Morvin, Vilje, Vale, Gina Krog, Skogul, Kvitebjørn, Ormen Lange, Alve, Marulk, Duva, Tambar Øst and Valemon fields, and to develop the Tommeliten Alpha field. Development of the Shrek, Alve Nord, Verdande, Fogelberg and King Lear fields is at the concept phase. PGNiG UN also works towards ensuring stable and predictable long-term gas supplies to Poland. It includes both support for the construction of infrastructure to physically bring Norwegian gas to Poland and potential acquisitions of production and pre-production assets on the Norwegian Continental Shelf.

In 2022, the company plans to upscale its gas production on the back of the acquisition of additional assets acquired as part of INEOS E&P Norge AS, as well as the investment works completed in 2021 on the Ærfugl, Ærfugl Nord and Duva fields. Gas volumes produced by PUN on the Norwegian Continental Shelf are expected to increase also as a result of a change in the gas production strategy, consisting in stopping re-injecting gas into the field to increase oil production. For more information on the PGNiG Group's hydrocarbon production forecasts, see Section 4.2.4. In 2022, investment decisions are due for Shrek, Alve Nord, Fogelberg, King Lear and Verdande.

Pakistan

Appraisal and production work is scheduled for 2023 to finish drilling and tie in the Rehman-8 well, while the drilling of the Rayyan-1 well is planned to be completed as part of the exploration work. In parallel with the drilling campaign, the PGNiG Pakistan Branch will work on expanding and maintaining the capacity of the production infrastructure. Moreover, seismic surveys are scheduled to commence on the Musakhel licence in 2023 to decide whether to proceed with the drilling of the first exploration well. In parallel to the work planned for the Kirthar and Musakhel licence areas, steps are being taken to identify and possibly acquire further attractive assets in Pakistan.

(in PLN million unless stated otherwise)

United Arab Emirates

The PGNiG Branch in UAE sees growth prospects in the acquisition of rights to operate on further blocks in the Ras Al Khaimah emirate, as well as in other emirates where production work is already under way (Sharjah and Abu Dhabi). Preliminary business negotiations are in progress for those initiatives. The challenge will be to contract service provides and to drill the first exploration well on Block 5 in the Ras Al Khaimah emirate, due to the challenging geological conditions and mechanics of the rock mass.

Ukraine

On February 24th 2022, the Russian Federation launched a military invasion of Ukraine. All operations have been discontinued and employees of the PGNiG Group and their families have been evacuated from areas at risk of being affected by the military conflict. The Group is monitoring the situation and will respond as appropriate.

4.2 Trade and Storage

In Poland, where the PGNiG Group is the largest natural gas supplier, the segment sells natural gas produced from domestic fields as well as imported gas. Through PST, the PGNiG Group is developing its foreign operations. The segment also trades in electricity, certificates of origin for electricity, CO_2 emission allowances, and crude oil (since 2018, through PST). In order to conduct trading activities on the global LNG market, the company established a branch in London. The segment operates seven underground gas storage facilities and provides a ticketing service for gas storage to external customers.

4.2.1 Key operating metrics

Table 12 Volumes of natural gas sales to non-PGNiG Group customers in the Trade and Storage segment

mcm	H1 2022		H1 2021		2021	2020	2019
	PGNiG Group	PGNiG	PGNiG Group	PGNiG	PGNiG Group	PGNiG Group	PGNiG Group
High-methane gas (E)	17,785	9,344	17,233	9,456	32,694	29,927	29,031
Nitrogen-rich gas (Ls/Lw as E equivalent)	369	101	446	126	797	745	751
Total (measured as E equivalent), inluding:	18,154	9,445	17,679	9,582	33,491	30,672	29,782
PGNiG – Wholesale	9,445	9,445	9,578	9,578	17,768	18,030	16,726
PGNiG OD – Retail sale	5,194	0	5,462	0	9,706	8,195	7,815
PST – Wholesale/retail sale	3,515	0	2,638	0	6,017	4,447	5,242

Table 13 Volumes of natural gas sales to non-PGNiG Group customers outside Poland in the Trade and Storage segment

mcm	H1 2022		H1 2021		2021	2020	2019
	PGNiG Group	PGNiG	PGNiG Group	PGNiG	PGNiG Group	PGNiG Group	PGNiG Group
PST	3,189	0	2,291	0	5,317	3,720	5,028
Exports from Poland and sales in Ukraine	109	109	225	225	225	1,239	544
Total (measured as E equivalent)	3,297	109	2,515	225	5,542	4,959	5,572

Table 14 T&S segment's natural gas customers from outside the PGNiG Group – Poland

mcm	H1 2022		H1 2021		2021	
	PGNiG Group	PGNiG	PGNiG Group	PGNiG	PGNiG Group	PGNiG
Households	2,828	0	3,022	0	5,140	0
Retail, services, wholesale	1,711	982	928	120	1,657	239
Nitrogen processing plants	1,210	1,204	1,286	1,281	2,491	2,482
Power and heat plants	468	353	884	582	1,276	984
Refineries and petrochemical plants	622	618	927	919	1,895	1,887
Other industrial customers	1,871	298	2,282	372	3,916	692
Exchange	6,147	5,882	6,214	6,079	11,574	11,259
TOTAL T&S sales to non-PGNiG Group customers in Poland	14,857	9,336	15,542	9,353	27,949	17,543

Table 15 Non-PGNiG Group gas customers outside Poland in the T&S segment

mcm	H1 2022		H1 2021		2021	
	PGNiG Group	PGNiG	PGNiG Group	PGNiG	PGNiG Group	PGNiG
Households	0	0	18	0	0	0
Retail, services, wholesale	1,500	0	1,580	0	2,654	0
Other industrial customers	0	0	9	0	0	0
Exchange	1,689	0	2,113	0	2,663	0
Exports from Poland and sales in Ukraine	109	109	225	225	225	225
Total T&S sales to non-PGNiG Group customers	3,297	109	3,945	225	5,542	225

(in PLN million unless stated otherwise)

Table 16 PGNiG's electricity customer base in the T&S segment

GWh	H1 2022	H1 2021	2021
End users	1	72	155
Trading companies	0	22	28
Balancing market	8	17	30
Exchange	4,125	4,966	9,756
Total PGNiG's sales	4,134	5,077	9,968

4.2.2 Wholesale business

4.2.2.1 Operations in Poland

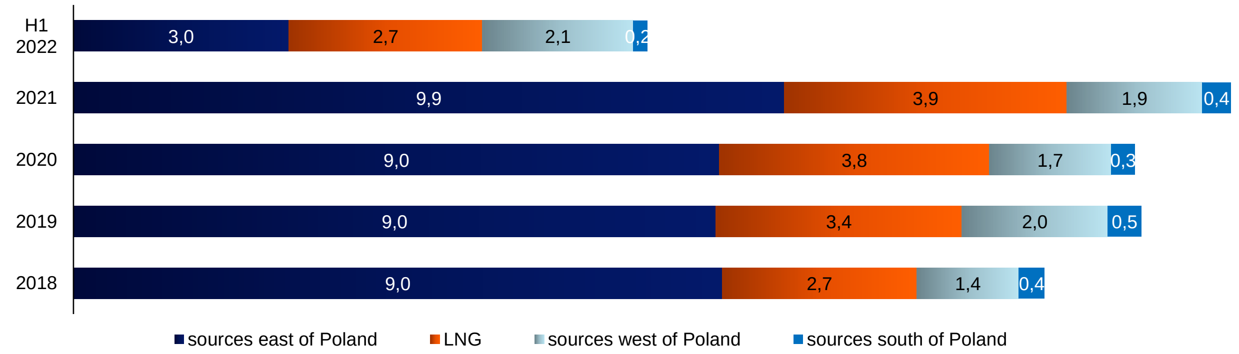
Gas imports

In the first six months of 2022, PGNiG purchased natural gas mainly under the long-term agreements and contracts specified below:

- Contract with PAO Gazprom/OOO Gazprom Export, for sale of natural gas to the Republic of Poland, dated September 25th 1996, effective until 2022 (the Yamal contract); Deliveries under the contract were discontinued as of April 27th 2022.
- Contract with Qatar Liquefied Gas Company Limited (3) for sale of liquefied natural gas, dated June 29th 2009, effective until 2034 (the Qatar contract), and supplementary agreement to the long-term agreement of March 2017 (effective from the beginning of 2018 to 2034);
- Contract with Cheniere Marketing International, LLP for sale / purchase of liquefied natural gas, dated November 8th 2018, effective until 2042.

Deliveries were also made under medium- and short-term grid gas and LNG supply contracts (including a five-year contract for nine shipments of liquefied natural gas from Centrica LNG Company Limited, which began to be performed in 2018).

Chart 2 Imports of natural gas to Poland in 2018–H1 2022 (bcm)



In the first half of 2022, gas imports totalled 88.0 TWh (8.0 bcm). Gas purchases from countries west of Poland rose by 10.8 TWh (approximately 1.0 bcm) on the first half of 2021. LNG deliveries went up from 22.4 Twh (2 bcm) in the first half of 2021 to 29.9 TWh (2.7 bcm) in the first half of 2022.

On May 16th 2022, PGNiG signed a Heads of Agreement with Sempra Infrastructure, setting out the key terms of a FOB purchase and sale contract for 3 million tonnes of LNG (to be shipped from two terminals: Cameron LNG after expansion and Port Arthur LNG).

For the purpose of transporting the LNG contracted under FOB at the US terminals, PST, a PGNiG Group company, has chartered a total of eight LNG carriers (six from the Norwegian shipowner Knutsen OAS Shipping and two from Maran Gas Maritime) for a period of ten years. The vessels, with a capacity of 174,000 cubic metres each, will be placed in service in 2023 (2 Knutsen), 2024 (2 Knutsen) and 2025 (2 Knutsen, 2 Maran). The PGNiG Group has also three short-term charter agreements in place for existing vessels that will start transporting LNG under FOB later this year (two of them, Maran Gas Apollonia and Golar Seal are already delivering LNG cargoes to the Świnoujście terminal). The acquisition of the vessels increases the flexibility of LNG purchases and sales and is another step towards developing the PGNiG Group's trading activities on the global market.

In March 2022, PGNiG submitted an order for regasification services in phase one of the FSRU Open Season procedure carried out by the Transmission System Operator Gaz-System S.A. The purpose of the FSRU Open Season is to gauge the level of market demand for the capacity of a Floating Storage Regasification Unit (FSRU), to be located in Gdańsk Bay, by soliciting binding orders for long-term provision of regasification services. FSRU's planned capacity is approximately 6 bcm per year.

PGNiG actively supports all efforts aimed at the construction of an infrastructural connection that would give Poland direct access to gas from North Sea fields. In January 2018, contracts were concluded for the provision of gas transmission services in the period from October 1st 2022 to October 1st 2037, as part of the 2017 Open Season procedure of the Baltic Pipe project, concerning gas transmission from Norway to Poland via Denmark. The Baltic Pipe is a strategic infrastructure project aimed at creating a new gas supply corridor on the European market. It is to enable the transmission of gas directly from deposits located in Norway to the markets of Denmark and Poland. The annual transmission capacity of the Baltic Pipe will reach approximately 10 bcm to Poland and approximately 3 bcm to Denmark and Sweden.

As announced by Energinet on March 1st 2022, the Danish Environmental Protection Agency (DEPA) issued a new environmental permit for the Baltic Pipe pipeline, allowing Energinet to resume construction work on the pipeline sections located in eastern Jutland and western Funen and construction of the power supply network for the gas compressor station at Everdrup (southern Zealand). The works were suspended after the Danish Environmental and Food Appeals Board repealed the Danish Environmental Protection Agency's permit of July 12th 2019 to build the Baltic Pipe gas link on land across Denmark on May 31st 2021. According to Energinet, the Baltic Pipe pipeline is scheduled to become operational on October 1st 2022. Operating with a reduced capacity in the fourth quarter of 2022, the pipeline will receive the full capacity reserved by PGNiG in January 1st 2023. The Company is in contact with Gaz-System and Energinet to monitor the completion and start-up of the Baltic Pipe.

Renegotiation of price terms under the contract with OOO Gazprom Export

On January 14th 2022, PGNiG received from an attorney-in-fact acting for PAO Gazprom/OOO Gazprom Export ("Gazprom") a call for arbitration before the Court of Arbitration of Stockholm (the "Gazprom Call"), including a request to change the terms of pricing gas supplied by Gazprom under the contract for the supply of natural gas to the Republic of Poland of September 25th 1996 (the "Yamal Contract"). The Gazprom Call contains a request to increase the contract price as part of Gazprom's request to renegotiate the contract price of December 8th 2017 ("Gazprom 2017 Request") and Gazprom's request to renegotiate the contract price of November 9th 2020 ("Gazprom 2020 Request").

Gazprom 2017 Request was submitted in response to PGNiG's request of November 1st 2017 to reduce the contract price ("PGNiG 2017 Request"). Gazprom 2020 Request was submitted in response to PGNiG's request of November 1st 2020 for reduction of the contract price, subsequently modified by PGNiG on October 28th 2021 ("PGNiG 2020/2021 Request").

On February 11th 2022, the Company submitted a response to the Gazprom Call, in which it requested that Gazprom's claims be dismissed as being formally inadmissible, or possibly as unfounded in substance, including the request to increase the contract price included in Gazprom's requests for renegotiation of the contract price of December 8th 2017 and November 9th 2020.

In addition, if the ad hoc Arbitration Tribunal determines that the contract price was permissible to change in 2017, the Company filed a counterclaim to reduce the contract price as of November 1st 2017, based on PGNiG's November 1st 2017 request to reduce the contract price.

The Company also filed a counterclaim to reduce the contract price from November 1st 2021, as part of PGNiG's request of November 1st 2020 to reduce the contract price, subsequently modified by PGNiG on October 28th 2021. The case is pending.

Gazprom's petitions with the Court of Appeals in Sweden

Gazprom filed two petitions with the Court of Appeals in Stockholm concerning the arbitration proceedings brought by PGNiG against Gazprom to revise the contractual price of gas sold by the supplier under the Yamal Contract as of November 1st 2014. The first petition, of October 2nd 2018, was for revoking the Arbitration Court's ad hoc partial award of June 29th 2018. By its ruling of December 23rd 2020, the Court of Appeals in Stockholm dismissed Gazprom's petition to set aside the ad-hoc partial award of the Arbitration Court of June 29th 2018. The second petition, of May 29th 2020, for reversal of the final award issued by the Court of Arbitration on March 30th 2020. By its ruling of March 9th 2022, the Court of Appeals in Stockholm dismissed Gazprom's petition as unfounded in its entirety and ordered Gazprom to reimburse the legal representation costs to PGNiG. The ruling was not final. The Court of Appeals granted leave to appeal against the ruling with the Supreme Court, declaring the case precedent. On April 11th 2022, the Company received information from the Court of Appeals that Gazprom had failed to submit a cassation complaint within the prescribed time limit. The ruling became final.

Payments for natural gas supplied under the Yamal Contract and halt of gas supplies by Gazprom

The President of the Russian Federation's Decree 172 on the special procedure for the fulfilment by foreign buyers of obligations to Russian natural gas suppliers (the "Decree") was published on March 31st 2021. As a result of the Decree, Gazprom served PGNiG with a notice to amend the terms of the Yamal Contract, including by introducing payments in Russian roubles.

On April 12th 2022, the Management Board of PGNiG S.A. decided that PGNiG would continue to fulfill its obligations to pay for natural gas supplied by Gazprom under the Yamal Contract in accordance with its existing terms and conditions and that the Management Board would not give its consent for PGNiG to fulfil its payment obligations under the Yamal Contract in accordance with the Decree.

At 8am CET on April 27th 2022 Gazprom halted its gas supplies under the Yamal Contract citing the prohibition under the Decree on the supply of natural gas to foreign buyers from countries "unfriendly to the Russian Federation" (including Poland) if payments for natural gas supplied to those countries starting from April 1st 2022 are made in a manner contrary to the provisions of the Decree.

In response, PGNiG took steps to protect the Company's interests by exercising its contractual rights, including a notice to perform and to comply with the payment and other terms of the contract effective until the end of 2022.

Despite the notice, as at June 30th 2022 Gazprom did not resume natural gas supplies and refused to allow payments in line with the contractual terms in force.

LNG supplies

In the first half of 2022, PGNiG received a total of 26 LNG shipments at the Świnoujście terminal, with a total volume of 1.96m tonnes, that is approximately 29.89 TWh or 2.72 bcm of natural gas after regasification, including:

- seven shipments under long-term contracts with Qatargas, with the volume of LNG imports from Qatar totalling 0.64m tonnes, that is approximately 9.78 TWh or 0.98 bcm of natural gas after regasification;
- 16 spot deliveries;
- two shipments under a medium-term contract with Centrica;
- one shipment under a long-term contract with Cheniere.

Sale of gas by PGNiG

Customers buy gas from PGNiG at market prices, in line with the formulas and pricing mechanisms set out in the contracts. Contractual prices are determined on a case-by-case basis using a uniform and objective pricing methodology.

In the first half of 2022, PGNiG successfully continued its sales strategy and retained the customer base. The largest amounts of natural gas are sold in Poland to industrial customers, including: PKN ORLEN, Grupa Azoty, LOTOS Asfalt, PGE Polska Grupa Energetyczna, KGHM Polska Miedź, Grupa Kapitałowa ArcelorMittal, CMC POLAND, PGNiG Termika and Elektrociepłownia Stalowa Wola.

In the first half of 2022, PGNiG's sales of high-methane grid gas in Poland amounted to 105.9 TWh (approximately 9.65 bcm). Year on year, the sales grew by 1%, from 104.9 TWh (9.56 bcm).

Sale of gas by PST

As at June 30th 2022, PST supplied gas (E gas) to 21 customers (42 points of delivery in Poland). The customers of the Polish Branch of PST are the largest private businesses from the glass, ceramic, automotive, non-ferrous metal, chemical, food and agricultural industries, receiving gas fuel for their in-house needs at physical points of delivery, as well as wholesale customers taking gas fuel at virtual or physical point of delivery for subsequent resale.

The Polish Branch of PST supports PGNiG OOH and PGNiG OD in the supply of small-scale LNG (SSLNG) from the Klaipėda LNG FSRU terminal in Lithuania to the Polish border. In the first six months of 2022, 59 GWh was delivered.

Export

In the first half of 2022, PGNiG supplied approximately 1.2 TWh (about 0.1 bcm PN) of natural gas to the ERU Group at the Polish-Ukrainian border, including US LNG delivered to the LNG terminal in Świnoujście, which was regasified and then transmitted to a delivery point at the interconnection of the Polish and Ukrainian transmission systems. Despite the military operations in Ukraine, natural gas deliveries continued throughout the second quarter of 2022. PGNiG is constantly monitoring the market situation and trading opportunities in Ukraine.

Gas sales on POLPX

The volume of gas sold by PGNiG on POLPX in the first half of 2022 (calculated based on the delivery date in the first half of 2022) was 64.54 TWh (5.8 bcm) and decreased by approximately 2.2 TWh year on year.

Small-scale LNG sales

In the first half of 2022, PGNiG continued to develop its small-scale LNG business, where gas is sold in the form of LNG transported by road tankers to regasification facilities or stations with no access to the distribution network. The volume of fuel delivered to end users in the form of liquefied natural gas remains high. In the first half of 2022, 2,714 LNG tankers were loaded at the Świnoujście LNG terminal, compared with 2,900 in the first half of 2021. The aggregate amount of LNG the Company placed on the market was 58.2 thousand tonnes, of which 48.6 thousand tonnes was sourced through Świnoujście and 9.6 thousand tonnes came from Odolanów and Grodzisk Wielkopolski. In the period from 2016 to the first half of 2022, the Company placed a total of 459.5 thousand tonnes of LNG on the market, including 319.8 thousand tonnes from the LNG terminal in Świnoujście and 139.7 thousand tonnes from the Odolanów and Grodzisk plants. In addition, PGNiG transshipped 20,000 tonnes of LNG onto tankers at the small-scale LNG terminal in Klaipėda from April 2020.

Sale of electricity

PGNiG's business on the electricity market primarily involves wholesale trade, providing the PGNiG Group companies with access to the market. Total sales of electricity to trading companies and on the Polish Power Exchange accounted for more than 90% of PGNiG's total electricity sales in the first half of 2022. PGNiG provided commercial balancing services to PGNiG TERMIKA and PGNiG TERMIKA EP, as well as commercial and technical operator services to PGNiG TERMIKA.

