2020

Raport roczny / Annual report

Przemysł i handel naftowy

Oil industry and trade

POPiHN

Polska Organizacja Przemysłu i Handlu Naftowego

DEAR READERS,

over the last year, the COVID-19 pandemic has had a negative impact over the state of the entire fuel industry. For the first time in history, the collapse of global demand for crude oil has caused the prices of American oil futures with delivery planned for May to turn negative. The suppliers had to pay to have their oil collected. International transport would periodically come to a standstill, while oil processing and fuel production declined.

In the face of such volatile international economic conditions, securing a steady supply of fuels for individual and business clients in Poland has become the prime objective. The continuity of fuel sales was maintained and the industry has taken steps to increase protection and safety of its workers and clients. At their own initiative, POPiHN members have quarantined their employees whenever a risk of contact with a person infected with COVID-19 was present, which allowed to prevent the epidemic from spreading across fuel companies.

Managing fuel production and trade proved highly challenging, especially during the initial stage of introduction of mobility restrictions, when the decline in petrols, diesel, and LPG sales amounted to as much as several dozen percent. Sales at the filling stations by the western border practically came to a grinding halt. Also the situation of the stations located along the motorways and express roads was dire, forcing oil companies to subsidise them in order to maintain sales continuity. Nation-wide the annual consumption of liquid fuels has decreased by about 4.5%.

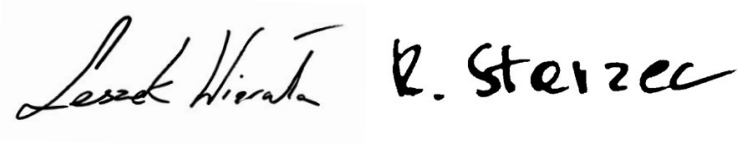
According to preliminary calculations, tax revenue from fuel industry in 2020 amounted to 68.5 bn PLN, indicating a drop of as much as 6.6% compared to 2019. Contributing factors include poor sales, low refinery margins, and, compared to last year, lower retail prices of fuel. Simultaneously, the operating expenses of the companies have grown due to implementation – in a broad sense – of epidemiological safety measures.

In 2020 companies associated in POPiHN were joined by UNIMOT S.A., thus further increasing the representation of the fuel sector.

We wish you a pleasant reading of the 'Oil industry and trade 2020' report.

Leszek Wiwała
President & Director General

Krzysztof Starzec
Chairman of the Board of Directors



POPIHN MEMBERS

AMIC Polska Sp. z o.o.

ANWIM S.A.

BP Europa SE

CIRCLE K Polska Sp. z o.o.

Fuchs Oil Corporation (PL) Sp. z o. o.

Grupa LOTOS S.A.

PKN ORLEN S.A.

PERN S.A.

Shell Polska Sp. z o.o.

Slovnaft Polska S.A. – MOL Group

TanQuid Polska Sp. z o.o.

TOTAL Polska Sp. z o.o.

UNIMOT S.A.

STRUCTURE OF THE ORGANIZATION

GENERAL MEETING

BOARD OF DIRECTORS

Supervisory body appointed by the General Meeting for a three-year term of office. Current term of office is May 2019 – May 2022.

Krzysztof Starzec	– Circle K Polska Sp. z o.o., Chairman of the Board of Directors
Bogdan Kucharski	– BP EUROPA SE, Vice-Chairman of the Board of Directors
Armen Konrad Artwich	– PKN ORLEN S.A.
Piotr Dziwok	– Shell Polska Sp. z o.o.
Rafał Galli	– TOTAL Polska Sp. z o.o.
Jarosław Kawula	– Grupa LOTOS S.A.
Paweł Maślakiewicz	– Grupa LOTOS S.A. – to June 2020
Katarzyna Mazurek	– Slovnaft Polska S.A. – MOL Group – since June 2020
Mateusz Radecki	– PERN S.A.
Tomasz Rybczak	– Slovnaft Polska S.A. – MOL Group – to June 2020
Krzysztof Strzelecki	– AMIC Polska Sp. z o.o.

MANAGEMENT BOARD

CHAIRMAN-DIRECTOR GENERAL – appointed by the Board of Directors for a three-year term of office.

Leszek Wiwała – since 14 June 2019

OFFICE

Krzysztof Romaniuk	– Director of Fuels Market Analysis
Marcin Szponder	– Director for Market Regulation – to September 2020 r.
Nadia Rybczyńska	– Expert – since September 2020 r.
Joanna Lewandowska	– Office Manager

THE REPORT USES THE FOLLOWING CONVERSION VALUES:

1 barrel of crude oil (1 bbl) = 159 litres

1 tonne of crude oil = 7.26 bbl

PRODUCT DENSITIES USED IN MASS TO VOLUME CONVERSIONS IN 1ST QUARTER OF 2020:

Petrol	0,737 Mg/m^3
Diesel	0,833 Mg/m^3
Light fuel oil	0,828 Mg/m^3
LPG	0,545 Mg/m^3

PRODUCT DENSITIES USED IN MASS TO VOLUME CONVERSIONS IN 2ND QUARTER OF 2020:

Petrol	0,733 Mg/m^3
Diesel	0,833 Mg/m^3
Light fuel oil	0,829 Mg/m^3
LPG	0,544 Mg/m^3

PRODUCT DENSITIES USED IN MASS TO VOLUME CONVERSIONS IN 3RD QUARTER OF 2020:

Petrol	0,746 Mg/m^3
Diesel	0,831 Mg/m^3
Light fuel oil	0,827 Mg/m^3
LPG	0,540 Mg/m^3

PRODUCT DENSITIES USED IN MASS TO VOLUME CONVERSIONS IN 4 THQUARTER OF 2020:

Petrol	0,748 Mg/m^3
Diesel	0,834 Mg/m^3
Light fuel oil	0,827 Mg/m^3
LPG	0,537 Mg/m^3

Fot.: GRUPA LOTOS

CONTENTS

6. Decarbonising transport – the main challenge for the fuel sector in the next decade
10. Processing of crude oil
11. Production of liquid fuels
13. Imports of liquid fuels
15. Exports of liquid fuels
16. Domestic consumption of liquid fuels
19. Filling stations in Poland
24. The retail market of liquid fuels
30. Demand forecast for the Polish market up to 2030
33. Motor fuel prices
42. Lubricating oils market
48. Information on crude oil and liquid fuels logistics

DECARBONISING TRANSPORT – THE MAIN CHALLENGE FOR THE FUEL SECTOR IN THE NEXT DECADE

Today, the oil sector is the beating heart of the Polish economy. The refineries in Płock and Gdańsk are among the most modern in the world. They provide a secure supply of relatively cheap fuels used in road, air and sea transport. To a lesser extent, oil-based fuels are used in rail transport and to generate electricity and heat households. Crude oil is also a key raw material for the petrochemical industry and is used to produce lubricating oils and greases. Last but not least, oil is used to produce asphalt, the most widely used material in road construction, as well as graphite, which is used in electric vehicle batteries.

Today's real economy is developing thanks to the transport sector, which at the current stage of civilisation development is fuelled mainly by traditional fuels. Progressive climate change justifies the need to reduce greenhouse gases, also in the production and use of transport fuels. Nonetheless, according to the latest forecasts of the International Energy Agency, the peak in demand for oil in the world is still ahead of us. It is expected to occur in the current decade. In the next two years, demand for this commodity may return to the level from before the COVID-19 pandemic, and then it is likely to grow at least until 2026. These predictions are quite consistent with POPiHN's earlier forecasts concerning demand in the domestic market.

CRUDE OIL IS THE MAIN SOURCE OF PRIMARY ENERGY IN POLAND. AT THE CURRENT STAGE OF SCIENTIFIC AND TECHNOLOGICAL DEVELOPMENT, THERE IS NO SINGLE TECHNOLOGY THAT COULD EFFECTIVELY REPLACE THIS RAW MATERIAL.

Crude oil is the main source of primary energy in Poland. At the current stage of scientific and technological development, there is no single technology that could effectively replace this raw material. This is due to the high demand for energy. This can be clearly seen when basic figures are collated. In 2020, the national production of electricity from coal amounted to nearly 110 TWh, while the consumption of oil-based fuels was over 250 TWh. To compare, a single nuclear power plant can produce around 6.5-7 TWh per year. This means that moving away from fossil fuels is not an easy process and requires a lot of investment and time to design and implement.

A report by the Centre for Climate and Energy Analysis entitled CO_2 emission reduction pathways in the transport sector in Poland in the context of 'the European Green Deal' shows that the volume of GHG emissions from transport will be affected by the pace of transformation of the energy system in Poland. The projected electricity demand for road transport in 2050 is expected to be 35 TWh. This leaves open the question of what about the rest of the energy needs of the transport sector.

To complete the picture, differences in energy conversion efficiency must be taken into account. The spark ignition engine has an efficiency of about 30-36% and the diesel engine has a higher efficiency, which amounts to about 40-45%. An electric motor with an efficiency of 85-95% performs unbeatably better. This difference makes electromobility one of the important directions of probable development of transport, especially in the segment of passenger cars. However, it will be important that this electricity comes from sources with low greenhouse gas emissions.