Capacity market

In the first half of 2022, PGNiG performed the contracts executed in main and additional auctions in previous years:

- annual contract for deliveries in 2022 (total net capacity of 21.5 MW)
- quarterly contract for deliveries in the first quarter of 2022 (86 MW)
- quarterly contracts for deliveries in the first and fourth quarter of 2022 (140 MW)

In 2022, PGNiG actively participated in secondary trading on the capacity market. In the first half of 2022, PGNiG did not participate in any auctions held by Polskie Sieci Elektroenergetyczne S.A. Additional auctions for 2023 were held during the period.

Prospects for wholesale trade in Poland

PGNiG has secured long-term regasification and transmission capacities to cover import requirements of the Polish wholesale market. Regardless of the suspension of gas supplies by Gazprom under the Yamal contract, PGNiG imports gas under on a diversified portfolio of purchase contracts. PGNiG also cooperates with PGNiG Group companies operating in the European wholesale and LNG markets and strengthening the PGNiG Group's position as a gas producer on the Norwegian Continental Shelf.

If an unforeseen increase in demand for gas fuels occurs, PGNiG will purchase natural gas under short-term contracts from the neighbouring countries or on the LNG market. The capacities of new cross-border connections: those already in service (Poland-Lithuania interconnector) and planned to be brought on stream (Baltic Pipe, Poland-Slovakia interconnector) in 2022, as well as the additional capacities of the LNG terminal in Świnoujście to be put into service in the years to come, will enable Poland to source higher volumes of grid gas and LNG, and to balance the market in the event of temporary gas shortages or surpluses.

4.2.2.2 Wholesale business abroad

PGNiG Supply&Trading (PST)

As part of its business, PST can trade in gas fuels in Poland, Germany, the Netherlands, Belgium, Austria, Norway (Gassled System), Denmark, the United Kingdom, France, the Czech Republic, Slovakia, Ukraine, Lithuania, Latvia, and Hungary. PST is an active player on organised markets (exchanges) and in OTC trading. It trades with over 150 counterparties under EFET (master agreements for trading in gas and electricity) or similar standardised contracts. In order to conduct trading activities on the global LNG market, the company has established a branch in London. In the first half of 2022, twenty-one LNG deliveries were received, including three at the FSRU terminal in Klaipėda, Lithuania. Overall, 19.0 TWh of LNG was delivered to the Świnoujście terminal and 2.9 TWh to the Klaipėda terminal.

In 2021, in order to expand its presence in Central and Eastern Europe, the company became a member of the CEEGEX Hungarian gas exchange and the GET Baltic exchange for the Lithuanian market. PST continues trading in futures contracts for Brent crude and gas in the US Henry Hub, through the following exchanges: ICE Futures Europe and ICE Futures U.S. It also sells electricity on the German market in exchange (EEX) and OTC transactions.

Product sales and operations in H1 2022

In the first half of 2022, PST sold 64.0 TWh of pipeline-supplied gas (including 15.4 TWh of gas from PGNiG UN and Grupa LOTOS S.A.), 21.9 TWh of LNG, and 0.3 TWh of electricity in exchange and OTC transactions. Poland was PST's largest market for deliveries, where 58% of the volume was sold, while the German and Dutch markets accounted for 18% and 12% of sales, respectively.

In 2019, PST began to receive gas from LOTOS Exploration & Production Norge, under a contract for supply of gas produced in license areas located on the Norwegian Continental Shelf. The volume of gas received under the contract in the first half of 2021 was 1.9 TWh.

In 2021, PST signed a gas supply contract on the German coast for the 2021 gas year and negotiated a contract with Total Energies Norge for an increased volumes of gas to be supplied from 2022. PST also signed a contract for deliveries to the Danish gas hub with Shell Energy Europe Ltd (the seller) and M Vest Energie AS (as the producer) and won a tender for the sale of gas produced from the Duva and Nova fields, to be sent to the United Kingdom (the seller: Sval Energie AS).

In addition, PST signed a medium-term contract with the Danish gas storage operator (Gas Storage Denmark A/S) and started injecting gas into a gas storage facility in April 2022 in order to improve the security of supplies brought to Poland via the Baltic Pipe.

Prospects for wholesale trade abroad

PST

PST expects reduced trading activity in the wholesale markets due to significant market volatility and an unprecedented price surge, triggering an increase in credit risk followed by lower liquidity on the OTC market. These factors posed significant liquidity challenges for PST and other energy market players. Moreover, lower gas volumes transported from Russia make the physical market vulnerable to potential supply disruptions, as confirmed by the measures taken by several European countries (including Germany, which launched the second phase of its emergency gas plan).

Consequently, the PGNiG Group expects PST to scale down its proprietary trading activities compared with the period before the pandemic and the price crisis affecting gas and electricity markets. Notwithstanding temporary restrictions caused by the pandemic and the crisis related to energy market prices, PST will continue to develop its business in the company's key strategic areas, especially LNG trading, procurement of gas from the North Sea and the Norwegian Sea area and gas trading in Central and Eastern European markets.

PST is expanding its LNG business to include delivery-ex-ship and free-on-board deliveries both on the spot market and under medium-term contracts. In May 2022, PST received the first free-on-board LNG cargo from the United States, transported to the Świnoujście terminal by Maran Gas Apollonia, a chartered LNG carrier. The expansion of commercial and logistic capabilities in LNG freight management will allow the Group to further develop its LNG trading business to create opportunities for optimising long-term contracts from 2023 onwards. In order to fulfil the long-term free-on-board supply contracts, PST has executed contracts to charter eleven LNG vessels that will be able to receive and transport the contracted LNG volumes. PST has also contracted regasification capacities of the Montoir LNG terminal in France, including 10 slots in 2023 and 15 slots per year in 2024−2029.

In preparation for the start of gas supplies to Poland via the Baltic Pipe, the company has increased its activity on the Norwegian Continental Shelf (NCS) and the Danish Continental Shelf (DCS). The purpose is to enable natural gas supplies from the NCS and the DCS to Poland. As part of its operations on the NCS, PST has also started to procure and sell natural gas liquids (including propane, butane, paraffin and ethane).

PST is also upscaling its activities in Central and Eastern Europe in order to diversify the sources of gas supply to Poland and to optimise the PGNiG Group's portfolio in the region. Particularly important for PST is business expansion into and in markets which, thanks to the emerging gas infrastructure, will gain strategic significance for the Polish market directly (Slovakia, Ukraine and Lithuania), and indirectly (Italy, Hungary, Latvia and Estonia). Building capabilities and strengthening presence in the region will enable the company to gain an additional market for gas from the northern direction and optimise its gas portfolio using, among other things, the storage systems in Poland, Ukraine and Latvia. The Company booked regasification capacity at the LNG terminal in Lithuania and launched deliveries from that terminal to PGNiG as of May 1st 2022. PST also started trading (sale and purchase) on the GET Baltic exchange and sale to wholesale customers from Lithuania and Estonia. Additionally, PST intends to commence trading activities in Italy and Romania in late 2022.

PGNiG

In the first half of 2022, the PGNiG Group booked regasification capacities at the Lithuanian FSRU Independence for the period May–December 2022. Three deliveries (two from the US and one from Norway) have been made to date, with 0.19 million tonnes of LNG (2.89 TWh or 430 thousand m^3 of LNG) delivered in total. Gas delivered in this way is not only placed on the Polish market, but also on Baltic States' markets.

On November 29th 2019, PGNiG signed a five-year exclusive contract for the use of the low-scale LNG collection and handling station in Klaipėda. It is a major step in PGNiG's efforts to build competence and market position in the markets of Central and Eastern Europe and the Baltic Sea basin. Since the start of operations on April 1st 2020, the Company has delivered 14 shipments by sea to Klaipėda, and 1,112 tanker trucks have left the terminal with a total freight of over 20 thousand tonnes of LNG, destined mostly for the Polish market, but also the markets in Lithuania, Latvia and Estonia.

In addition to the transshipment facilities, the terminal also offers bunkering of ships. This allows PGNiG to build competence in this area and in the future to make use of the potential of the Świnoujście terminal, which is being expanded.

4.2.3 Retail business

Sources of gas

High-methane gas is procured from three main sources:

- Pourchases of gas on the Polish Power Exchange (POLPX);
- Purchase of gas under a bilateral contract, with deliveries to a virtual trading point in the transmission network operated by GAZ-SYSTEM;
- Purchase of gas under a bilateral contract executed with PGNiG, with deliveries to a physical trading point in Słubice.

The largest share in the global volume of high-methane gas purchases was attributable to transactions on POLPX. In addition to high-methane natural gas, PGNiG OD's purchase portfolio also includes nitrogen-rich gas and liquefied high-methane natural gas

(LNG). Nitrogen-rich gas is purchased under a bilateral contract with PGNiG, while LNG is sourced under bilateral contracts with PGNiG and the Polish Branch of PST.

Sale of gas

PGNiG OD's customer base includes consumers and non-consumers (including in particular small and medium-sized enterprises). Customers are classified into tariff groups based on the following criteria:

- Type of gas fuel received: high-methane gas or nitrogen-rich gas;
- Contracted capacity;
- Annual contracted volume – for customers with contracted capacity of not more than 110 kWh/h;
- Billing system – as per the billing frequency applicable to customers with contracted capacity of not more than 110 kWh/h.

Group 1-4 retail customers purchase gas used mainly for cooking and for water and space heating, as well as in shop-floor processes. Households are subject to a gas tariff approved by the President of URE. Moreover, the Act of January 26th 2022 on Special Measures to Protect Gas Fuel Customers in View of the Situation on the Gas Market extended the group of entities eligible for tariff protection. Gas prices based on applicable tariffs will thus be charged from cooperatives, housing communities, hospitals, nursing homes, schools, pre-schools and nurseries, and a number of other consumers of importance to the general public.

The tariff in force in the first half of 2022 was PGNiG OD's Gas Fuel Trading Tariff No. 11, approved by President of URE's decision of December 17th 2021. The tariff, effective from January 1st 2022 to December 31st 2022, was set in accordance with the Act of December 7th 2021 Amending the Energy Law, which allows sellers of gas fuel to households to take advantage of a mechanism whereby the price tariff approved by the President of URE can cover only a part of the cost of gas fuel purchase with recovery of the actually incurred cost spread over three consecutive years from the end of the effective period of the tariff approved under these regulations. Under the Act, PGNiG OD uses compensation for gas supplied in 2022 to end users who are charged tariff prices in order to offset the actual costs of gas purchased by PGNiG OD for those users. This compensation is linked to the mechanism provided for in Art. 62f of the Energy Law of April 10th 1997 under which PGNiG OD calculated the 2022 tariff so that the compensation reduces the costs to be recovered in subsequent tariffs calculated for the following three years starting from January 1st 2023. In addition, the compensation applies to the actual costs of gas purchased in 2022 for customers for whom tariff protection was extended, as discussed above.

As at the end of the first half of 2022, PGNiG OD served the total of approximately 7.16 million customers in tariff groups 1–4 (both high-methane and nitrogen-rich gas) and almost 33,000 gas delivery points in tariff groups 5–7. Business customers buy gas both for the purposes of their industrial processes and for heating, and are billed at prices set in the price lists and in special offers.

Sale of other hydrocarbons

PGNiG OD expanded its CNG gas sales business by opening another 23 CNG and LCNG refuelling stations built by PSG under the Act on Electromobility. Acceptance procedure is under way to hand over the stations to PGNIG OD as a station operator.

Business-to-customer sales policy (B2C)

An important factor determining the company's retail gas sales policy is the obligation to have its tariffs approved by the President of URE. Under previous legislation, this obligation was to be abolished as of January 2024. However, due to the crisis on the wholesale gas market, the tariff obligation was extended until the end of 2027.

In the first half of 2022, PGNiG OD added to its offering the "Personal Security" service, which provides insurance cover in the event of a loss of a wallet or documents, or unauthorised transactions on the Internet. In 2022, PGNiG OD also started to sell condensation gas boilers and launched a programme to subsidise the replacement of heating equipment or equipment for domestic water heating, addressed to consumers living in single-family buildings.

Business-to-business sales policy (B2B)

Gas is offered to business customers based on a tariff which is not subject to approval by the President of URE. Under the tariff, customers can flexibly change contract duration. "Gas for Business" Tariff No. 9 has been effective since December 24th 2021. On January 14th 2022, PGNiG OD launched an offering with an automatic price reduction mechanism. It provides for a temporary decrease in gas prices for customers billed under "Gas for Business" Tariff No. 9. The levels of automatic reduction were as follows:

- 25% reduction of prices set in the tariff in the period January 14th 2022 – January 31st 2022;
- 35% reduction of prices set in the tariff in the period February 1st 2022 – March 31st 2022;
- 15% reduction of prices set in the tariff in the period April 1st 2022 – May 31st 2022;
- 25% reduction of prices set in the tariff in the period June 1st 2022 – June 30th 2022.

Standard products also include special term-plans with fixed prices or variable prices indexed to selected stock exchange indices.

A major development in the first half of 2022 was the unification of the offering portfolio for customers purchasing high-methane gas and nitrogen-rich gas: at present, both customer groups can use the same offering package.

Gas fuel sales under emergency / standby / supplier of last resort procedures

PGNiG OD acts as a "stand-by supplier" and "supplier of last resort" (in accordance with the Act Amending the Energy Law and Certain Other Acts of November 9th 2018). In the first half of 2022, following discontinuation of gas supplies by Avrio Media sp. z o.o., Energy Gate Europe sp. z o.o., Audax Energia sp. z o.o., Green S.A. and Novatek Green S.A., and the expiry, as of the beginning of a gas day, of comprehensive gas fuel supply contracts with various gas sellers, PGNiG OD, acting as a stand-by supplier or supplier of last resort, ensured uninterrupted gas supplies to customers of those companies and sellers.

Sale of electricity

PGNiG OD's customer base includes consumers and non-consumers who have concluded comprehensive service contracts for the supply of electricity or contracts for the sale of electricity. As at the end of June 2022, the company supplied electricity to more than 96.3 thousand delivery points.

Prospects for retail trade in Poland

The key driver of the company's performance is the grid gas market, which saw unprecedented price hikes in late 2021 and early 2022. The company had to adapt to the challenges posed by sharp increases in wholesale prices on the main markets, regulatory changes and the introduction of preferential terms for technologies alternative to fossil fuels. An overview of the key challenges and risks for PGNiG OD:

- A sharp increase in/volatility of natural gas prices – both in terms of direct impact on the company's financial performance and volumes (customers' purchase and investment decisions, which are adversely affected by price rises eroding the competitiveness of gas vs other energy carriers) and in terms of public relations and communication (including threats to the effects of campaigns promoting gas fuel and to the effectiveness of support mechanisms for air quality improvement initiatives).
- The progressing energy transition driven both by the EU's climate policy and market expectations, and the associated competitive, technological and investment challenges – planned implementation of the Fit for 55 package and the RePowerEU strategy.
- Reducing the role of natural gas as a transition fuel in the energy transition process within the EU taxonomy by increasing requirements for new gas projects.
- The risk of replacing gas fuel by customers from tariff groups 1–4 with alternative solutions for central heating and domestic hot water, supported with assistance funds from various public programmes.
- The risk of substituting gas-based solutions with zero-carbon solutions in the business sector.

Concurrently, changes in the company's environment provide a number of opportunities the company is leveraging or intends to leverage. These mainly include:

- Growing demand for various multi-energy solutions to meet all customer needs.
- Growing awareness of opportunities and demand for energy efficiency services.
- Planned and existing programmes and mechanisms to co-finance customers' energy transition.
- Making natural gas a source of green energy in view of the objectives of the climate neutrality policy until 2050 through inclusion of natural gas in the EU taxonomy.
- Further exploiting the sales potential in the existing B2C customer base by launching more add-on products, such as gas boilers, heat pumps, solar PV systems, etc.
- Digitalisation and exploiting the potential of the existing sales channels and customer service – developing multi-channel services, leveraging the experience and possibilities offered by electronic customer service channels, including mobile applications.
- Growing demand from B2B customers for advanced gas products (including LNG) and electricity as well as related services and products, including consultancy and other solutions enabling cost optimisation.
- Expanding the offering of hybrid solutions and new models to meet energy needs, also using RES solutions, in response to evolving customer expectations and project co-financing options.
- Development of fuel demand for low-emission land and marine transport.

4.2.4 Storage

As part of its business, GSP holds a licence to store gas fuel in storage facilities. Settlements of gas fuel storage services were subject to the following tariffs:

- Amendment 3 to Gas Fuel Storage Tariff No. 1/2021, effective from 6.00 am on January 1st 2022 to 6.00 am on June 4th 2022;
- Gas Fuel Storage Tariff No. 1/2022, effective from 6.00 am on June 4th 2022.

As at June 30th 2022, under long-term storage service agreements (SSAs), GSP allocated a total of 175,020 long-term storage capacity packages, including 70,970 packages of storage services provided on a firm basis, and 104,050 packages on an interruptible basis. Under short-term storage services provided on an interruptible basis, GSP allocated 1,660 storage capacity packages, with the storage service to be provided from July 1st 2022.

(in PLN million unless stated otherwise)

Third-party access (TPA) storage capacities

As at June 30th 2022, GSP had a total working storage capacity of 3,230.6 mcm. As part of those capacities, GSP made available a total of 3,190.3 mcm of working storage capacities for third-party access (TPA) and for the gas transmission system operator under long-term services contracts. On June 20th 2022, GSP announced that 30.3 mcm (of 33.3 mcm of working capacity) would be made available from July 1st 2022 on an intermittent basis under short-term services contracts, with the availability depending on the technical storage conditions in the salt caverns. In addition, GSP allocated 7.0 mcm of working capacity for the needs of the Mogilno CGSF's and Kosakowo CGSF's technological units.

Ticketing service – PGNiG

PGNiG offers a ticketing service which allows gas importers and traders to meet their gas-stocking obligations in accordance with the applicable Polish regulations. The Company performed ticketing service contracts concluded for the gas year 2021/2022 with nine energy companies. The total volume of gas stocks held by PGNiG for other entities was over 315 GWh of natural gas in the 2021/2022 gas year. As part of the ticketing service, PGNiG maintains gas stocks in its own gas storage facilities, operated by GSP.

Growth prospects and challenges for the future in the storage area

GSP plans to expand its storage business, in particular storage of energy in the form of hydrogen and compressed air, as well as storage of gas fuels (hydrogen, biomethane) and liquid fuels, in order to broaden its customer base and secure new revenue streams.

Under the agreement with PGNiG, work will continue on the project to construct the Mogilno Large-Scale Energy Storage Facility and the INGA2_Kawsol project.

4.3 Distribution

The segment's principal business activity consists in the delivery of high-methane and nitrogen-rich gas, as well as of small amounts of coke-oven gas, over the distribution network to retail and corporate customers. The segment is also engaged in extending and upgrading the gas network and connecting new customers. Natural gas distribution is the responsibility of Polska Spółka Gazownictwa sp. z o.o. (PSG). As the Distribution System Operator, the company operates in all regions of Poland. Being the owner of the major part of the gas distribution network and gas service lines located in Poland, PSG enjoys a dominant market share.

4.3.1 Key operating metrics

Table 17 Volume of distributed gas

mcm in natural units	H1 2022	H1 2021	2021	2020	2019
Total volume of distributed gas, including:	6,530	7,349	13,138	11,570	11,531
high-methane gas (E)	5,764	6,459	11,488	10,194	9,976
nitrogen-rich gas (Ls/Lw as E equivalent)	544	646	1,150	1060.59	1048

Table 18 Length of distribution networks

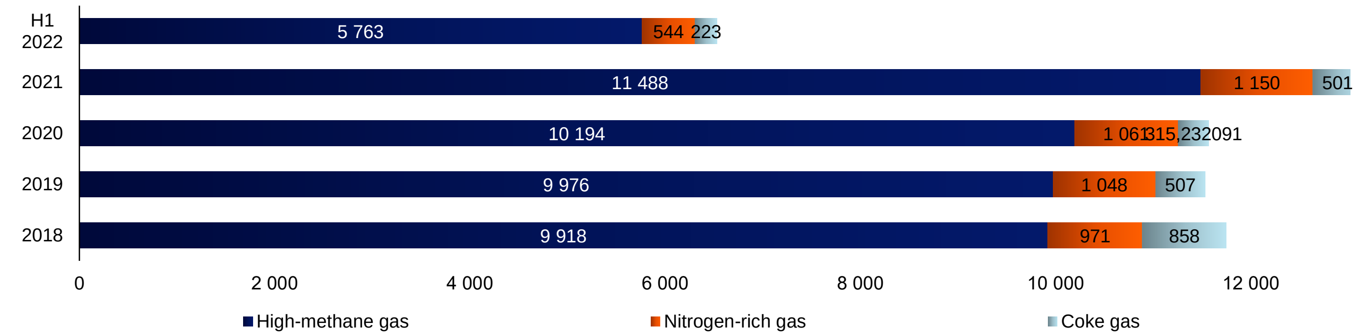
thousand km	H1 2022	2021	2020	2019	2018
Length of distribution networks	204	201	195	191	186

In the first half of 2022, four new municipalities were connected to the gas network. Thus, the geographical coverage in terms of the number of municipalities connected reached 68.67% (1,701 out of 2,477) as at June 30th 2022.