Greenhouse gas emission rates will be a key factor influencing the directions of development of the energy transition. Despite the development of renewable energy sources, electricity generation in Poland is still highly emissive, currently amounting to approximately 216 g CO_2eq/MJ. By comparison, life cycle greenhouse gas emissions average 93.2 g CO_2eq/MJ for petrol

Fot.: PKN ORLEN

THE TRANSPORT SECTOR IS ONE OF THE KEY INDUSTRIES FACING THE TOUGHEST CHALLENGES IN MEETING THE GREEN DEAL TARGETS.

and 95.1 g CO_2eq/MJ for diesel. In this respect, the fuel of the future is undeniably the so-called green hydrogen, with lifecycle greenhouse gas emissions averaging 9.1 g CO_2eq/MJ.

The overarching goal of the European Green Deal is the climate neutrality of the European Union by achieving zero net greenhouse gas emissions by 2050. An ambitious plan to accelerate the energy transition sets the direction for economic change by allocating resources to research and investment in a low-carbon economy, while respecting the interests of consumers and businesses.

The transport sector is one of the key industries facing the toughest challenges in meeting the Green Deal targets. The main task over the next three decades will be to prepare for the gradual transition from fossil fuels, used in transport, to more sustainable and low-carbon energy sources. The Green Deal calls for a 90 per cent reduction in emissions from the transport sector by 2050. The movement of goods and people has an impact on the environment, but it is also a necessary condition for economic development. The concept of ‚clean transport' may be misunderstood, as all transport involves the emission of greenhouse gases, but in accordance with the principles of climate neutrality, measures must be taken to minimise these emissions and to offset their impact on the environment. To this end, it is necessary to progressively reduce the use of fossil fuels and to increase the use of alternative fuels and electricity. The technology available today already offers a wide range of low-carbon liquid fuel solutions. Implementing these technologies on an industrial scale can improve their economic viability, making them more attractive to consumers. Given the unprecedented R&D investment in various low-carbon technologies used to power vehicles, as well as the increasing efficiency of internal combustion engines, it is extremely important to maintain technology neutrality so that the regulatory framework does not dictate the direction of green technology development from above. It is also important that the implementation of the Green Deal should not restrict the mobility of the poorest inhabitants of the European Union or take place at the cost of a reduction in the energy security of any Member State.

The fuel industry, together with the broader transport sector, wants to be actively involved in the development of a low-emission economy. We understand the need for urgent action to address progressing climate change, while at the same time taking care of corporate social responsibility. However, it is also essential that appropriate mechanisms are introduced to support the replacement of a car with a more ecological model in order not to increase the level of transport exclusion.

The fuel sector is currently facing the challenge of finding ways to effectively develop and implement low-carbon technologies. In the transition period up to 2050, natural gas has an important role to play as a fuel. Over the next decade, the industry will in some way try to modify and evolve its actions, and thus it can be argued that it will reinvent itself with a variety of technologies that can already accelerate the decarbonisation process. Supporting actions to sustainably and optimally carry out the energy transition of the liquid fuels and transport sectors is one of the most important already present and future tasks of POPiHN.

IT IS ALSO IMPORTANT THAT THE IMPLEMENTATION OF THE GREEN DEAL SHOULD NOT RESTRICT THE MOBILITY OF THE POOREST INHABITANTS OF THE EUROPEAN UNION OR TAKE PLACE AT THE COST OF A REDUCTION IN THE ENERGY SECURITY OF ANY MEMBER STATE

Fot.: SLOVNAFT-MOL GROUP

PROCESSING OF CRUDE OIL

In 2020 Polish refineries decreased the processing of crude oil by 5% compared to the results in 2019. Total refining production amounted to 25.8 m tonnes, which was 1.4 m tonnes less than in the previous year. Refineries diverted almost the entire production stream to supply the domestic market as a consequence of international demand reduction, associated with the constraints resulting from the COVID-19 pandemic. It was thus possible to meet the fuel demand of the Polish economy and individual drivers. Difficult situation related to the demand in the market slightly reduced the process of diversification of oil supplies to Poland. Refineries had to look for ways of curbing expenditure in the light of weak refining margins. In the above circumstances the need to make a maximum use of Naftoport's oil facilities somewhat diminished, yet having built them fully proved a good idea. Prices of crude oil supplied to Poland were lower by 35%, which – even taking into consideration a severely limited demand for finished fuels – allowed to keep positive margins in refining and petrochemical production. In both halves of the year crude oil refining volumes in Polish refineries were close to 13 m tonnes, with slightly bigger numbers in the second half of the year (1 half of the year – 12.73 m tonnes, 2 half of the year – 13.03 m tonnes).