4.3.2 Operations in the first half of 2022

PSG, as the distribution system operator, provides gas fuel distribution services to all gas fuel consumers and traders (while ensuring that all of them receive equal treatment) in accordance with the provisions of the Energy Law and a programme for ensuring non-discriminatory treatment of distribution system users, applicable to PSG. PSG provides the distribution services under distribution contracts. At the end of the first half of 2022, PSG was distributing gas fuel to 7.4m customers. In the six months to June 30th 2022, PSG signed three distribution agreements with gas sellers. In the same period, approximately 11.5 thousand customers switched gas suppliers.

Chart 3 Volume of gas transmitted via the distribution system in 2018 – H1 2022 (mcm)



PSG's activities resulted in the execution of over 25,000 connection contracts in the first six months of 2022, providing for 30,000 new connections to the gas network. As the end of June 2022, more than 68,000 decisions defining the terms of connection were issued and almost 57,000 service lines with a total length of approximately 549 km were built.

In the first six months of 2022, the construction, acceptance and launch of LNG regasification stations continued. June 2022 saw the commissioning of a regasification station in Łukowa (this is the sixth LNG regasification station built by PSG in the Lublin Province). In addition, a liquefaction and regasification licence was obtained for three LNG regasification stations, and three LNG regasification stations were made available for use (stations with a capacity of up to 200 $m^{3,}$ per hour do not require a licence). At the end of the first half of 2022, PSG enables LNG regasification and supply to off-grid distribution zones as well as additional supply to the distribution network using 97 LNG regasification stations. After the first two quarters of 2022, the volume of regasified gas distributed to customers (including additional supply stations) was 127 GWh, an increase of 13.5% year on year.

A significant event that had an impact on the fulfilment of its operator obligations was the execution by PSG, with suppliers of last resort and stand-by suppliers, of comprehensive contracts, including the provisions of the stand-by supply contract, in the name and on behalf of end customers for 3,931 exit points, following discontinuation of gas fuel supply by gas fuel suppliers to customers connected to the distribution network.

In addition, following Russia's invasion of Ukraine and the Minister of the Interior and Administration's decision of April 25th 2022, issued pursuant to Art. 3.1 and Art. 3.6 of the Act on Special Measures to Prevent Supporting Aggression against Ukraine and Protect National Security of April 13th 2022, Novatek Green Energy (a trading partner of PSG) was entered in the sanctions list. In response, Novatek Green Energy discontinued the provision of gas supply services. In view of the above, on April 29th the Prime Minister issued a ruling under the Act on Crisis Management obliging PSG, on condition that the President of URE issues administrative decisions necessary to comply with the ruling, to provide distribution and regasification services through Novatek Green Energy lending, free of charge, the network and regasification plants. On April 29th 2022, the President of the Energy Regulatory Office granted PSG a licence to liquefy natural gas and regasify LNG at LNG plants and LNG regasification plants taken over by PSG, and designated PSG as the gas distribution system operator and natural gas liquefaction system operator at the above-mentioned plants and networks owned by Novatek Green Energy. After obtaining the necessary documents, PSG immediately took steps to fulfil the tasks assigned to it and, in collaboration with PGNiG OD, restored gas supplies to the municipalities disconnected from the gas network. PSG also signed comprehensive contracts including the provisions of the stand-by supply contract with the supplier of last resort to end customers, for 946 exit points connected to the distribution network handed over to PSG by Novatek Green Energy.

PSG's business is regulated: gas fuel distribution and LNG regasification services are subject to licensing and distribution tariffs are subject to approval by the President of URE. The tariff in force in the first half of 2022 was Tariff No. 10, effective from January 1st to December 31st 2022.

4.3.3 Growth prospects and challenges for the future

In the short term, PSG is taking steps which, through the roll-out of the gas network and connection of end customers (mainly as part of "network densification", i.e., connection of new service lines to the existing gas network), are part of the anti-smog measures. In parallel, PSG participates in the 'Connect, because every breath matters' campaign.

In the medium term, PSG is taking steps to convert, modernise and build a new gas network in order to maintain the security and continuity of gas fuel supplies and the long-term capacity to connect new industrial customers, including in particular district heating accounts below 50 MW. This is in line with the arrangements set out in Directive (EU) 2015/2193 of the European Parliament and of the Council of 25 November 2015 (the "MCP Directive"), which sets tighter emission limits for certain pollutants from medium combustion plants. In accordance with those arrangements, existing plants with a rated thermal input greater than 5 MW have to ensure compliance with the new emission limits before 2025, and those with a rated thermal input of less than or equal to 5 MW – before 2030. Switching to gaseous fuel, by connecting to the gas network, represents an opportunity for these facilities to reduce harmful emissions.

PSG continuously monitors R&D&I projects to investigate the impact of hydrogen and biomethane additives on the operation of the network system and to optimise the management of gas infrastructure, enabling safe and efficient transport of these green gases via the distribution network operated by the company.

In the reporting period, PSG completed multi-faceted analyses on a project basis, covering technical aspects of the concept of biomethane plant connection to the distribution network, its impact on the tariff, the methodology for assessing the economic viability of connecting gas fuel sources to the network in the event of switching from a non-renewable to a renewable fuel. As a result, two preferred options were developed for biomethane plant connection to the medium- and high-pressure gas distribution network. This category of connection projects was included by the President of URE in the "Draft Plan of PSG Development for 2022–2026". This is the capital expenditure necessary to connect 407 biomethane plants with a capacity of 500 m^3/h (approximately 1.63 bcm per annum); The company continued to issue service-line pre-contract documentation for biomethane units in accordance with the developed standards.

In the first half of 2022, work on defining the requirements for injecting dopant gases into the network, including the technical requirements for the gas network for injecting hydrogen and gases containing hydrogen in a certain concentration, was completed. The analysis will cover projects in which PSG will be able to engage in collaboration with other stakeholders: energy sector entities, manufacturers of infrastructure components, the entities referred to in Art. 7.1.1, Art. 7.1.2 and Art. 7.1.4−8 of the Act on Higher Education and Science of July 20th 2018, as well as others whose products will enable the verification of technical guidelines on the scope of upgrading the gas network required for safe distribution of hydrogen-doped gas or pure hydrogen in the actual operating environment of the gas network. The projects include the pilot launch of a new business line – transport of hydrogen through pipelines from the source to the users.

In view of the long-term policy of the European Union, known as the European Green Deal, which envisages achieving climate neutrality by 2050, and the priority for the generation of energy from renewable energy sources, PSG will continue to analyse, on a project basis, further issues related to extension of the functionality of gas infrastructure to transport natural gas mixtures containing other gases, primarily gases from renewable sources, i.e., biomethane, hydrogen and synthetic natural gas. Cooperation and experience sharing with foreign and domestic entities involved in the implementation of the power-to-gas project, as well as preparation (operation) of gas networks for the transport of natural gas mixture containing hydrogen or transport of pure hydrogen will also continue. In the R&D area, analyses will focus on feasible projects to expand the functionality of the gas network and prepare for the distribution of decarbonised gases, improve the efficiency of gas fuel distribution, as well as to ensure the operational safety of gas infrastructure and the continuity of gas fuel supply.

PSG also engages in cooperation with PGNiG Group companies and entities from the fuel sector to develop a business model which, taking into account the prevailing market conditions and the policy of the state, will enable the development of alternative fuel infrastructure and create conditions to offer vehicle users a viable CNG refuelling option. Currently, all projects to develop alternative fuel infrastructure under the "Programme to build natural gas stations and to upgrade, expand or build networks necessary to connect these stations in 2019–2022" are at final implementation stages. Projects to construct 23 CNG refuelling stations, including two LCNG facilities, are under way. By the end of June 2022, 21 CNG stations, including two LCNG stations, were commissioned. At the same time, seven CNG refuelling stations, including two LCNG stations, underwent final acceptance.

4.4 Generation

The segment's principal business consists in the production of heat and electricity, distribution of heat, and delivery of large natural gas-fired projects in the power sector. The relevant competence centre at the PGNiG Group is the PGNiG TERMIKA Group, including PGNiG TERMIKA (and its subsidiaries) and PGNiG TERMIKA EP (and its subsidiaries).

4.4.1 Key operating metrics

Table 19 Volume of regulated sales of heat from own sources to customers outside the PGNiG Group in the Generation segment

TJ	H1 2022	H1 2021	2021	2020	2019
Total heat sales volumes from own generation sources	23,919	23,545	41,174	38,940	39,263
at PGNiG TERMIKA	22,505	21,862	38,395	36,495	36,880
at PGNiG TERMIKA EP	1,414	1,683	2,779	2,445	2,383

Table 20 Total sales volume of electricity from own generation sources in the Generation segment

GWh	H1 2022	H1 2021	2021	2020	2019
Total electricity sales volumes from own generation sources	2,763	1,838	3,480	3,638	3,948
at PGNiG TERMIKA	2,553	1,598	2,992	3,202	3,493
at PGNiG TERMIKA EP	210	240	488	436	455

** Without taking into account the sale of heat and electricity from the start-up of new generating units at the Żerań CHP plant (gas boilers and CCGT unit) – the period prior to obtaining the relevant licences.*

(in PLN million unless stated otherwise)

Table 21 Maximum capacity by licence / plant / branch

Generating unit	Heat [MW]	Electricity [MW]	Cooling [MW]	Compressed air capacity [thousand m³/h]
PGNiG TERMIKA	5,177	1,567	-	-
Siekierki CHP plant	2,068	650	-	-
Żerań CHP plant*	2,131	908	-	-
Pruszków CHP plant	164	9	-	-
Kawęczyn heat plant	465	-	-	-
Wola heat plant	349	-	-	-
PGNIG TERMIKA EP	773	185	17	240
Zofiówka Branch	279	113	-	117
Zofiówka Branch (Borynia site)	4	2	-	-
Moszczenica Branch	121	39	-	-
Pniówek Branch	72	14	17	123
Suszec Branch (Suszec site)	38	11	-	-
Suszec Branch (Częstochowa site)	3	3	-	-
Wodzisław Branch	55	2	-	-
Wodzisław Branch (Niewiadom site)	3	2	-	-
Racibórz Branch (Racibórz site)	87	-	-	-
Racibórz Branch (Kuźnia Raciborska site)	4	-	-	-
Żory Branch	88	-	-	-
Żory Branch (Czerwionka-Leszczyny site)	15	-	-	-
Distribution Office	4	-	-	-

** At Żerań CHP plant decommissioning of four coal-fired water boilers WP120 (9, 10, 11, 12) to adapt the plant to new emission requirements; change of licence to cover three gas-fired water boilers of 130 MW each and a CCGT unit – the effective licence approved by a decision of December 9th 2021.*

4.4.2 Operations in the first half of 2022

PGNiG TERMIKA S.A. is the Group's competence centre for heat and electricity generation as well as execution of heat and power projects. PGNiG TERMIKA's core business is the generation of heat and electricity from cogeneration sources.

The main sources of the company's revenue are sales of heat, electricity and grid services. The company satisfies around 80% of the heat demand on the Warsaw market and almost the entire demand of the district heating network. PGNiG TERMIKA is also a producer and supplier of heat and the owner of heat sources and heat networks in the towns of Pruszków and Piastów and in the Michałowice municipality.

The company is one of the largest Polish producers of electricity and heat from high-efficiency cogeneration sources.

The core business of PGNiG TERMIKA Energetyka Przemysłowa is generation and distribution of and trading in heat, distribution of electricity, compressed air and cold. PGNiG TERMIKA EP is the PGNiG TERMIKA Group's competence centre for industrial power generation and use of methane captured from coal seam demethanation. The company operates generation assets with a total capacity of ca. 773 MWt and 185 MWe, and approximately 318 km of heat networks. The company operates in the municipalities of Jastrzębie-Zdrój, Czerwionka-Leszczyny, Knurów, Racibórz, Kuźnia Raciborska, Pawłowice, Rybnik, Wodzisław Śląski, Żory and Częstochowa, and sells its products mainly to housing cooperatives, housing communities, housing management companies (ZGMs) and mines.

In the first six months of 2022, the main assembly and construction work was completed and the construction of the gas infrastructure for a peak-load boiler house at the Żerań CHP plant commenced, a decision was obtained to construct a gas and oil-fired boiler house at the Pruszków CHP plant, and an application was submitted for a building permit for a gas engine house at the Pruszków CHP plant. In the six months ended June 30th 2022, in order to adapt the Kawęczyn heat plant to the BAT requirements, a final zoning permit was obtained and applications for building permits were filed with the authorities. The concept for the construction of a gas-fired boiler house (KG2) at the Kawęczyn heat plant was also adopted. At the same time, construction of a gas pipeline to the Kawęczyn heat plant is in progress.

As part of future investments at the Siekierki CHP plant, in 2021 a feasibility study was prepared to upgrade the plant by the construction of a CCGT unit with a capacity of 300 Mwe to 550 MWe, gas-fired boiler units with a capacity of 520 Mwt to 650 MWt, a heat battery with a capacity of 30,000 ccm to 60,000 ccm and electrode boilers.

In the six months to June 30th 2022, PGNiG TERMIKA supplied heat to two municipal networks: the Warsaw heating network, owned by Veolia Energia Warszawa S.A., and its own heating network, covering Pruszków, Piastów, and Michałowice. The heat output in Warsaw in the first half of 2022 corresponded to the requirements set out in the annual agreement with Veolia Energia Warszawa S.A. under the multi-year contract for the sale of heat from PGNiG TERMIKA S.A. generating facilities, effective until August 31st 2028. The company also used Veolia's network to supply heat to its own end customers (connected to PGNiG TERMIKA S.A.'s own local networks and to the networks of Veolia Energia Warszawa S.A.), based on a transmission contract (those customers are billed on different terms as they are classified in PGNiG TERMIKA S.A.'s separate tariff group).

Licences (tariffs)

PGNiG TERMIKA holds licences for electricity generation, heat generation, heat transmission, electricity trading and a commitment letter to amend the licence for electricity generation in connection with the construction of a cogeneration unit in Przemyśl. In the first six months of 2022, a tariff for heat generated at PGNiG TERMIKA's heat generating sources: the Żerań CHP plant, Siekierki CHP plant, Pruszków CHP plant, Wola heat plant and Kawęczyn heat plant, and for transmission and distribution of heat via the heating networks in the Pruszków area (supplied from the company's own heat generating source: Pruszków CHP plant), and in the Annopol, Chełmżyńska, Jana Kazimierza, Marsa Park and Marynarska areas, approved by the President of URE on September 10th 2021. The rates resulting from the decision have applied since October 1st 2021.

After a new cogeneration unit had been placed in service at the Żerań CHP plant, an application was made to amend the heat tariff so that it covers the CCGT unit in the Żerań CHP plant. The President of URE issued an approving decision on December 17th 2021 and the adjusted heat rates have applied since January 1st 2022.

New heat generation rates apply as of May 17th 2022 under the second tariff adjustment and decision of the President of URE obtained on April 29th 2022. The following tariffs were introduced and applied in the first half of 2022:

- the first tariff adjustment effective from January 1st 2022 to September 30th 2022, resulting in a 15.54% increase in generation prices;
- the second tariff adjustment effective from May 17th 2022 to September 30th 2022, resulting in a 13.12% increase in generation prices.

PGNiG TERMIKA EP holds licences for: generation of electricity, generation of heat, transmission and distribution of heat, trading in heat, trading in electricity and distribution of electricity. The following tariff was applicable to heat generated from PGNiG TERMIKA EP's generating sources in the first half of 2022:

- heat tariff effective from August 1st 2021, approved by the President of URE on July 14th 2021.

The following adjustments to the tariff have been approved:

- heat tariff adjustment effective from December 1st 2021, approved by the President of URE on November 8th 2021;
- heat tariff adjustment effective from March 1st 2022, approved by the President of URE on February 9th 2022;
- heat tariff adjustment effective from May 1st 2022, approved by the President of URE on April 14th 2022.

The approved average heat price growth rate in the first half of 2022 relative to prices effective as at December 31st 2021 was 6.78% (for heat generation the rate was 7.63% and for heat transmission – 4.85%).

Summary of auctions on the capacity market for 2021–2026

On March 17th 2022, further additional auctions were held for quarterly deliveries in 2023. Following the auction, PGNiG TERMIKA EP entered into quarterly contracts for deliveries in 2023 (net capacity of 65 MW) for the CFB (circulating fluidised bed) unit at the Zofiówka CHP plant.

In order to build a capacity reserve in respect of the remuneration payable on account of main auctions won in previous years, PGNiG TERMIKA did not offer any capacity in additional auctions for 2023. The current status of the capacity contracts signed as a result of participation of the Company's generation units in the main and additional capacity auctions conducted to date by Polskie Sieci Elektroenergetyczne S.A. is as follows:

- Moszczenica CHP plant unit: annual supply contracts for deliveries in 2022 (net capacity of 7 MW), and for 2023 (net capacity of 6.4 MW);
- Wodzisław-Częstochowa CHP plant unit: annual supply contracts for deliveries in 2022 and 2023 (net capacity of 1.2 MW);
- Moszczenica-Wodzisław CHP plant unit: annual supply contracts for deliveries in 2024 (net capacity of 8 MW), and in 2025 and 2026 (net capacity of 8.2 MW);
- CFB (circulating fluidised bed) unit at the Zofiówka CHP plant in Jastrzębie-Zdrój – quarterly contracts for deliveries in 2022 (net capacity of 65 MW), annual supply contract for deliveries in 2024 (net capacity of 65.1 MW) and semi-annual supply contract for deliveries in 2025 (net capacity of 65.7 MW).

4.4.3 Growth prospects and challenges for the future

In 2022, PGNiG TERMIKA S.A. will continue work on several projects, including the construction of a peak-load boiler house at the Żerań CHP plant (phase 2), and preparations for the construction of a CCGT unit at the Siekierki CHP plant. Capital expenditure planned for 2022 in the area of environmental initiatives will cover adaptation of the Kawęczyn heat plant to the BAT conclusions, upgrade of the Pruszków CHP plant, upgrade of absorbers 1 and 2 at the Siekierki CHP plant, a programme to reduce noise generated by the plants and upgrade of the sanitary sewage system.

PGNiG TERMIKA will pursue an investment programme, including upgrades to its existing generation assets, aimed at building new high-efficiency and cost-effective generation capacity using low- and zero-emission technologies adapted to increasingly stringent environmental requirements developed as part of projects such as "PR40+".

In the coming years, PGNiG TERMIKA also intends to continue the monitoring of acquisition opportunities among heat distribution and heat and electricity generation businesses, and to improve its business efficiency through the use of modern production and assets management methods.

The objectives of PGNiG TERMIKA EP in 2022 include the continuation and completion of the project to secure heat supplies for the town of Rybnik and the project to integrate the heating systems of the Zofiówka CHP plant and the Pniówek CHP plant, as well as efforts to intensify acquisition of new customers for central heating, domestic hot water, and cold. In the long term, the company recognises the potential of incineration plants and is therefore carrying out siting, technological and economic analyses (construction of an incineration plant in Racibórz). Concurrently, PGNiG TERMIKA EP is taking steps to reduce emissions from individual generation sources through:

- exiting the ETS by the Suszec (from April 2022) and Moszczenica CHP plants (planned for 2024);
- conversion to biomass or co-combustion of coal and biomass in Żory, Wodzisław Śląski and Jastrzębie Zdrój (Zofiówka CHP plant);
- the use of existing RES installations, that is the solar PV systems in Jastrzębie-Zdrój, Racibórz and Żory (completed in 2021), and planned to be completed in the coming years in Jastrzębie-Zdrój (Moszczenica Branch) and Wodzisław Śląski.

The key challenges to the PGNiG TERMIKA Group's strategic plans include:

- preparing and implementing a long-term investment plan that will ensure compliance of generation assets with current and future environmental and energy efficiency requirements and seeking to achieve climate neutrality in 2050;
- increasing the share of zero and low carbon fuels and waste heat in the heat and electricity generation mix in order to reduce GHG emissions.

4.5 Other Activities

4.5.1 Research, development and innovation. PGNiG Corporate Centre

4.5.1.1 Operations in the first half of 2022

Research and Innovation Department

In the first half of 2022, 89 R&D&I projects were supervised at the Research and Innovation Department. As at June 30th 2022, the PGNiG Group spent a total of approximately PLN 67.25m on R&D&I and hydrocarbon identification and exploration projects, of which at the PGNiG Group companies: approximately PLN 9.66m, at PGNiG: approximately PLN 57.59m (including approximately PLN 13.54m on R&D&I projects and approximately PLN 44.05m on hydrocarbon identification and exploration projects at the Geology and Hydrocarbon Production Branch).

In 2022, collaborative work continued with scientific and research partners on ongoing and planned R&D&I projects of interest to the PGNiG Group.

Under the INGA (INnovative GAs) joint venture implemented in partnership with the National Centre for Research and Development and OGP GAZ-SYSTEM S.A., work was continued on six research and development projects selected in the first and second competition rounds, including four projects in the area "Exploration for and production of hydrocarbons and production of gas fuels" (INNKARP, SYNERGA, Miocen 3D, DME), one project in the area "Coalbed methane recovery" (AMMUSCB), and one project in the area "Underground hydrocarbon storage" (KAWSOL) concerning the integration of RES with underground energy storage facilities in salt caverns.

All those projects are co-funded by the National Centre for Research and Development. The total budget of the projects is approximately PLN 74.4m, including PLN 36.4m provided by the National Centre for Research and Development. The objective of the INGA joint venture is to promote long-term innovation and competitiveness of the PGNiG Group companies in Poland and on the global market through targeted and commercialisation-oriented implementation of R&D projects and partnerships with research institutes.

The first half of 2022 also saw the continuation of Stage 2 of the MiniDrill project. The purpose of the project is to develop a technology for the drilling of a number of small-diameter sidetracks, radiating in different directions from an existing well, which – by increasing the accessibility of the well area – will enable the acquisition of additional hydrocarbon volumes. In this way, the technology is expected to enable enhanced recovery of hydrocarbons from existing wells, optimising the production operations.

In the first half of 2022, the Research and Innovation Department continued to implement the "Processor" Digitalisation Programme. Projects included in the first tranche of the programme, the aim of which is to maximise the benefits of digital innovation, were carried out. As part of the projects, particular attention is placed on developing a predictive model to draw up long-term forecasts of demand for high-methane gas reflecting nine areas of use, and on performing data classification analyses for the Smartfield project.

As one of the objectives of the "Processor" Digitalisation Programme is to identify areas within the PGNiG Group where the implementation of new digital technology solutions would quickly deliver benefits from the business activities of the PGNiG Group, identification of the most important projects to be implemented in the subsequent tranches of the programme is performed on an ongoing basis. Particular focus will be placed on methods of detecting methane leakages or collecting detailed data from the field using Distributed Fibre Optic Sensing technology and its analysis with the use of advanced artificial intelligence and machine learning mechanisms.

In the first six months of 2022, the R&D&I area pursued a systemic approach to securing preferential financing by the Group companies. PGNiG Group companies are being informed on an ongoing basis about potential sources of financing within the current and future EU financial frameworks and initiate application procedures for R&D&I and investment projects. During that period, PGNiG Termika filed one application for a preferential loan from the National Fund for Environmental Protection and Water Management, PSG filed seven applications for projects involving smart energy storage, transmission and distribution systems, and Geofizyka Toruń continued to raise funding under the licence mechanism for PGNiG UN, securing new funds from this source.

Hydrogen Programme

In the first half of 2022, design work continued under the "Hydrogen – a Clean Fuel for the Future. Building Hydrogen Capabilities at the PGNiG Group" programme initiated in 2020. The programme consists of several projects ranging from green hydrogen production, through hydrogen storage and distribution, to industrial power generation applications. Its objective is to assess and commence the implementation (pilots/demonstrations) of hydrogen technologies within specific areas of the PGNiG Group's business, including in particular distribution and large-scale storage, by developing the existing technological capabilities and gaining new experience, primarily through R&D&I projects. Concurrently, the development of new hydrogen technologies through commercialisation of project results and deliverables will help diversify the PGNiG Group's revenue streams and customer portfolio.

Eight hydrogen projects are under way to transform the company and support Poland's transition towards low carbon economy:

- **InGrid, P2G** – verification and testing of the possibility of injecting hydrogen into existing gas networks and construct Poland's first demonstration unit to produce green hydrogen through the electrolysis process with a possibility of off-grid operation supported by an energy reservoir and production of hydrogen using electricity from the power grid. The project also aims to perform tests on how mixtures of natural gas and hydrogen affect terminal units. Finishing works as part of the construction of a solar PV farm and electricity storage facility were performed in the first half of 2022;
- **Underground hydrogen storage facility at Mogilno CGSF (H2020)** – construction of underground hydrogen storage facilities with the use of salt caverns. In the first half of 2022, the application submitted by PGNiG received a pre-notification and was presented to the European Commission for the "Important Projects of Common European Interest" – for co-financing the project to construct commercial energy storage facilities in Mogilno and Kosakowo, and to construct a research cavern in Mogilno.
- **H2 Micro-Cogeneration** (Micro-CHP) R&D – development of a proprietary cell production technology, to acquire technical and economic expertise in the production process as well as hands-on operational experience in the solid oxide fuel cells (SOFC) technology, and subsequently develop and implement the high-efficiency small-scale micro-CHP technology based on solid oxide fuel cells (mCHP-SOFC). The first half of 2022 saw the acceptance of the first fully-functional prototype of a 1 kW hydrogen-powered micro-cogeneration system;
- **New Fuel Lab** – expansion of CLPB's laboratory activities to perform quantitative and qualitative tests of hydrogen purity for vehicle fuel applications, mixtures of natural gas with hydrogen and biomethane;
- **Blue H2** (launch in 2022) – development of a blue hydrogen production technology (with parameters meeting the transport requirements) based on reforming natural gas integrated with a CO_2 capture unit – adaptable to the characteristics of the market product and enabling hydrogen storage. In 2022, letters of intent were signed with three industrial partners.
- **HycoGen** (launch in 2022) – generation of electricity and heat in industrial generation equipment using mixtures of natural gas, hydrogen and pure hydrogen, which will make it possible to use any mixture of natural gas and hydrogen in cogeneration for captive and commercial power plants.
- **Hydrosens** (launch in 2022) – development of a hydrogen sensor operating at room temperature using Polish technology. The project was included in the international list of projects recommended for funding in the M-ERA.NET 3 Call 2021 competition.
- **Hy-Chess** – technically and operationally verified technology for distributed energy storage, which may be used to locally balance RES sources and support the construction of energy clusters (electricity storage facility and a local source of SNG and hydrogen).

Further projects are initiated under the Hydrogen Programme, related to the Company's engagement in further development of innovative hydrogen technology projects, including the production of green hydrogen. The projects to be implemented at PGNiG will either have dedicated RES sources built as an integral part of individual projects, or energy supply contracts with RES owners will be concluded prior to launching the projects.

The company received the Economic Award from the Polish Radio for taking the first place in the "Green Company" category for its "Hydrogen – Clean Fuel for the Future" research programme.

Business Development Department

In the first half of 2022, the Business Development Department worked on development projects and tasks in the following key areas: Renewable Energy Sources, Alternative Fuels, Energy Efficiency and the Inn-Vento Start-up Centre.

RES

In the first six months of 2022, the "Photovoltaic Business" project was continued, relating to the PGNiG Group's operations in the market for PV prosumer production and heat pumps. PGNiG acquired Solgen Sp. z o.o., specialising in sales and supply of RES products in the prosument segment. Its incorporation into the PGNiG Group opens more opportunities for expansion in Poland and for building synergies in product and service offering with other Group companies.

In parallel, under the "Photovoltaic Installations" project, rooftop PV systems are mounted on PGNiG facilities. Systems with a total capacity of over 120 kWp were installed at the Zielona Góra Branch, and further contracts were concluded to install systems with a total capacity of over 1.3 MWp at the Zielona Góra Branch, the Sanok Branch, and the Head Office. A concept for the development of large-scale photovoltaic farm projects was also developed, envisaging conditional acquisition of special purpose vehicles developing such projects. At the same time, development work is under way to obtain administrative decisions required to build PV farms with a total capacity of approximately 10 MW on land owned by PGNiG, as well as on leased land, with a target capacity potentially in excess of 40 MW. Potential acquisitions of ready-to-build and operational wind farms are analysed on an ongoing basis.

Alternative Fuels

The first half of 2022 saw the continuation of the "bioLNG TANK" project to construct a plant parametrising and liquefying agricultural biogas to obtain bio-LNG at the agricultural biogas plant built by a third-party investor: the Project Information Sheet for the agricultural biogas plant and bio-LNG plant was developed and submitted to obtain a positive environmental decision; the terms of cooperation with the investor in the agricultural biogas plant were defined, following which long-term agreements on cooperation, sale of biogas and lease of land were signed; a draft contract for turn-key construction of a plant for purifying and liquefying agricultural biogas to obtain bio-LNG was prepared; tender documentation was prepared and a public tender procedure was launched for "Turn-key construction of a plant for purifying and liquefying agricultural biogas to obtain bio-LNG".

In addition, the following Projects were completed:

- under the ssLNG/CNG Programme, the "ISOLA" project to develop an optimum business model for off-grid gas distribution and LNG balancing was continued and closed; as part of the project financial efficiency indicators for the project and a document on off-grid gas roll-out were developed;
- the "Magellan" project, envisaging the development of LNG bunkering services, was completed. The Strategic Committee decided to continue the project as part of the PGNiG OD's project;
- the "Gepard" project to expand PGNiG's LNG and CNG product offering for heavy road transport, was completed. The project is being implemented as part of an initiative to develop the LNG and CNG segment directly at PGNiG OD;

In addition, legislation on alternative fuels was analysed in detail and amendments to legislation on biohydrogen were proposed. The biohydrogen production and sales potential was verified. A list of biohydrogen production technologies, highlighting the most advanced and commercially feasible ones, and a preliminary financial model were prepared.

Energy Efficiency

In the first half of 2022, following the implementation of projects improving energy efficiency, the average annual savings in energy consumed approximate 14,800 toe (172 GWh). Certification of the Company's Energy Management System compliant with the PN-EN ISO:50001:2018 standard was maintained until March 2023.

Moreover, the programme "Improvement of Energy Efficiency at the PGNiG Group", designed to coordinate measures aimed at achieving benefits in energy management, was continued. Under the Programme, the Company launched two further projects expected to improve its energy efficiency performance.

InnVento Startup Centre

In the first six months of 2022, InnVento focused on cooperation with Krakowski Park Technologiczny Sp. z o.o. (KPT), operator of the KPT ScaleUp acceleration programme. A similar cooperation agreement was also performed with Blue Dot Solutions Sp. z o.o., operator of the Space 3ac acceleration programme under the same POIR operational programme, but this time dedicated to foreign start-ups that intend to launch operations in Poland. As part of this cooperation, PGNiG can carry out pilot projects with selected start-ups in business areas that have been identified as promising for the implementation of technologies developed by small technology companies. InnVento also became a partner of the Lublin Science and Technology Park, where international start-up teams which will join the Connect Poland Prize programme will be given the opportunity to receive financial support and implement pilot projects for PGNiG S.A.

In the six months to June 30th 2022, InnVento entered into agreements for three pilot projects in the following areas:

- construction of a prototype application using machine learning in marking the first occurrence of refraction waves (ML FB Pick) for Geofizyka Toruń S.A. – Evorain start-up;
- construction of a platform to save energy using sensory data, combined with switching to LED lighting with smart control at the Lublin Oil and Gas Production Facility – mTap start-up;
- launch of the unit and gasification of certain fractions of municipal waste, measurement and preparation of test results for the produced syngas, the quantity of produced gas (m3/h) and the efficiency of energy production for PGNiG Termika S.A. – Commergy Convert start-up.

PGNiG Central Measurement and Testing Laboratory (CLPB) Branch

The main objective of CLPB is to maintain and strengthen its market position as a leading calibration and testing laboratory accredited by the Polish Centre of Accreditation and a verification point for measuring equipment and systems used in the natural gas industry as well as a natural gas quality control laboratory for all types of natural gas, including CNG and LNG. In this area, CLPB continues to provide services such as testing the correctness and reliability of natural gas quality and quantity measurements, testing of metering equipment and systems, and provision of analyses, opinions and technical expertise. The CLPB Branch's key customers are internal and external customers operating in Poland. The largest customers include PGNiG Group companies (Gas Storage Poland Sp. z o.o., Polska Spółka Gazownictwa Sp. z o.o., PGNiG Termika S.A., Sanok Branch and Zielona Góra Branch), GAZ-SYSTEM S.A., EuRoPolGaz S.A., KGHM Polska Miedź S.A. and Grupa Azoty Group companies.

The Branch provides metrology services for natural gas measurement and quality assessment equipment. Such equipment includes process chromatographic analysers for the assessment of natural gas quality, gas fuel dampness diagnostic devices and gas fuel density meters. CLPB also analyses the composition of natural gas, the content of odoriser and the content of sulfur compounds.

In line with the purpose of its establishment, the Research, Development and Innovative Technology Office (RD&T) focuses on design issues and technologies related to alternative gas fuels, especially biogas, biomethane and hydrogen. Four projects are being implemented and three projects are at the planning phase. The Office has regulatory powers to manage the whole innovation value chain: from defining a research idea/problem to commercialisation. RD&T also serves as the Area Project Management Office (APMO). As the APMO, it verifies design and programme documentation in terms of correctness and methodology.

The key project initiatives implemented in 2020 and continued in the first half of 2022 at RD&T include:

- research and implementation project: Use of Biodegradable Fraction of Municipal Waste in Energy Production – a circular economy initiative to develop a technology for efficient preparation, processing and management of the organic fraction of municipal waste to produce raw biogas and an alternative solid fuel in the form of coal from recycling.

  By the end of the first half of 2022, the following key tasks were carried out:

  - successful validation of the finished prototype in real-life conditions, as confirmed by continued high performance of test material from another source,
  - a draft consortium agreement was drawn up for the implementation of Phase 2 of the Project in consultation with the urban sanitation company (MPO) of Kraków as the target user of the pilot and demonstration unit, and business negotiations began,
    - extensive dissemination of results continued by involving students in project work on the part of UPP, implementing anonymised research data for selected engineer's theses and promoting the results at selected industry and scientific conferences.
- research and implementation project: The H2 Micro-Cogeneration (Micro-CHP) project designed to acquire technical and economic expertise in the production process, as well as hands-on operational experience in the solid oxide fuel cells (SOFC) technology, and to subsequently develop and implement the high-efficiency small-scale micro-CHP technology based on solid oxide fuel cells (mCHP-SOFC). As at June 30th 2022, the first Project Milestone was achieved – the first fully functional prototype of a 1 kW hydrogen-powered micro-cogeneration system was accepted; Long-term tests of the prototype at the Energy Institute and work on the Project's business stream are under way in order to develop a plan to commercialise and implement the Project's deliverables – a micro-generation technology based on innovative solid oxide fuel cells (SOFC) entirely produced in Poland.

- New Fuel Lab – a project designed to expand the laboratory activities of the CLPB Branch of PGNiG S.A. to perform quantitative and qualitative tests of hydrogen purity for vehicle fuel applications, mixtures of natural gas with hydrogen and biomethane.

The first half of 2022 also saw the launch of further projects:

- the Biomethanisation project (research work phase), whose business objective is to obtain research deliverables in the form of know-how and rights to biomethanisation technology, ready to move on to the pre-implementation phase, which will enable economic optimisation of purifying raw biogas to achieve the parameters of the "grid" biomethane, thus facilitating the transformation of biogas plants into biomethane plants over a shorter period of time and with lower capital expenditure compared to the solutions currently in use.

  In March 2022, an agreement was signed with the Poznań University of Life Sciences for the implementation of the "*In situ* biomethanisation in a methanogenic reactor" R&D project. The first partial results of the work performed so far have shown positive effects of adapting the microflora to biomethanisation when dosing carbon dioxide and hydrogen in non-stoichiometric proportions into the reactor. The R&D work is planned to be completed at the end of the first quarter of 2023.

- The HyCogen research and development project focusing on the development of an innovative technology of a gas engine in a cogeneration unit powered by a mixture of natural gas and hydrogen in any proportions (and ultimately with pure hydrogen), designed to supply electricity and heat to end users from lowest emission (and ultimately zero emission) sources.

  As at the end of the first half of 2022, the first Project Milestone was achieved – the development of technical documentation for the power supply and control system of the multifuel system was completed and the intellectual property rights were transferred to PGNiG. Components of a prototype cogeneration unit are being assembled.

In addition, in the first half of 2022 a concept was prepared for the ReFOOD innovative investment project to develop a sector coupling model to implement an effective technical solution and business model based on the circular economy concept and the production of an alternative gas fuel (biogas) using expired food products.

4.5.2 Growth prospects and challenges for the future in the R+D+I area

Research and Innovation Department

PGNiG's focus is primarily on reinforcing the PGNiG Group's position in hydrogen technologies, further digitalisation of its business, and application of new solutions to its core business operations, particularly to Exploration and Production as well as Storage. Priority will be given to the proper completion of ongoing R&D&I projects and to the commercialisation of further products. At the same time, new business areas that can increase the competitiveness of the companies and strengthen their market position will be constantly analysed. These activities will be implemented over two time horizons.

Short-term horizon (until the end of 2022):

- Strengthening the position of the PGNiG Group in hydrogen technologies, including by preparing an update of the Hydrogen Programme, incorporating the objectives set out in the "Polish Hydrogen Strategy until 2030 with an outlook until 2040" adopted by the Polish government;
- Under the InGrid Power to Gas (P2G) project – launch of a solar PV system with a power storage facility in Odolanów in the second half of 2022;
- As part of the H2020 project – launch in the second half of 2022 of a complete measurement vehicle capable of testing storage infrastructure containing hydrogen and natural gas-hydrogen mixtures;
- Under the Blue H2 project – carrying out a tender for the delivery of a reformer in accordance with the concept to build a test installation consisting of gas reforming, carbon capture and conditioning system, as adopted in the feasibility study;
- Roll-out of the passporting functionality for the power unit in the production facility, including its connection to production databases and real-time presentation;
- Securing notification to the European Commission relating to the construction of salt caverns as large-scale storage facilities of energy in hydrogen.

Medium-term horizon (2023–2024):

- launch in the first half of 2023, under the InGrid P2G project, of an electrolyser unit and an off-grid hydrogen research network in Odolanów, which will mark completion of construction work and commencement of research into the impact of hydrogen and hydrogen mixtures on the existing natural gas distribution networks;
- Roll-out of the 2nd tranche of the Digitalisation Programme including digital innovation projects – e.g., big data analytics and decision support algorithms (artificial intelligence, machine learning) and process automation – developed, tested and implemented across the PGNiG Group's value chain;
- cooperation with industrial partners interested in the purchase of products from the blue hydrogen production unit (hydrogen and CO_2);
- design, construction and optimisation of an innovative cryogenic turboexpander based on Polish know-how, in cooperation with the partner in Odolanów;

- provided that a notification for the H2020 project is secured – launch of investment work relating to the construction of a research energy storage facility and pre-investment work to prepare the construction of the first commercial energy storage facility based on cavern technology.
- completion of phase 1 of the Hy-chess project and submission of the feasibility study for the proposed technology to the National Centre for Research and Development;
- commercialisation/implementation into the PGNiG Group's business of the results of R&D projects, including products and technologies originating from INGA projects – verified on an ongoing basis in terms of commercialisation viability.

Business Development Department

In the second half of 2022, steps will be taken primarily to ensure efficient implementation of new business products at the PGNiG Group and to identify and develop new projects.

RES

As regards the RES area, a post-transaction integration of Solgen Sp. z o.o. is planned for the second half of 2022. Plans also include stepping up the sales of heat pumps as a joint venture of Solgen Sp. z o.o. and PGNiG OD. As part of the Group's growth in the RES market in 2022, efforts will be continued to build and operate a portfolio of renewable electricity sources, including in the photovoltaics segment: continued development of photovoltaic systems on own land and in own facilities, acquisitions of photovoltaic farms and development of large-scale photovoltaic farm projects in accordance with the adopted business concept; In the wind farm segment: potential acquisitions of wind farm projects ready for construction as well as operational wind farms.

Alternative Fuels

In the second half of 2022, work is to be continued under the bioLNG TANK project. The contractor will be selected as part of the procurement procedure for the "Turn-key construction of a bioLNG unit", followed by the execution of a contract with the winning contractor and securing administrative permits for the construction project. New liquefied biomethane projects will be selected and analysed, and new locations for investment projects will be identified. Detailed information (including valuation) on the biogas treatment and biohydrogen production unit will be collected to develop a detailed financial model of the potential project.

Potential production of other alternative fuels derived from waste (such as ammonia, methanol, and ethanol) and their possible applications will be further analysed; market research will be conducted with regard to the sale of other types of alternative fuels; and other hydrogen production technologies will be explored.

Energy Efficiency

As regards Energy Efficiency, in 2022 PGNiG Group companies will phase in energy-related products, including under the ongoing Stop SMOG project; Implementation of the Energy Efficiency Improvement Programme; Taking steps to maintain the certified Energy Management System compliant with the PN-EN ISO 50001:2018 standard (energy reviews, internal audits); Submission to the President of URE of applications for energy efficiency certificates drawn up following energy efficiency audits carried out by the Energy Efficiency Department.

InnVento Startup Centre

In the second half of 2022, the Group plans to increase the scale of test projects with start-ups, building on cooperation with external partners (accelerators). To this end, steps will be taken to identify and verify the technological and business needs of PGNiG S.A. and key PGNiG Group companies, as well as to support effective management of such projects within the PGNIG Group.

Central Measurement and Testing Laboratory (CLPB)

In 2022, CLPB plans to expand its measurement and testing activities by acquiring new customers, expanding the service range, increasing the use of its expertise potential and existing infrastructure, and to intensify marketing efforts through such activities as campaigns targeted at entities that use infrastructure requiring certification. Other business development initiatives will include building CLPB's competences and infrastructure to offer qualitative and quantitative testing and analytical services for alternative fuels.

Plans provide for expanding CLPB's competences to include quality analyses of hydrogen as a low-emission vehicle fuel. Currently, there is no such laboratory in Poland, and the prospect of organising one becomes a very important element in the development of CLPB in the context of the emerging market for hydrogen fuel, as well as the quantitative and qualitative testing of natural gas-hydrogen mixtures and biomethane.

In addition, the model NSG-T01 metering station is planned to be upgraded, which allows commercial calibration of various types of gas meters (turbine, ultrasonic, and centrifugal) within the range of (0.16 ÷ 6,500 cm/h), as Poland's only such facility (except for the Central Office of Measures). Replacement of the existing control system as well as the control and measurement devices will enable the company to expand its measuring capabilities to include turbine, ultrasonic, and thermal mass flow meters.

Development plans for the Measurement and Testing Laboratories include preparation for expanding their services to include measurement of methane emissions. This matter is to be tackled as part of the draft decarbonised gas market package (the Gas Directive, Gas Regulation, and Methane Regulation), published on December 15th 2021 by the European Commission.

RD&T's plans for the second half of 2022 include continuation of the following basic work:

- research and implementation project: Use of Biodegradable Fraction of Municipal Waste to Produce Energy: signing contracts for Phase 2 (technology optimisation + pilot and demonstration unit) with the municipal sanitation company (MPO) of Kraków and the Poznań University of Life Sciences, launch of procurement procedure to commission the installation of the pilot and demonstration unit of an integrated system for the use of biodegradable fraction of municipal waste to produce energy, filing an application with the patent office to protect the proprietary technology developed as part of Phase 1.
- research and implementation project: H2 microgeneration: construction of a second gas-fuelled prototype system. Long-term tests of this prototype will demonstrate the suitability for fuelling the system with natural gas during the transitional period of energy transition, targeting alternative, zero-emission (decarbonised) fuels.
- the Biomethanisation (research work phase) project: acceptance of the Key Milestone concerning the efficiency of dosing hydrogen to fermentation pulp, development of a draft implementation and commercialisation plan.
- HyCogen research and development project: technical and business arrangements for transferring the prototype (industrial scale cogeneration unit) for use and long-term testing, with pure hydrogen and/or natural gas used as fuel, in real-life conditions. Effective implementation and long-term tests will enable validation of the multifuel technology prior to its commercialisation and placement on the market.

5. Financial condition of the PGNiG Group and PGNiG in the first half of 2022

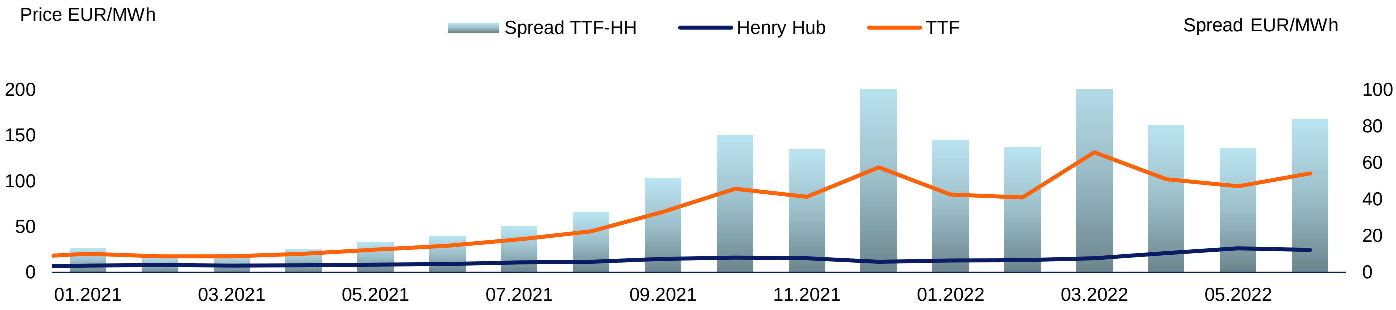
5.1 Macroeconomic environment

5.1.1 Trends in the natural gas market

2022 witnessed unprecedented developments across global energy commodity markets. After Russia's armed aggression against Ukraine, the prices of most hydrocarbons on global markets rose sharply. The ongoing war distorted traditional pricing mechanisms – the recent months saw major price fluctuations, and prices were mainly driven by political statements and speculation. The reason for price spikes was primarily the risk of a reduction or complete stoppage of hydrocarbon deliveries from Russia to Europe, both due to a potential cut of supplies by Russia and sanctions gradually imposed by Western countries. On April 27th 2022, Gazprom shut down all gas supplies to Poland.

In the first half of 2022, gas prices in Europe soared year on year. The average price of gas at the Dutch TTF hub was EUR 96.94 per MWh, an increase of almost 350% compared with the corresponding period of 2021. Year on year, the prices of natural gas at the Henry Hub rose by 135%, to the average of EUR 18.91 per MWh. The average gas price in the United States was up EUR 10.86 per MWh at that time. The spread between those two trading points grew by almost 500%, or EUR 67.91 per MWh, in the last six months, to reach an average of EUR 81.52 per MWh. The largest price spreadm, of EUR 115.81 per MWh, was recorded in March.

Chart 4 Average monthly front month gas contract at Henry Hub and TTF in 2021 and H1 2022

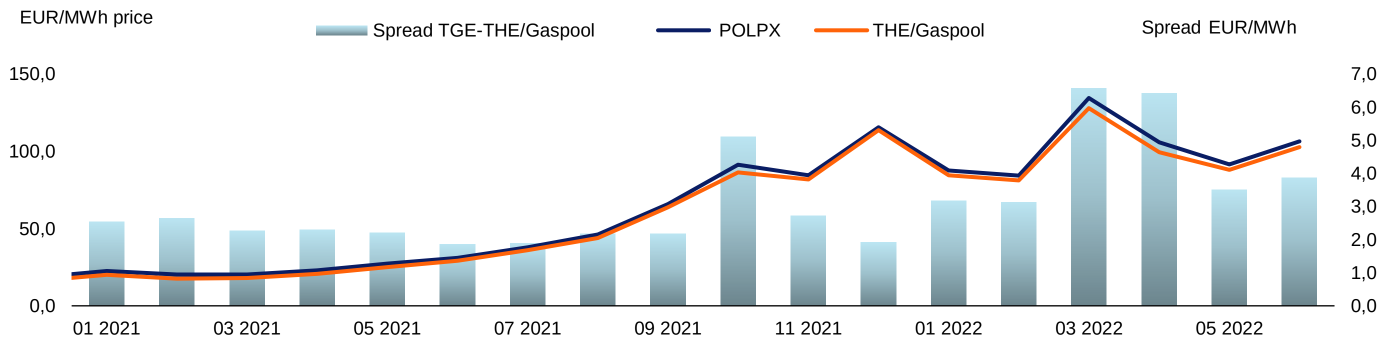


Source: In-house analysis based on NYMEX and ICE data. Front-month contract - contract with the delivery date in the following month.

Gas prices in Poland

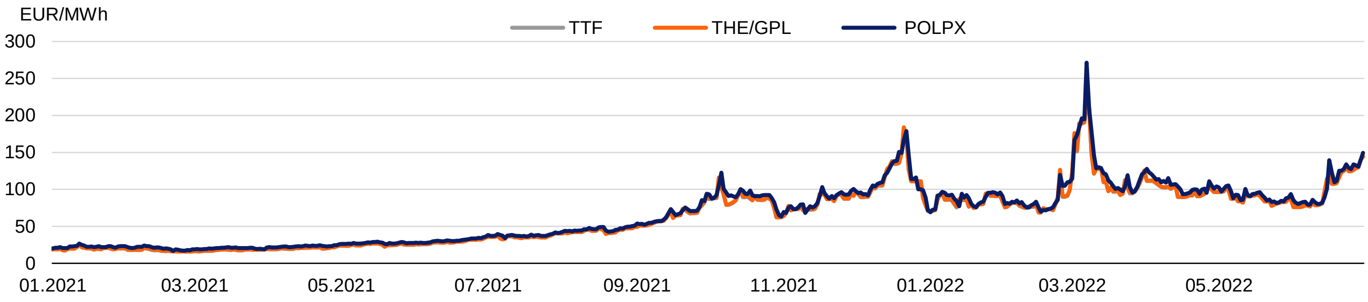
In the first half of 2022, the average spot price of gas in Poland (Day-Ahead and Intraday Markets) was EUR 101.88/MWh, having increased by EUR 77.79/MWh (or 323%) year on year. Gas prices in Poland were strongly correlated with those in Germany and on the European markets in general. The average spread between spot prices (for the Day Ahead product) on the POLPX and the (Gaspool) in the first six months of 2022 was EUR 4.46/MWh, up EUR 2.16/MWh (94%) year on year. The reported increase in the spread between average closing prices on the Polish and German markets was not attributable to any fundamental changes (such as higher transmission costs), but was driven by sharp price spikes on the gas market. As a result of these market developments, combined with the earlier closing time of the POLPX relative to western exchanges, the closing prices in Poland did not follow the gas price upticks on other markets, and the POLPX price was only able to catch up with prices quoted at the Western European hubs on the next day on market opening.

Chart 5 Average monthly natural gas spot prices in Poland and Germany in 2021 and H1 2022



Source: In-house analysis based on POLPX and EEX data.

Chart 6 Spot price of gas on POLPX, TTF and GPL in 2021 and H1 2022



Source: In-house analysis based on POLPX and EEX data.

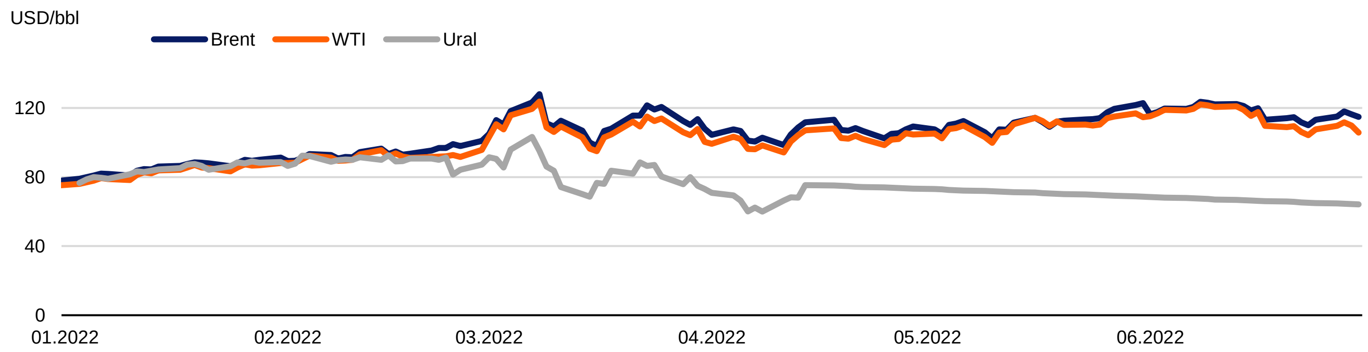
The situation on the natural gas market in Europe and globally has a bearing on the PGNiG Group's financial results, mainly due to its impact on both income and expenses of the Trade and Storage segment.

5.1.2 Trends in the crude oil market

The first six months of 2022 saw significant movements in oil prices, with daily changes within a range of several US dollars. Until mid-February 2022, the prices of Brent, WTI and Urals crudes were correlated, but the situation changed following Russia's invasion of Ukraine. Since the end of February, Urals crude has been sold at a large discount to other types of crude, as it has become unattractive for buyers from Western countries. The United States imposed sanctions on Russian crude as early as at the beginning of March and the European Union is making efforts to reduce its imports and plans to almost completely stop buying Russian oil by the end of 2022.

The prices of Brent and WTI peaked in early March, at USD 127 and USD 123, respectively. On March 8th, just before the US imposed sanctions on Russia, the price of oil spiked to levels unseen in the last 13 years. Shortly after that both benchmarks fell, with Brent price plunging by almost USD 40 and WTI – by USD 33 over ten days. Concerns about the global supply due to the imminent economic slowdown and new coronavirus outbreaks in China resulted in a price decline. Signals that sanctions against Iran and Venezuela may be lifted also put downward pressure on oil prices.

Chart 7 Brent, WTI and Urals crude prices, month-ahead contract in H1 2022



Source: In-house analysis based on ICE and NYMEX data. month-ahead contract – contract with the delivery date in the following month.

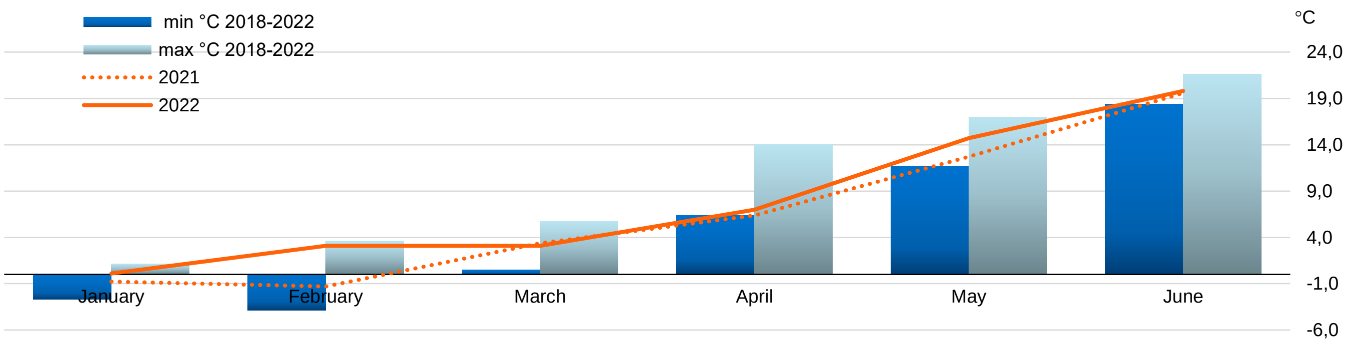
The demand for crude oil rose in the first half of 2022 and according to EIA is 98.77 mbbl/d, with global crude production at 99.28 mbbl/d. Most industry agencies and organisations expect a further increase in global production in 2022 and 2023, the main reason being that OPEC and its allies, who keep controlling the volume of crude oil on the market, announced their plans to lift all regulations on output in September 2022. In the first half of 2022, there was a growing number of reports that sanctions against Iran might be lifted provided that the country complies with the nuclear deal, which would further increase the global output. Demand-wise, however, there is less optimism. The prospects of an economic downturn and deceleration raise concerns over demand growth in the years to come.

The situation on the oil market in Europe and globally has a bearing on the PGNiG Group's financial performance, mainly due to its impact on the Exploration and Production segment (chiefly sales of crude produced in Norway) and the cost of gas imports in the Trade and Storage segment.

5.1.3 Average monthly temperatures

In the first half of 2022, the average temperature reached 8.0 degrees Celsius – 1.3 degrees above the average temperature recorded in the same period of 2021. In the first quarter of 2022, the average reading was 2.09 degrees Celsius, compared with 0.4 degree the year before. Relative to 2021, the largest year-on-year difference in temperature was recorded in February (4.4 degrees Celsius). In the second quarter, the average reading was 13.8 degrees Celsius – an increase of 0.9 degree compared with the second quarter of 2021. The temperature factor affects the performance of the PGNiG Group mainly in the Trade and Storage, Distribution and Generation segments.

Chart 8 Average monthly temperatures



Reference point for temperature measurement: Rzeszów.
Source: In-house analysis.

5.2 Financial condition of the PGNiG Group in H1 2022

Table 22Financial highlights of the PGNiG Group for H1 2022, H1 2021 and at year end 2021

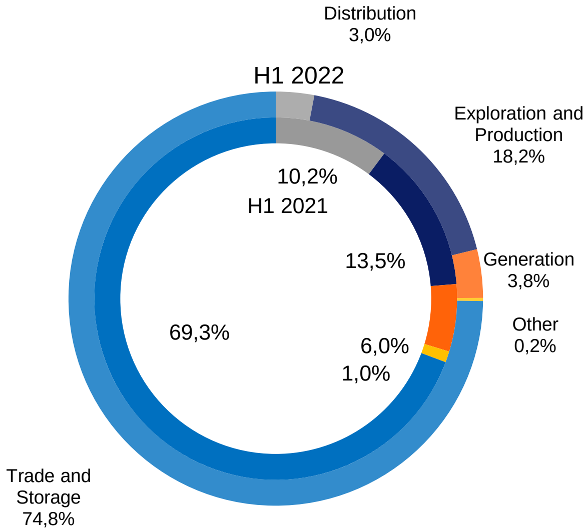
Consolidated financial data	PLNm		EURm	
	6 months ended Jun 30 2022	6 months ended Jun 30 2021	6 months ended Jun 30 2022	6 months ended Jun 30 2021
Revenue	78,372	24,985	16,881	5,495
Operating profit before interest, taxes, depreciation and amortisation (EBITDA)	15,067	5,195	3,245	1,142
Operating profit (EBIT)	11,917	3,417	2,567	751
Profit before tax	11,414	3,336	2,458	734
Net profit attributable to owners of the parent	4,839	2,434	1,042	535
Net profit	4,839	2,434	1,042	535
Total comprehensive income attributable to owners of the parent	(1,576)	2,371	(339)	521
Total comprehensive income	(1,576)	2,371	(339)	521
Net cash from operating activities	3,325	4,750	716	1,045
Net cash from investing activities	(2,785)	(2,878)	(600)	(633)
Net cash from financing activities	576	(1,065)	124	(234)
Net cash flows	1,116	807	240	177
Basic and diluted earnings per share (in PLN and EUR, respectively)	0,84	0,42	0,18	0,09

Consolidated financial data	PLNm		EURm	
	As at Jun 30 2022	As at Dec 31 2021	As at Jun 30 2022	As at Dec 31 2021
Total assets	120,967	101,576	25,844	22,085
Total liabilities	78,556	57,197	16,783	12,436
Non-current liabilities	24,959	20,107	5,332	4,372
Current liabilities	53,597	37,090	11,451	8,064
Total equity	42,411	44,379	9,061	9,649
Share capital	5,778	5,778	1,234	1,256
Weighted average number of ordinary shares (million)	5,778	5,778	5,778	5,778
Book value per share and diluted book value per share (PLN/EUR)	7,34	7,68	1,57	1,67
Dividend per share declared or paid (PLN and EUR)	-	0,21	-	0,05

5.2.1 Consolidated statement of profit or loss of the PGNiG Group

Revenue

Chart 9 Revenue in H1 2021 and H1 2022 by business segment



Exploration and Production: revenue from sales of E and Ls/Lw gas up PLN 12,486m (+518%) year on year, revenue from sales of crude oil and condensate up PLN 1,130m (+104%) year on year.

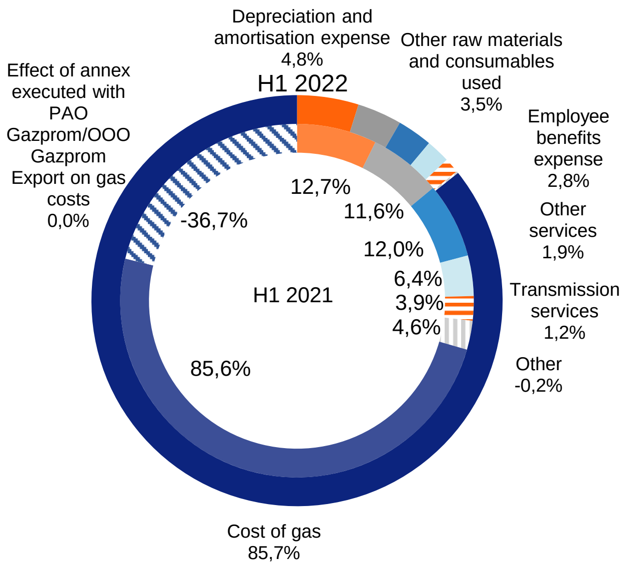
Trade and Storage: revenue from sales of E and Ls/Lw gas (taking into account the adjustment to gas sales due to hedging transactions) up PLN 48,601m (270%) year on year. Effect of compensation of PLN 2,964m from the Price Difference Payment Fund on PGNiG OD's revenue.

Distribution: stable revenue from distribution services in Poland of PLN 2.74bn, with a 3.6% increase in the distribution tariff.

Generation: revenue from sales of heat up PLN 259m (27%) year on year, with the average air temperature higher year on year and a 2% increase in volumes of heat sales; revenue from sales of electricity generated by the segment's own sources up PLN 1,419m (301%) year on year on higher sales volumes (up 50%).

Operating expenses

Chart 10 Operating expenses in H1 2021 and H1 2022



Cost of gas sold up PLN 42,744m (293%) year on year.

The cost of other raw materials and consumables up PLN 384m (20%) year on year, including a PLN 346m (30%) year-on-year increase in electricity for trading.

Employee benefits expense up PLN 144m (9%) year on year, including salaries and wages up PLN 77m (6%) year on year.

Cost of three dry wells and seismic surveys totalled PLN 224m in the first half of 2022 vs PLN 425m (eight dry wells) in the first half of 2021.

Reversal of impairment losses on non-current assets in the first half of 2022 of PLN +656m vs reversal of impairment losses of PLN +541m in the first half of 2021.
Effect of reversal of a gas inventory write-down of PLN +36m Compared with gas inventory write-down of PLN +0.5m reversed in the first half of 2021.
Depreciation and amortisation in the first half of 2022 at PLN 3,150m, in Norway at PLN 1,007m.

EBITDA

EBIT in the first half of 2022 amounted to PLN 11,917m, up by PLN 8,500m year on year, mainly on higher revenue from sales of own natural gas and crude oil with condensate amid high market prices of hydrocarbons. A similar effect was reported in the case of EBITDA, which rose by PLN 9,872m year on year, to PLN 15,067m in the first half of 2022.

Net finance costs and net profit or loss

Net finance costs in the first half of 2022 amounted to PLN -495m, of which the key items were a PLN -240m interest on debt and a PLN -146m impairment loss on loans advanced (mainly to Elektrociepłownia Stalowa Wola S.A.).

After accounting for profit on equity-accounted investees of PLN -8m and the higher year on year tax expense (due largely to taxes on PGNiG UN's operations) of PLN 6,575m, the Group's net profit for the first six months of 2022 came in at PLN 4,839m, up PLN 2,405m year on year.

For detailed notes on finance income and costs (Note 3.7) equity-accounted investees (Note 2.1) and income tax (Note 3.8), see the consolidated financial statements of the PGNiG Group for the first half of 2022.

Assets

Property, plant and equipment represent the largest item of the PGNiG Group's assets. As at June 30th 2022, property, plant and equipment amounted to PLN 50,913m, having increased by PLN 721m (+1%) relative to December 31st 2021, with a major increase of PLN +708m (+17%) reported for 'Other tangible assets under construction', and PLN 476m (2%) reported for 'Buildings and structures' on December 31st 2021.

As at June 30th 2022, the PGNiG Group's current assets amounted to PLN 59,925m, up PLN 15,829m (+36%) on the end of 2021, with receivables up PLN 5,584m (+34%), derivative financial instruments up PLN 4,655m (+61%) and inventories up PLN 3,931m (+48%).

Equity and liabilities

A significant source of financing for the PGNiG Group's assets is equity, whose value at June 30th 2022 was PLN 42,411m, down PLN 1,968m (-4%) on December 31st 2021. The change in equity was mainly attributable to retained earnings (up PLN 4,839m) and a negative hedging reserve (up PLN 6,908m).

As at June 30th 2022, non-current liabilities were PLN 24,959m, having increased by PLN +4,852m (+24%) on December 31st 2021. The increase was attributable mainly to a rise in derivative financial instruments (up PLN +6,661m (+137%) on December 31st 2021). As at June 30th 2022, the PGNiG Group had current liabilities of PLN 53,597m, up PLN +16,507m (+45%) on the end of 2021. As in the case of non-current liabilities, the increase was attributable to higher derivative financial instruments (up PLN +8,254m (+81%) on December 31st 2021).

For detailed information on the consolidated statement of financial position, see the PGNiG Group's Interim Report for the six months ended June 30th 2022.

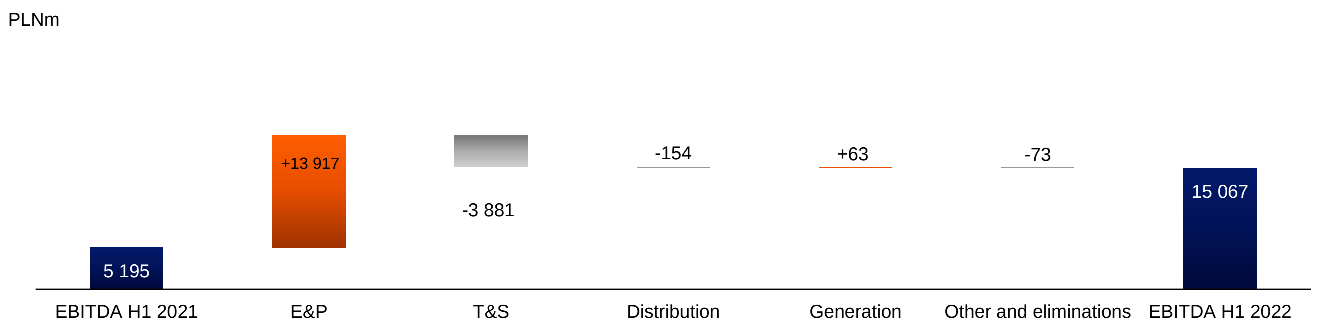
Statement of cash flows of the PGNiG Group

In the first half of 2022, cash flows from operating activities were PLN +3,325m, down PLN 1,425m year on year. The decrease was mainly attributable to a material change in working capital, which at the end of the first half of 2022 amounted to PLN -5,384m vs PLN 233m the year before. Cash flows from investing activities slightly decreased year on year (PLN -2,785m in the first half of 2022 vs PLN -2,878m in the first half of 2021). Cash flows from financing activities amounted to PLN 576m as a result of a much higher increase in debt year on year (PLN 3,208m as at the end of the first half of 2022 vs PLN 4m as at the end of the first half of 2021).

For detailed information on the consolidated statement of financial position, see the PGNiG Group's Interim Report for the six months ended June 30th 2022.

5.2.2 Overview of segment results

Chart 6 EBITDA changes between H1 2021 and H1 2022



(in PLN million unless stated otherwise)

Exploration and Production (E&P)

Table 23 Revenue in the Exploration and Production segment in H1 2022, H1 2021 and in 2020–2021

Exploration and Production financial results	H1 2022	H1 2021	2021	2020
Revenue from non-PGNiG Group customers	3,525	1,742	4,354	2,754
Inter-segment revenue	14,104	2,049	11,536	1,858
Total revenue, including	17,629	3,791	15,890	4,612
high-methane gas, nitrogen-rich gas and LNG	14,898	2,412	12,455	2,512
crude oil, condensate and NGL	2,215	1,085	2,683	1,491
geophysical, geological, drilling, well services	187	122	302	227
Operating profit before interest, taxes, depreciation and amortisation (EBITDA)	16,670	2,754	13,530	927
Operating profit (EBIT)	15,294	2,174	12,078	-321

Table 24 Operating expenses in the Exploration and Production segment in H1 2022, H1 2021 and in 2020–2021

	H1 2022	H1 2021	2021	2020
Total costs, including:	-2,335	-1,617	-3,812	-4,933
raw materials and consumables used	-334	-141	-455	-313
employee benefits expense	-488	-442	-928	-910
transmission services	-278	-102	-290	-210
other services	-574	-334	-852	-618
taxes and charges	-438	-221	-606	-389
other income and expenses	580	-127	-32	-55
work performed by the entity and capitalised	136	190	378	493
cost of dry wells	-207	-425	-607	-185
cost of exploration and evaluation assets written-off – seismic surveys	-17	0	-18	-13
impairment losses on non-current assets	661	565	1,050	-1,485
depreciation and amortisation expense	-1,376	-580	-1,452	-1,248

- a PLN 12,486m (518%) year-on-year total increase in revenue from sales of natural gas in the segment, on a 330% year-on-year rise in gas prices quoted on the Day-Ahead Market of the Polish Power Exchange and a 368% year-on-year rise in gas price in PLN quoted on the TTF;
- stable gas production volumes in Poland (1.78 bcm), with a 5% year-on-year decrease in Pakistan, and a 294% year-on-year increase in Norway;
- revenue from sales of crude oil and condensate up PLN 1,130m (+104%) year on year, on lower sales volumes in Poland (down 1% year on year), higher sales volumes in Norway (up 18% year on year), and a 64% year-on-year increase in the average Brent oil price in USD;
- crude oil and NGL production volumes in Norway up 52% year on year, to 430 thousand tonnes, and in Poland – down 5% year on year, to 309 thousand tonnes;
- cost of dry wells and seismic surveys written off: PLN -224m in the first half of 2022 vs PLN -425m in the first half of 2021;
- reversal of impairment losses on non-current assets: PLN +661m in the first half of 2022 vs PLN +565m of impairment losses reversed in the first half of 2021;
- overlift/underlift in Norway in the first half of 2022 – effect on profit or loss: PLN +368m. In the first six months of 2021, the effect of overlift/underlift on profit or loss was PLN -36m.

Table 25 Capital expenditure in the Exploration and Production segment in H1 2022, H1 2021 and in 2020–2021*

PLNm	H1 2021	H1 2021	2021	2020
Exploration and Production, including:	1,054	876	2,108	2,557
Norway	772	427	1,227	1,572
Pakistan	48	24	64	75
Libya	1	1	4	4

** Including capitalised borrowing costs.*

Trade and Storage (T&S)

Table 26 Revenue in the Trade and Storage segment in H1 2022, H1 2021 and in 2020–2021

Trade and Storage financial results	H1 2022	H1 2021	2021	2020
Revenue from non-PGNiG Group customers	69,735	19,134	57,807	29,850
Inter-segment revenue	2,832	325	2,140	793
Total revenue, including	72,567	19,459	59,947	30,643
high-methane gas, nitrogen-rich gas, LNG, CNG, adjustment on hedging transactions	66,617	18,016	55,126	27,135
electricity	2,960	1,617	3,778	2,858
Operating profit before interest, taxes, depreciation and amortisation (EBITDA)	-3,609	272	-1,702	9,580
Operating profit (EBIT)	-3,792	162	-1,913	9,357

(in PLN million unless stated otherwise)

Table 27 Operating expenses in the Trade and Storage segment in H1 2022, H1 2021 and in 2020–2021

	H1 2022	H1 2021	2021	2020
Total costs, including:	-76,359	-19,297	-61,860	-21,286
cost of gas	-72,719	-16,538	-55,148	-16,717
raw materials and consumables used	-2,913	-1,639	-3,813	-2,782
employee benefits expense	-198	-194	-431	-441
transmission services	-145	-97	-185	-171
other services	-531	-360	-805	-824
taxes and charges	-34	-29	-39	-48
other income and expenses	-1,196	-335	-1,156	-466
work performed by the entity and capitalised	1,524	5	17	28
depreciation and amortisation expense	-183	-110	-211	-223

- total revenue from sale of natural gas in the segment (including the effect of hedging transactions) up PLN 48,601m (+270%) year on year;
- compensation income from the Price Difference Payment Fund for PGNiG OD: PLN 2,964m.
- in March PGNiG sold 10.06 TWh of emergency stocks of natural gas worth PLN 5,955m to the Government Agency for Strategic Reserves;
- PLN 54,647m (330%) year-on-year increase in the cost of gas sold in the segment due to higher gas prices on European commodity exchanges;
- net gain/(loss) on measurement and realisation of hedging instruments recognised in operating profit/(loss) in a total amount of PLN -418m, of which:
  (1) recognised in revenue: PLN -1,112m (first half of 2021: PLN -360m),
  (2) recognised in cost of gas: PLN +587m (first half of 2021: PLN +200m),
  (3) recognised in other expenses, net: PLN +107m (first half of 2021: PLN -41m);
- year-on-year decrease in gas imports from east of Poland (first half of 2022: 3.0 bcm vs first half of 2021: 4.82 bcm), increase in LNG imports (first half of 2022: 2.72 bcm vs first half of 2021: 2.04 bcm), and from the western and southern direction (first half of 2022: 2.30 bcm vs first half of 2021: 1.41 bcm);
- total revenue from sale of electricity in the segment: PLN 2,960m, increase by PLN 1,343m (83%) year on year, with cost of energy for trading higher by PLN 1,266m (78%) year on year;
- effect of reversal of a gas inventory write-down of PLN +37m Compared with gas inventory write-down of PLN +0.5m reversed in the first half of 2021.
- effect of recognition of a provision for energy efficiency buy-out price: PLN -176m in the first half of 2022 vs PLN -151m in the first half of 2021.

Capital expenditure made in the first half of 2022 on the PGNiG Group's property, plant and equipment in the Trade and Storage segment was PLN 483m.

Distribution

Table 28 Revenue in the Distribution segment in H1 2022, H1 2021 and in 2020–2021

Distribution financial results	H1 2022	H1 2021	2021	2020
Revenue from non-PGNiG Group customers	2,830	2,820	5,304	4,603
Inter-segment revenue	67	48	109	81
Total revenue, including	2,897	2,868	5,413	4,684
gas distribution	2,742	2,731	5,088	4,389
Operating profit before interest, taxes, depreciation and amortisation (EBITDA)	1,399	1,553	2,893	2,157
Operating profit (EBIT)	769	958	1,675	1,063

Table 29 Operating expenses in the Distribution segment in H1 2022, H1 2021 and in 2020–2021

	H1 2022	H1 2021	2021	2020
Total costs, including:	-2,128	-1,910	-3,738	-3,621
raw materials and consumables used	-173	-90	-221	-72
employee benefits expense	-818	-743	-1,566	-1,495
transmission services	-351	-339	-684	-667
other services	-123	-114	-244	-233
taxes and charges	-495	-431	-490	-394
other income and expenses	277	242	299	-33
work performed by the entity and capitalised	185	160	386	367
recognition and reversal of impairment losses on property, plant and equipment and intangible assets	3	2	-5	-5
depreciation and amortisation expense	-630	-595	-1,218	-1,094

(in PLN million unless stated otherwise)

- 11% lower gas distribution volumes of 6.53 bcm, with average air temperatures higher by 1.3°C year on year;
- stable revenue of PLN 2.74bn from distribution services in Poland, with a 3.6% increase in tariff compared with the previous tariff;
- employee benefits expense higher by PLN 74m (+10%) year on year due to higher salaries and wages and other components of remuneration (bonuses and social security contributions).

Capital expenditure incurred in the fist six months of 2022 on the PGNiG Group's property, plant and equipment in the Distribution segment was PLN 1,530m.

Generation

Table 30 Revenue in the Generation segment in H1 2022, H1 2021 and in 2020–2021

Generation financial results	H1 2022	H1 2021	2021	2020
Revenue from non-PGNiG Group customers	2,240	1,238	2,381	1,844
Inter-segment revenue	1,432	448	1,042	929
Total revenue, including	3,672	1,686	3,423	2,773
heat	1,205	946	1,753	1,469
electricity	2,177	536	1,239	1,053
heat distribution	61	50	96	78
Operating profit before interest, taxes, depreciation and amortisation (EBITDA)	696	633	1,134	930
Operating profit (EBIT)	-230	173	55	135

Table 31 Operating expenses in the Generation segment in H1 2022, H1 2021 and in 2020–2021

	H1 2022	H1 2021	2021	2020
Total costs, including:	-3,902	-1,513	-3,368	-2,638
raw materials and consumables used	-2,482	-693	-1,636	-1,166
employee benefits expense	-129	-120	-238	-234
services	-121	-101	-244	-207
taxes and charges	-39	-39	-76	-65
other income and expenses	-205	-100	-95	-171
work performed by the entity and capitalised	0	0	0	0
recognition and reversal of impairment losses on property, plant and equipment and intangible assets	0	0	0	-7
depreciation and amortisation expense	-926	-460	-1,079	-795

- revenue from sales of electricity generated from the segment's own sources higher by 301% year on year, at PLN 1,891m, on higher market prices and sales volumes up by 50% year on year;
- higher revenue from sales of heat (27% year on year) at PLN 1.21bn, on a higher average temperature and sales volumes up by 2% year on year;
- costs of coal down by PLN 34m year on year, to PLN 442m in the first half of 2022, and cost of biomass higher by PLN 18m year on year, at PLN 45m in the first half of 2022;
- PLN 466m year-on-year increase in depreciation and amortisation expense. CO_2 depreciation in H1 2022: PLN 718m.

Capital expenditure made in the first half of 2022 on the PGNiG Group's property, plant and equipment in the Generation segment was PLN 1,017m (including PLN 582m attributable to CO_2).

5.2.3 Anticipated financial condition and trends on key product markets

PGNiG Group's anticipated financial condition

PGNiG does not publish any financial forecasts. In the coming periods, the financial standing of the PGNiG Group will be materially affected by changes in the prices of hydrocarbons on global commodity markets and fluctuations in foreign exchange rates. These factors will be a material driver of the PGNiG Group's performance in the Exploration and Production and Trade and Storage segments. Any changes in hydrocarbon prices affect revenues of the Group entities engaged in production, and determine the demand for seismic and exploration services offered by the Group companies. Rising gas and crude oil prices have a positive effect on the performance of the Exploration and Production segment. Long-term forecasts of hydrocarbon prices strongly influence projected cash flows from production assets, and as a consequence entail the necessity of revaluation of property, plant and equipment.

Russia's ongoing invasion of Ukraine as well as the continuing pandemic threat and uncertainty caused by the possible reinstatement of restrictions may increase the volatility of hydrocarbon prices on international markets, potentially affecting the PGNiG Group's revenue and expenses related to hydrocarbon production and trading. Significant fluctuations in commodity prices may cause temporary or permanent problems with trading partners' liquidity, which may lead to their insolvency or bankruptcy. For this reason, it is expected that the economic consequences of those factors will have an impact on the quality of the PGNiG Group's financial asset portfolio and may affect the collectability of trade and other receivables. The projected impact will vary depending on the economic sector in which the trading partners operate.

In the short term, the PGNiG Group is also exposed to the risk of demand and supply shocks on commodity markets and sharp movements in prices of energy commodities, as well as the risk of fluctuations in price spreads for various geographic and commodity markets. Significant price and price spread fluctuations may lead to a temporary deterioration in profitability of the PGNiG Group's operations and adversely affect the Group's and its trading partners' liquidity position, which in consequence may adversely impact the PGNiG Group's operations, financial condition, financial performance or growth prospects.

On the other hand, since the prices of gas purchased by PGNiG under the Yamal and Qatar contracts are linked to prices of crude oil, the effect of rising oil prices on the performance of the Trade and Storage segment is opposite to the effect that rising oil prices have on the performance of the Exploration and Production segment. Any increase in crude oil prices translates into higher cost of gas purchased by PGNiG. This relationship was significantly limited in the case of the Yamal contract thanks to the ruling of the Arbitration Court in Stockholm in favour of PGNiG concerning the pricing formula used in the Yamal contract. The PGNiG Group's financial results will also be influenced by the situation on the domestic currency market. Any strengthening of the złoty against foreign currencies (primarily the US dollar) will have a positive effect on the performance of the Trade and Storage segment by driving down PGNiG's gas procurement costs, although it must be noted that the effect of exchange rate fluctuations is mitigated by the PGNiG Group's hedging policy.

Another factor with a bearing on the PGNiG Group's financial condition is the President of URE's decisions on gas fuel sale and distribution tariffs and heat sale tariffs. In addition, the progressing deregulation of the gas market in Poland will continue to put pressure on the performance of the PGNiG Group's Trade and Storage companies selling gas. These factors may have an adverse effect on the profitability of the Trade and Storage segment by eroding its margins.

As the PGNiG Group also operates in the heat and electricity generation segment, the risk of price volatility also relates to electricity trading, certificates of origin, and carbon credits. Trade in electricity is carried out on regulated exchange markets in Poland and abroad. The Group also executes transactions outside of regulated markets, under framework agreements. In the Generation segment, financial results will be considerably influenced by the support programmes for electricity produced from high-efficiency cogeneration sources and renewable sources. Changes in the market prices of CO_2 emission allowances will have an increasing effect on the PGNiG Group's financial condition in the segment. Another key driver of the segment's performance is prices of the fuels used to produce heat and electricity, including natural gas and coal.

The PGNiG Group's financial condition and operations will depend on developments in Ukraine and the Russian Federation's continuing military invasion of the country. The gradually imposed economic and personal sanctions against Russian businesses and citizens, as well as the threat to infrastructure and security of gas imports from Russia, may negatively impact the international gas market and lead to further spikes in gas prices and depreciation of the Polish złoty. For more information on changes in the PGNiG Group's environment in the six months to June 30th 2022, see Section 3.1.

Outlook for the oil, gas, electricity and carbon allowances markets

In the coming months, oil prices will be dictated by global economic developments and numerous uncertainties related to Russia's aggression against Ukraine and, to a lesser extent, the pandemic. Over the subsequent months of Russia's invasion of Ukraine, limits have been imposed on crude oil imports and buyers fear a reduction or complete stoppage of deliveries as the military conflict escalates. In view of the uncertain supply situation, further sharp price fluctuations are to be expected on the exchanges over the coming periods, including on account of the decisions being made to reduce or halt purchases of Russian oil.

Gas prices in Europe are likely to remain high in summer and winter. In the long term, it should therefore be expected that the ongoing conflict will accelerate Europe's energy transition and the process of overcoming its current dependence on Russian energy supplies. Europe is likely to import gas from sources other than Russia, which will drive demand for LNG and increase the volumes of gas injected into gas storage facilities.

A planned increase in import capacities and, more broadly, diversification of gas supply sources will cushion Poland against any supply shortages on the global market.

The price of CO_2 EUAs will mainly depend on the share of conventional sources in the staple of electricity generation, which is an effect of the efficiency of renewable energy sources and margins delivered by generation sources based on hard coal, lignite and natural gas. At present, when the price of natural gas is relatively higher than that of coal, generation of electricity from high emission fuels is on the rise. This, coupled with low generation from renewables in the previous year, led to sharp rises in EUA prices, to more than EUR 90 per tonne of CO_2. The European Union employs a mechanism to limit the supply of certificates each year. The smaller amount of EUAs available to EU Member States is intended to discourage them from producing electricity from conventional sources. Member States' efforts to dynamically increase the share of RES in the national energy mix may halt the increase in certificate prices over the next few years, but analysts expect a stable, strong increase after 2025. In the wake of Russian aggression against Ukraine and rising gas prices, the prices of CO_2 emission allowances plunged in early 2022. However, during the second quarter of 2022, the price of CO_2 emission allowances again exceeded EUR 75 per tonne.

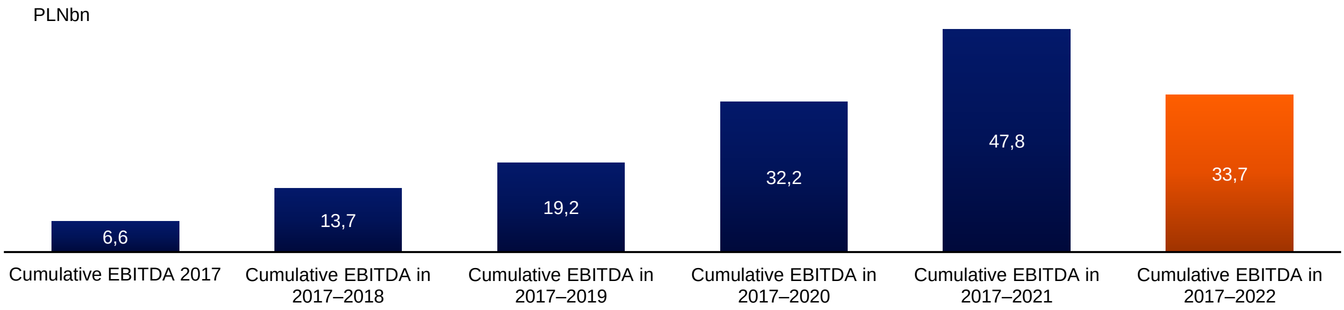
The price of electricity in Poland in 2022 will depend on the price of CO_2 emission allowances. Possible limitations of coal imports may adversely affect the cost of electricity generation in Poland.

5.2.4 Publication of financial and operating forecasts

The Company does not publish any performance forecasts. In the strategy released in 2017, the Company announced its plans to generate cumulative Group EBITDA of approximately PLN 33.7bn in 2017–2022 thanks to an investment programme. As at the end of 2020, cumulative EBITDA reached PLN 47.8bn, representing approximately 142% of the target to be achieved by 2022.

(in PLN million unless stated otherwise)

Chart 12 PGNiG Group's cumulative EBITDA in 2017–2021 and the strategic target for 2022



On May 11th 2022, the PGNiG Group published a revision of its forecast of natural gas and crude oil production in Norway for 2022–2024.

Table 33 Natural gas production forecast for 2022–2024*

bcm	2022	2023	2024
Poland	3.7	3.7	3.9
Other countries, including:	2.9	2.8	2.9
- Norway	*2.6*	*2.4*	*2.6*
- Pakistan	*0.3*	*0.4*	*0.3*
Total	6.6	6.5	6.8

** Converted to gas with a calorific value of 39.5 MJ/cm.*

Table 34 Crude oil production forecast, including condensate and NGL, for 2022–2024

thousand tonnes	2022	2023	2024
Poland	603	569	534
Other countries, including:	920	791	894
Norway	*920*	*791*	*904*
Total	1,523	1,360	1,428

The projected increase in natural gas production in 2022–2024 (compared to the previous forecast of December 1st 2021) concerns three fields: Skarv, Gina Krog and Duva. Gas volumes produced from the Skarv and Gina Krog fields will increase as a result of a change in the gas production strategy, consisting in stopping re-injecting gas into the field to increase the oil output. Gas volumes from the Duva field will increase thanks to the use of the spare capacity of the production installation on the Gjøa and adjacent fields, to which Duva is connected. The change in the gas production strategy will also affect the profile of oil production from the fields in 2022–2024.

The forecasts for the PGNiG Group's hydrocarbon production in Poland and Pakistan have not changed (the forecasts published on December 1st 2021 are still valid).

5.3 Financial condition of PGNiG in the first half of 2022

Table 32 PGNiG's financial highlights for H1 2022, H1 2021 and at year end 2021

Data from the separate financial statements	PLNm		EURm	
	6 months ended Jun 30 2022	6 months ended Jun 30 2021	6 months ended Jun 30 2022	6 months ended Jun 30 2021
Revenue	43,745	12,413	9,422	2,730
Operating profit before interest, taxes, depreciation and amortisation (EBITDA)	3,115	1,836	671	404
Operating profit (EBIT)	2,671	1,427	575	314
Profit before tax	2,893	2,140	623	471
Net profit	2,291	1,870	493	411
Total comprehensive income	(4,235)	1,779	(912)	391
Net cash from operating activities	(6,587)	(257)	(1,419)	(57)
Net cash from investing activities	(323)	738	(70)	162
Net cash from financing activities	2,375	(28)	512	(6)
Net cash flows	(4,535)	453	(977)	99
Earnings and diluted earnings per share attributable to holders of ordinary shares (PLN/EUR)	0.40	0.32	0.09	0.07

Data from the separate financial statements	PLNm		EURm	
	As at Jun 30 2022	As at Dec 31 2021	As at Jun 30 2022	As at Dec 31 2021
Total assets	80,503	69,690	17,199	15,152
Total liabilities	49,560	34,120	10,588	7,418
Non-current liabilities	12,676	7,270	2,708	1,580
Current liabilities	36,884	26,850	7,880	5,838
Equity	30,943	35,570	6,611	7,734
Share capital and share premium	7,518	7,518	1,606	1,635
Weighted average number of shares (million) in the period	5,778	5,778	5,778	5,778
Book value per share and diluted book value per share (PLN/EUR)	5.36	6.16	1.14	1.34
Dividend per share declared or paid (PLN and EUR)	-	0.21	-	0.05

In the first half of 2022, PGNiG reported EBITDA of PLN 3,115m, up by PLN 1,279m year on year. The decline in EBITDA (of PLN -5,088m) posted by the Trade and Storage segment was attributable to higher gas purchase prices. The PLN 6,482m increase in the Exploration and Production segment's EBITDA was mainly attributable to higher gas prices.

The segment's EBITDA also improved as a result of higher profit on sales of crude oil, driven by rising unit selling prices. The decrease (of PLN -115m) in the Other Activities segment's EBITDA was attributable, among other things, to the net foreign exchange result on operating activities.

6. Additional information on the PGNiG Group

6.1 Management and supervisory bodies at PGNIG S.A. and their committees

6.1.1 Management Board

Composition of the Management Board as at January 1st 2022:

- Paweł Majewski – President
- Robert Perkowski – Vice President, Operations
- Arkadiusz Sekściński – Vice President, Development
- Przemysław Wacławski – Vice President, Finance
- Artur Cieślik – Vice President, Strategy and Regulation
- Magdalena Zegarska – Vice President.

On March 25th 2022, Paweł Majewski resigned as President of the PGNiG Management Board with effect from April 8th 2022. On April 7th 2022, the Supervisory Board appointed Iwona Waksmundzka-Olejniczak as President of the PGNiG Management Board for the Management Board's 6th term of office due to end on January 10th 2023, with effect from April 9th 2022.

Composition of the Management Board as at June 30th 2022:

- Iwona Waksmundzka-Olejniczak – President
- Robert Perkowski – Vice President, Operations
- Arkadiusz Sekściński – Vice President, Development
- Przemysław Wacławski – Vice President, Finance
- Artur Cieślik – Vice President, Strategy and Regulation
- Magdalena Zegarska – Vice President.

6.1.2 Supervisory Board

Composition of the PGNiG Supervisory Board in the period January 1st–June 30th 2022

- Bartłomiej Nowak – Chairman
- Cezary Falkiewicz – Deputy Chairman
- Tomasz Gabzdyl – Secretary
- Roman Gabrowski – Member
- Mariusz Gierczak – Member
- Mieczysław Kawecki – Member
- Piotr Sprzączak – Member
- Grzegorz Tchorek – Member

6.2 Agreements executed by PGNiG Group companies

6.2.1 Agreements material to the operations of the PGNiG Group

The agreements material to the operations of the PGNiG Group, executed in the first half of 2022, included:

- Credit facility agreement of January 5th 2022 with Societe Generale S.A. Polish Branch, for up to PLN 750m and a term of nine months
- Credit facility agreements of February 23rd 2022 with a bank syndicate of Bank of China Limited, acting through Bank of China Limited Luxembourg Branch, and Bank of China (Europe) S.A., acting through Bank of China (Europe) S.A. Polish Branch, for PLN 1.2bn, and the following banks: Deutsche Bank Polska S.A. (PLN 400m) and Credit Agricole Bank Polska S.A. (PLN 200m) for a term of nine months
- Agreement with the Government Agency for Strategic Reserves to perform tasks related to maintaining emergency stocks of natural gas for the period from March 18th 2022 to September 30th 2022, with an option to extend its effective term until September 30th 2023
- Credit facility agreement for up to EUR 170m, dated June 30th 2022, signed with entities of the Sumitomo Mitsui Banking Corporation group for a term of nine months
- Annexes to agreements with five Grupa Azoty Group companies, namely Grupa Azoty S.A. of Tarnów, Grupa Azoty Zakłady Azotowe Puławy S.A., Grupa Azoty Zakłady Chemiczne Police S.A., Grupa Azoty Zakłady Azotowe Kędzierzyn S.A., and

(in PLN million unless stated otherwise)

Grupa Azoty Kopalnie i Zakłady Chemiczne Siarki Siarkopol S.A. to the Gas Sale Framework Agreement dated April 13th 2016 ("Individual Contracts"). Under the Annexes, PGNiG will remain a strategic supplier of gas to the Grupa Azoty Group companies listed above until September 30th 2023. The aggregate value of the Annexes for the extension period of the Individual Contracts is estimated at PLN 13.4bn.

6.2.2 Material related-party transactions

In the first half of 2022, PGNiG and its subsidiaries did not enter into material transactions with related parties otherwise than on arm's length terms. For detailed information on related-party transactions, see Note 4.8 to the consolidated financial statements of the PGNiG Group for the first half of 2022.

6.3 Litigation

Table 36 Litigation

Parties to the proceedings	Subject of the dispute	Description
Proceedings with respect to the obligation to sell natural gas through commodity exchange Parties to the proceedings: PGNiG, President of URE	failure to satisfy the exchange sale requirement in 2013 and 2014	On May 25th 2016, the President of URE launched ex officio proceedings to impose a fine on PGNiG S.A. for its failure to meet the exchange sale requirement in 2013. On June 17th 2016, pursuant to Art. 56.6a of the Energy Law, the Company filed a request that the President of URE refrain from imposing the penalty. As at the date of this Report, the proceedings were not concluded by the President of URE. On October 10th 2018, the Competition and Consumer Protection Court granted PGNiG S.A.'s appeal and reduced the administrative fine for failure to meet the exchange sale requirement in 2014 from PLN 15m to PLN 5m, and also cancelled costs of the first instance proceedings between the parties. On November 12th 2020, the Court of Appeals in Warsaw dismissed the Company's appeal. The ruling is final. The Company filed both a cassation complaint and a constitutional complaint.
Anti-trust proceedings instigated on December 28th 2010 Parties to the proceedings: PGNiG, President of UOKiK	alleged abuse by PGNiG of its dominant position on the domestic natural gas wholesale market, which consisted in inhibiting trade in natural gas against the interests of trading partners or consumers and in impeding the development of market conditions necessary for the emergence or development of competition by refusing to sell gas fuel under a comprehensive supply contract to a business entity that intended to resell the gas	On June 8th 2017, the Court of Appeals in Warsaw reversed the ruling of the Competition and Consumer Protection Court of May 12th 2014 and remanded the case for re-examination by that court. On October 10th 2019, the Competition and Consumer Protection Court again upheld the decision of the President of UOKiK and again imposed a fine on the Company, changing its amount to PLN 5,508,000. The Company filed an appeal with the Court of Appeals, but the appeal was dismissed. The Company filed a cassation complaint.

(in PLN million unless stated otherwise)

NS2 AG derogation proceedings Parties to the proceedings: PGNiG, PST, NS2 AG, BNetzA, Higher Regional Court in Düsseldorf, Federal Court of Justice	derogation from the provisions of the Gas Directive in relation to Nord Stream 2 AG	On January 10th 2020, Nord Stream 2 AG applied to the German regulator BNetzA for derogation (exemption) from the provisions of the Gas Directive (2009/73/EC), as amended in 2019. The German company invoked Article 49a of the Directive despite failing to meet one of its conditions regarding the need for the pipeline to be completed on May 23rd 2019 (the date of entry into force of the amendment). PGNiG S.A. and PST applied on February 19th 2020 to join the proceedings. On March 18th 2020, the German regulator granted the request. On May 15th 2020, the German regulator issued a decision refusing the derogation to Nord Stream 2 AG. Consistent with the position presented by PGNiG S.A. and PST, BNetzA concluded that the pipeline was not completed on May 23rd 2019. On June 15th 2020, Nord Stream 2 AG appealed BNetzA's decision to the Higher Regional Court in Düsseldorf. On July 30th 2020, PGNiG S.A. and PST filed a letter of accession to the case as active participants, and on January 14th 2021 they filed a pleading stating their position on the case. On March 25th 2021, Nord Stream 2 AG submitted a response. On June 14th 2021, PGNiG S.A. and PST submitted a response to that pleading. On June 30th 2021, a hearing was held before the Higher Regional Court of Düsseldorf, which dismissed Nord Stream 2 AG's appeal by its judgment of August 25th 2021. Subsequently, on September 21st 2021, Nord Stream 2 AG filed a cassation complaint with the Federal Court of Justice. On March 8th 2022, PGNiG S.A. and PST responded to the complaint. The session of the Federal Court of Justice is scheduled for November 2022.
NS2 AG certification proceedings Parties to the proceedings: PGNiG, PST, NS2 AG, BNetzA, German Federal Ministry of Economy and Climate Protection	certification of Nord Stream 2 AG as an independent transmission operator (ITO)	On June 11th 2021, Nord Stream 2 AG applied to the German regulator BNetzA to be certified as an Independent Transmission Operator (ITO) of the Nord Stream 2 pipeline. On September 8th 2021, the application was supplemented, which resulted in the formal initiation of the procedure. On July 30th 2021, PGNiG S.A. and PST filed an application to join the certification procedure. On September 21st 2021, BNetzA agreed that the two companies could join the certification procedure. On October 20th 2021, both companies submitted their position pointing to an expected adverse impact of the Nord Stream 2 pipeline on the supply security, especially if Nord Stream 2 AG is certified as ITO. On November 16th 2021, BNetzA gave notice of suspension of the certification procedure. The reason for the suspension was that the Swiss company Nord Stream 2 AG did not at that moment meet the certification criteria as an independent operator. On November 24th 2021, PGNiG S.A. and PST submitted their position on the matter, adducing a number of formal and substantive arguments concerning failure of Nord Stream 2 AG and its subsidiary to meet the conditions necessary for certification under the ITO model. As at the end of 2021, the proceedings were not resumed. On February 22nd 2022, the Federal Ministry of Economy and Climate Protection announced that it had revoked its previous opinion on the deemed lack of an adverse impact of Nord Stream 2 AG on the supply security. A positive opinion of the Ministry is a prerequisite for the certification of the applicant as ITO.

(in PLN million unless stated otherwise)

Proceedings concerning the OPAL pipeline Parties to the proceedings: PGNiG, PST, Opal Gastransport, OAO Gazprom, OOO Gazprom Export, BNetzA, Higher Regional Court of Düsseldorf, European Union Court of Justice	inadmissibility of complaint; award of injunctive relief (administration of injunctive relief)	The complaint and the request for injunctive relief have been filed with the General Court of the European Union against the European Commission's decision of October 28th 2016 whereby the Commission allowed a revision to the exemption of the OPAL pipeline from the common gas market regulations (especially with respect to the Third Party Access (TPA) principle), in accordance with the text of the administrative decision issued by the German regulator – Federal Network Agency (Bundesnetzagentur), subject to modifications referred to in the Commission's decision. The complaint and the request for injunctive relief have been filed with the General Court of the European Union against the European Commission's decision of October 28th 2016 whereby the Commission allowed a revision to the exemption of the OPAL pipeline from the common gas market regulations (especially with respect to the Third Party Access (TPA) principle), in accordance with the text of the administrative decision issued by the German regulator – Federal Network Agency (Bundesnetzagentur), subject to modifications referred to in the Commission's decision. On December 4th 2019, the Court of Justice of the European Union dismissed the appeals lodged by PST and PGNiG, upholding the decision of the General Court of the EU and referring only to formal issues and not to the substantive analysis of the case. On December 4th 2019, the Court of Justice of the European Union also dismissed the appeal lodged by the Republic of Poland in the PST case, indicating that the decision of the General Court of the EU was irrelevant to the case initiated based on the Republic of Poland's complaint under Case No. T-883/16. On January 9th 2019, the German Federal Network Agency (Bundesnetzagentur) resumed proceedings concerning a previous decision issued in 2009 on the terms of the regulatory exemption of the OPAL gas pipeline, and at the same time it suspended the proceedings. On January 28th 2019, PGNiG and PST filed a request to join the proceedings. In its reply of February 25th 2019, the German regulatory authority stated that the request would be examined after the pending court proceedings had been closed. On September 13th 2019, the Federal Network Agency obliged the transmission system operator Opal Gastransport GmbH's to reduce gas flows in the Opal pipeline, thus responding to the judgment of the General Court of the EU of September 10th 2019 in Case No. T-883/16 initiated by the complaint of the Republic of Poland, declaring invalidity of the European Commission's decision of October 28th 2016 on the rules for using the Opal pipeline. An appeal against the judgment of the General Court of the EU was filed by the Federal Republic of Germany. On March 18th 2021, the Advocate General of the CJEU issued an opinion on maintaining the validity of the judgment issued by the General Court of the EU. On July 15th 2021, the Court of Justice of the European Union dismissed the appeal of the Federal Republic of Germany and found that by issuing the decision on the OPAL pipeline the European Commission had violated the principle of energy solidarity. The judgment is final. In parallel, PGNiG and PST filed a complaint with the Higher Regional Court of Düsseldorf (Oberlandesgericht Düsseldorf) against the administrative settlement between the German regulator, OPAL Gastransport GmbH & Co. KG, OAO Gazprom and OOO Gazprom Export, specifying the revised conditions for exemption of the OPAL pipeline from the common gas market regulations (in particular the TPA principle). On June 29th 2022, at a hearing before the Higher Regional Court of Düsseldorf, the Federal Network Agency found that the administrative settlement is invalid and may not be applied. The court closed the proceedings and postponed the decision on the costs of the proceedings until August 10th 2022.

(in PLN million unless stated otherwise)

6.4 Detailed description of the PGNiG Group's structure and its changes in the first six months of 2022

As at June 30th 2022, the PGNiG Group comprised 41 business entities, including:

- PGNiG as the parent,
- 38 production, trade and service companies and two mutual insurance companies, including:
  - 21 direct subsidiaries of PGNiG,
  - 19 indirect subsidiaries of PGNiG.

6.4.1 Detailed structure of the PGNiG Group

Table 33 List of the PGNiG Group subsidiaries as at June 30th 2022

No.	Company name	Share capital [in PLN, unless stated otherwise]	Value of shares held by PGNiG [in PLN, unless stated otherwise]	PGNiG's ownership interest (%, direct holdings)	PGNiG Group's ownership interest (%, direct and indirect holdings)
		Subsidiaries – first tier			
1	PGNiG GAZOPROJEKT S.A.	5,326,300	5,068,800	95.17%	95.17%
2	EXALO Drilling S.A.	981,500,000	981,500,000	100%	100%
3	GEOFIZYKA Toruń S.A.	75,240,000	75,240,000	100%	100%
4	Gas Storage Poland Sp. z o.o.	15,290,000	15,290,000	100%	100%
5	PGNiG Obrót Detaliczny Sp. z o.o.	625,307,815	625,307,815	100%	100%
6	PGNiG Serwis Sp. z o.o.	9,995,000	9,995,000	100%	100%
7	PGNiG Technologie S.A.	272,727,240	272,727,240	100%	100%
8	PGNiG TERMIKA S.A.	1,740,324,950	1,740,324,950	100%	100%
9	Polska Spółka Gazownictwa Sp. z o.o.	10,488,917,050	10,488,917,050	100%	100%
10	PGNiG Supply & Trading GmbH	EUR 10,000,000	EUR 10,000,000	100%	100%
11	PGNiG Upstream Norway AS	NOK 1,115,000,000	NOK 1,115,000,000	100%	100%
12	PGNiG Upstream North Africa B.V.	EUR 20,000	EUR 20,000	100%	100%
13	GAS-TRADING S.A.	2,975,000	1,291,350	43.41%	79.58%[2]
14	PGNiG Ventures Sp. z o.o.	26,190,000	26,190,000	100%	100%
15	PGNiG SPV 6 Sp. z o.o.	51,381,000	51,381,000	100%	100%
16	PGNiG SPV 7 Sp. z o.o.	2,000,000	2,000,000	100%	100%
17	Polski Gaz Towarzystwo Ubezpieczeń Wzajemnych	40,000,000	40,000,000	100%	100%
18	LLC Karpatgazvydobuvannya	UAH 160,363,000	UAH 136,308,550	85%	85%
19	PGNiG SPV 8 Sp. z o.o.	1,500,000	1,500,000	100%	100%
20	PGNiG SPV 9 Sp. z o.o.	250,000	250,000	100%	100%
21	PGNiG SPV 10 Sp. z o.o.	250,000	250,000	100%	100%
		Subsidiaries – second tier			
22	PGNiG TERMIKA Energetyka Przemysłowa S.A.	370,836,300	370,836,300	-	100%[8]
23	GAZ Sp. z o.o.	300,000	300,000	-	100%[3]
24	PSG Inwestycje Sp. z o.o.	81,131,000	81,131,000	-	100%[3]
25	Oil Tech International F.Z.E.	USD 20,000	USD 20,000	-	100%[4]
26	EXALO DRILLING UKRAINE LLC	EUR 20,000	EUR 20,000	-	100%[4]
27	PST Europe Sales GmbH in liquidation	EUR 1,000,000	EUR 1,000,000	-	100%[5]
28	Ośrodek Badawczo-Rozwojowy Górnictwa Surowców Chemicznych CHEMKOP Sp. z o.o.	2,831,150	2,616,550	-	92.42%[6]
29	Gas-Trading Podkarpacie Sp. z o.o.	6,670,627	5,257,524	-	78.82%[7]
30	Polskie Centrum Brokerskie Sp. z o.o.	100,000	100,000		100%[1]
31	PGNiG TERMIKA Energetyka Rozproszona Sp. z o.o.	13,550,000	13,550,000		100%[8]
32	PGNiG TERMIKA Energetyka Przemyśl sp. z o.o.	6,000,000	6,000,000	-	100%[8]
33	Zakład Gospodarki Mieszkaniowej Sp. z o.o.	1,806,500	1,806,500	-	100%[4]
34	Exalo Diament sp. z o.o.	5,000	5,000	-	100%[4]
35	Polski Gaz Towarzystwo Ubezpieczeń Wzajemnych na Życie	25,000,000	25,000,000	-	100%[11]
36	PST LNG TRADING LIMITED	GBP 5,000	GBP 5,000	-	100%[5]
37	PST LNG SHIPPING LIMITED	GBP 5,000	GBP 5,000	-	100%[5]
38	PGNiG Supply&Trading Polska Sp. z o.o.	50,000	50,000	-	100%[12]
		Subsidiaries – third tier			
39	XOOL GmbH in liquidation	EUR 500,000	EUR 500,000	-	100%[9]
40	PGNiG TERMIKA Energetyka Przemysłowa - Technika Sp. z o.o.	200,000	200,000	-	100%[10]

1) PGNiG's interest held indirectly through PGNiG Serwis Sp. z o.o.
2) PGNiG's direct interest is 43.41%, with a 36.17% interest held indirectly through PGNiG SPV 6 Sp. z o.o.
3) PGNiG's interest held indirectly through Polska Spółka Gazownictwa Sp. z o.o.
4) PGNiG's interest held indirectly through Exalo Drilling S.A.
5) PGNiG's interest held indirectly through PGNiG Supply & Trading GmbH.
6) PGNiG's interest held indirectly through Gas Storage Poland Sp. z o.o.
7) PGNiG's interest held indirectly through GAS TRADING S.A.
8) PGNiG's interest held indirectly through PGNiG TERMIKA S.A.
9) PGNiG's interest held indirectly through PGNiG Supply & Trading GmbH and PST Europe Sales GmbH in liquidation.
10) PGNiG's interest held indirectly through PGNiG TERMIKA S.A. and PGNiG TERMIKA Energetyka Przemysłowa S.A.
11) PGNIG's interest held indirectly through Polski Gaz Towarzystwo Ubezpieczeń Wzajemnych.
12) PGNiG's interest held indirectly through PGNiG Supply & Trading GmbH (99%) and PGNiG SPV 6 Sp. z o.o. (1%)

(in PLN million unless stated otherwise)

6.4.2 Other ownership interests and organisational links

Table 38 List of the PGNiG Group jointly controlled entities and associates as at June 30th 2022

No.	Company name	Share capital [in PLN, unless stated otherwise]	Value of shares held by PGNiG [in PLN, unless stated otherwise]	PGNiG's ownership interest (%, direct holdings)	PGNiG Group's ownership interest (%, direct and indirect holdings)
	Jointly controlled entities and associates – first tier				
1	SGT EUROPOL GAZ S.A.	80,000,000	38,400,000	48.00%	51.18%[1)]
2	SOLGEN Sp. z o.o.	62,500	37,500	60.00%	60.00%
3	PFK GASKON S.A.	13,061,325	6,000,000	45.94%	45.94%
4	ZWUG INTERGAZ Sp. z o.o.	4,700,000	1,800,000	38.30%	38.30%
5	"Dewon" PSA	UAH 11,146,800	UAH 4,055,205.84	36.38%	36.38%
	Jointly-controlled and associated entities - second tier				
6	Zakład Separacji Popiołów Siekierki Sp. z o.o.	10,000,000	7,000,000	-	70%[2)]
7	Elektrociepłownia Stalowa Wola S.A.	28,200,000	14,100,000	-	50%[2)]
8	Polska Grupa Górnicza S.A.	3,916,718,300	800,000,000	-	20.43%[2)]
9	Polimex-Mostostal S.A.	477,237,604	78,695,548	-	16.49%[3)]
10	Reliability Solutions sp. z o.o.	195,500	12,000	-	6.14%[6)]
11	ICsec SA	163,105	21,229	-	13.02%[6)]
12	Enelion Sp. z o.o.	13,200	2,250	-	17.05%[6)]
13	PGES Polska Grupa Energetyki Słonecznej Sp. z o.o. w likwidacji (under liquidation)	60,000	9,000	-	15.00%[8)]
	Jointly controlled entities and associates– third and fourth tier				
14	SYNERCOM USŁUGI WSPÓLNE sp. z o.o.	10,835,000	2,213,591	-	20.43%[4)]
15	Gardia Broker Sp. z o.o.	55,000	11,236.5	-	20.43%[5)]
16	ICaudit Sp. z o.o.	22,500	2,928.50	-	13.02%[7)]
17	ICcert Sp. z o.o.	35,000	4,555.44	-	13.02%[7)]
18	ICdiode Sp. z o.o.	22,500	2,928.50	-	13.02%[7)]

1) PGNiG's direct interest is 48.00%, with an indirect 3.18% interest held through GAS-TRADING S.A.
2) PGNiG S.A.'s interest held indirectly through PGNiG TERMIKA S.A.
3) PGNiG S.A.'s interest held indirectly through PGNiG Technologie S.A.
4) PGNiG S.A.'s interest held indirectly through PGNiG TERMIKA S.A. and Polska Grupa Górnicza S.A.
5) PGNiG S.A.'s interest held indirectly through PGNiG TERMIKA S.A., Polska Grupa Górnicza S.A. and SYNERCOM USŁUGI WSPÓLNE Sp. z o.o. (formerly: Śląskie Centrum Usług Wspólnych Sp. z o.o.)
6) PGNiG's interest held indirectly through PGNiG Ventures Sp. z o.o.
7) PGNiG's interest held indirectly through PGNiG Ventures Sp. z o.o. and ICsec SA.
8) PGNiG's interest held indirectly through SOLGEN Sp. z o.o.

Equity investments outside the group of related entities

In the first half of 2022, the PGNiG Group made no material equity investments outside the group of related entities. As at the end of June 2022, the total par value of PGNiG's equity interests held outside the group of related entities was PLN 85.7m. As at June 30th 2022, the total par value of the PGNiG Group's (PGNiG's and the PGNiG Group companies') equity interests held outside the group of related entities was PLN 114.2m.

6.4.3 Changes in the PGNiG Group structure in the first half of 2022

Table 39 Changes in the PGNiG Group shareholding structure in the first half of 2022

Type of change/transaction	Date	% Voting interest after the change/transaction
Share capital increase		
PGNiG Ventures Sp. z o.o.	Mar 10 2022	100.00%
PGNiG SPV 7 Sp. z o.o.	May 10 2022	100.00%
LLC Karpatgazvydobuvannya	Feb 18 2022	85.00%
Polska Grupa Górnicza S.A.	Jun 29 2022	20.43%
Polimex Mostostal S.A. (and acquisition of shares by PGNiG Technologie)	Jun 7 2022	16.49%
ICsec S.A.	Apr 22 2022	13.02%
By PGNiG Ventures Sp. z o.o. and ICsec S.A. in ICaudit Sp. z o.o.	Apr 22 2022	13.02%
By PGNiG Ventures Sp. z o.o. and ICsec S.A. in ICcert Sp. z o.o.	Apr 22 2022	13.02%
By PGNiG Ventures Sp. z o.o. and ICsec S.A. in ICdiode Sp. z o.o.	Apr 22 2022	13.02%
Company formation		
PST LNG TRADING LIMITED (by PGNiG Supply & Trading GmbH)	Apr 1 2022	100.00%
PST LNG SHIPPING LIMITED (by PGNiG Supply & Trading GmbH)	Apr 1 2022	100.00%
PGNiG Supply & Trading Polska Sp. z o.o. (by PGNiG Supply & Trading GmbH and PGNiG SPV 6 Sp. z o.o.)	Mar 30 2022	100.00%
Acquisition of shares/accession to the company		
SOLGEN Sp. z o.o.	Apr 21 2022	60.00%
Reliability Solutions sp. z o.o.	May 25 2022	6.14%
By SOLGEN Sp. z o.o. at PGES Polska Grupa Energetyki Słonecznej Sp. z o.o. w likwidacji (under liquidation)	Apr 21 2022	15.00%
Other changes		
placement of PST Europe Sales GmbH under liquidation	Jan 1 2022	100.00%
placement of XOOL GmbH under liquidation	Jan 1 2022	100.00%
sale of shares in Geovita S.A.	Mar 4 2022	0.00%
acquisition by Gas Storage Poland Sp. z o.o. of additional shares in Ośrodek Badawczo-Rozwojowy Górnictwa Surowców Chemicznych CHEMKOP Sp. z o.o.	Feb 1–2 2022	92.09%
acquisition by Gas Storage Poland Sp. z o.o. of additional shares in Ośrodek Badawczo-Rozwojowy Górnictwa Surowców Chemicznych CHEMKOP Sp. z o.o.	Mar 28 2022	92.42%

(in PLN million unless stated otherwise)

6.5 PGNiG treasury shares and shares in PGNiG Group companies held by members of the management and supervisory bodies

Table 40 PGNiG shares held by members of the management and supervisory bodies as at June 30th 2022

Full name	Position	Number of shares/voting rights as at Dec 31 2021	Par value of shares (PLN)	Number of shares/voting rights as at Jun 30 2022	Par value of shares (PLN)
Mieczysław Kawecki	Member of the Supervisory Board	9,500	9,500	9,500	9,500

As at the date of this Report, the other members of the management and supervisory bodies declared they did not hold any PGNiG shares. The Company was not aware of any agreements which could lead to future material changes in the equity interests held in the Company by its existing shareholders. In 2022, PGNiG did not acquire any of its own shares.

6.6 Events subsequent to the reporting date

July 2022

July 7th – Extension of Individual Contracts with Grupa Azoty until September 30th 2023.

July 28th – Execution of a credit facility agreement using State Treasury guarantees with Polska Kasa Opieki S.A. (for up to PLN 4.8bn for a period of 24 months).

July 29th – Agreeing the merger plan between PGNiG S.A. and PKN ORLEN S.A. and calculating the share exchange ratio in connection with the merger at 0.0925 of a PKN ORLEN share to 1 PGNiG share.

August 2022

August 2nd – Information update regarding compensation from the Price Difference Payment Fund for PGNiG Obrót Detaliczny

August 3rd – Execution of a conditional agreement to sell shares in Polska Grupa Górnicza S.A.

August 16th – Execution of a credit facility agreement using State Treasury guarantees with Bank Gospodarstwa Krajowego for up to PLN 4.8bn for a period of 24 months

Definitions

Abbreviations and acronyms	Meaning
Proper names of companies and branches	
PGNiG, the Company, the Issuer	PGNiG S.A. as the parent of the group of companies
PGNiG Group	The PGNiG Group consisting of PGNiG S.A. as the parent and the subsidiaries
CLPB	PGNiG Central Measurement and Testing Laboratory Branch
Stalowa Wola CHP plant	Elektrociepłownia Stalowa Wola S.A.
EXALO	EXALO Drilling S.A.
Gazoprojekt	PGNiG GAZOPROJEKT S.A.
Geofizyka Kraków	GEOFIZYKA Kraków Sp. z o.o. w likwidacji (in liquidation)
Geofizyka Toruń	GEOFIZYKA Toruń Sp. z o.o.
GEOVITA	GEOVITA S.A.
GSP	Gas Storage Poland Sp. z o.o.
OGiE	Geology and Hydrocarbon Production Branch of PGNiG
OOH	Wholesale Trading Branch of PGNiG
PGG	Polska Grupa Górnicza S.A.
PGNiG OD	PGNiG Obrót Detaliczny Sp. z o.o.
PGNiG Serwis	PGNiG Serwis Sp z o.o.
PGNiG Technologie	PGNiG Technologie Sp. z o.o.
PGNiG TERMIKA	PGNiG TERMIKA S.A.
PGNiG TERMIKA EP	PGNiG TERMIKA Energetyka Przemysłowa S.A.
PGNiG UN	PGNiG Upstream Norway AS
PGNiG UNA	PGNiG UPSTREAM NORTH AFRICA B.V.
PGNIG Ventures	PGNiG Ventures Sp z o.o.
Polski Gaz TUW	Polski Gaz Towarzystwo Ubezpieczeń Wzajemnych
PSG	Polska Spółka Gazownictwa Sp. z o.o.
PST	PGNiG Supply & Trading GmbH
Names of institutions, capital market entities and energy markets	
EIA	Energy Information Administration (US)
EEX	European Energy Exchange AG (Germany)
Henry Hub	Hub /price area in the United States
GASPOOL	GASPOOL Balancing Services GmbH – hub/price area in Germany
GAZ-SYSTEM	Operator Gazociągów Przesyłowych GAZ-SYSTEM S.A.
WSE	Warsaw Stock Exchange (Giełda Papierów Wartościowych w Warszawie S.A.)
ICE	Intercontinental Exchange – energy and commodity exchange
KRS	National Court Register
NCG	NetConnect Germany GmbH & Co. KG – hub/price area in Germany
NBP	National Balancing Point – hub/price area in the UK
OPEC	Organization of the Petroleum Exporting Countries
LNG terminal	the President Lech Kaczyński LNG Terminal in Świnoujście
THE	Trading Hub Europe – hub/price area in Germany
POLPX	Polish Power Exchange (Towarowa Giełda Energii S.A.)
TTF	Title Transfer Facility – hub/price area in the Netherlands
URE	Polish Energy Regulatory Office
Units of measure	
bbl	1 barrel of crude oil
boe	barrel of oil equivalent;

LNG	liquefied natural gas
Nm^3	normal cubic meter of gas
MWt	1 megawatt thermal
MWe	1 megawatt electrical
NGL	natural gas liquids - gas composed of molecules heavier than methane: ethane, propane, butane, isobutane, etc.
PJ	1 petajoule
TWh	1 terawatt hour
Economic and financial metrics	
EBIT	earnings before interest and taxes
EBITDA	earnings before interest, taxes, depreciation and amortisation
Adjusted EBITDA	EBITDA adjusted for impairment losses on non-current assets
EV	enterprise value
P/BV	price/book value
P/E	price/earnings
ROA	return on assets
ROE	return on equity
Net margin	net profit to revenue
Other	
HP	heat plant
CHPP	Combined heat and power plant
SFG	Storage Facilities Group
GPF	gas production facility
CGSF	cavern gas storage facility
OGPF	Oil and gas production facility
MTTS	Multiple Truck-to-Ship, a multiplying technology, increasing bunkering volume and speed
EGM	Extraordinary General Meeting (of a joint stock company)
EGM	Extraordinary General Meeting (of a limited liability company)
UGSF	underground gas storage facility
GM	General Meeting of Shareholders (of a joint stock company)
GM	General Meeting of Shareholders (of a limited liability company)
Currencies used	
PLN	amounts expressed in the Polish zloty
euro, EUR	amounts expressed in the euro
US dollar, USD	amounts expressed in the US dollar
NOK	amounts expressed in the Norwegian crown
SEK	amounts expressed in the Swedish crown
UAH	amounts expressed in the Ukrainian hryvnia

Converters

Converters	1 bcm of natural gas	1m tonnes of crude oil	1m tonnes of LNG	1 PJ	1 mboe	1 TWh
1 bcm of natural gas	1	0.90	0.73	38	6.45	10.972
1m tonnes of crude oil	1.113	1	0.81	42.7	7.5–7.8*	11.65
1m tonnes of LNG	1.38	1.23	1	55	8.68	14.34
1 PJ	0.026	0.23	0.019	1	0.17	0.28
1 mboe	0.16	0.128–0.133*	0.12	6.04	1	1.70
1 TWh	0.091	0.086	0.07	3.6	0.59	1

** The converter is different for crude oil produced in Poland and Norway.*

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7. Representation of the PGNiG Management Board and authorisation of the report

The Management Board of PGNiG represents that to the best of its knowledge this Directors' Report on the operations of the PGNiG Group and PGNiG S.A. gives a fair view of the Company's and the Group's condition and includes a description of key threats and risks.

PGNiG S.A. Management Board:

President of the Management Board	Iwona Waksmundzka–Olejniczak	*Signed with qualified electronic signature*
Vice President of the Management Board	Artur Cieślik	*Signed with qualified electronic signature*
Vice President of the Management Board	Robert Perkowski	*Signed with qualified electronic signature*
Vice President of the Management Board	Arkadiusz Sekściński	*Signed with qualified electronic signature*
Vice President of the Management Board	Przemysław Wacławski	*Signed with qualified electronic signature*
Vice President of the Management Board	Magdalena Zegarska	*Signed with qualified electronic signature*

Warsaw, August 17th 2022