Processing of crude oil by PKN ORLEN amounted to 15.6 m tonnes (0.9 m tonnes less than in 2019), whereas by Grupa LOTOS to 10.2 m tonnes (0.5 m tonnes less than in 2019).

The East remained the dominant direction for oil supplies to Polish refineries, but there was a smaller diversification scale compared to the previous year. The crude oil transports, apart from Russia, mostly came from Saudi Arabia, Nigeria, Kazakhstan and Norway. There were also supplementary supplies from Great Britain and Lithuania.

The share of REBCO crude oil in supply increased from 66.6% in 2019 to 69.7% in 2020. Increased oil supplies from the eastern direction were a consequence of economic conditions, technological adjustment of refineries and utilisation of long-distance pipelines, which are the optimum mode of transportation of crude oil. In 2020 there were no problems with contaminated crude oil, which in 2019 entered Poland through the pipeline network from the east, significantly decreasing the level of pumping. The above situation forced supplies via the sea route, but some crude oil was still in stock in warehouses of Polish logistics operators. Traditionally, crude oil from domestic supplies (Petrobaltic, PGNiG) was used to supplement the exports. The scale of domestic production, however, continued to be at a low level.

Crude oil other than REBCO in the structure of supplies of PKN ORLEN constituted 42% (just like in the previous year), whereas for Grupa LOTOS it was around 11% of supplies (8 percentage points less than in 2019). For both Polish oil companies overall crude oil other than REBCO constituted 29.5% of supplies.

The structure of crude oil supplies to domestic refineries is presented in Fig. 2. REBCO crude oil slightly strengthened its position, yet Polish refineries maintained a high diversification scale, using for this purpose the installations of Naftoport in Gdańsk.

In 2020 about 18.2 m tonnes of REBCO crude oil were brought to Poland (which is about 0.2 m tonnes less than in 2019), out of which about 15 m tonnes (i.e. about 0.3 m tonnes more) were transported via the pipelines owned by PERN S.A. from the eastern direction. The remaining oil was brought to Polish refineries via the port facilities in Gdańsk, and in case of domestic deposits, via rail transport.

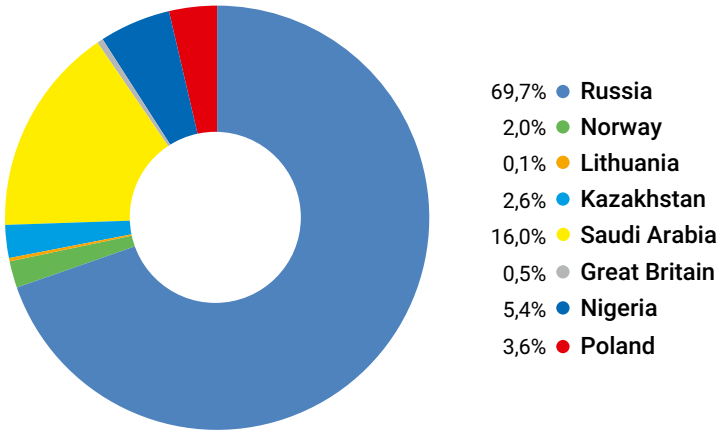
FIG. 1 PROCESSING OF CRUDE OIL – DATA FOR 2019 AND 2020 [in m tonnes]

Source: POPiHN's own data

Description	2019	2020	Reference 2019=100
OVERALL	27,2	25,8	95

FIG. 2 SHARE OF CRUDE OIL SUPPLIES TO DOMESTIC REFINERIES IN 2020 [%]

Source: POPiHN's own data



18.2 m tonnes

of REBCO crude oil brought to Poland in 2020

Fot.: CIRCLE K POLSKA

PRODUCTION OF LIQUID FUELS

Liquid fuel production in 2020 (Fig. 3) of petrol (P), diesel (D), liquefied petroleum gas LPG, JET aviation fuel, light fuel oil (LFO) and heavy fuel oil (HFO) amounted to 25.8 m m^3. The decrease in the domestic refining production and blending fuels, which in Poland is also treated as production, amounted to 7% compared to the previous year. A decrease in market supplies from this source equalled approximately 2 m m^3. The coronavirus pandemic left its mark on the structure and volume of refinery production. A decrease in overall fuel production was largely a consequence of severely restricted fuel sales during lockdowns aimed at reducing the scale of the epidemic.

Almost all domestic production of fuel types that are most important for the economy was allocated internally.

In this economically difficult pandemic-driven situation there was an increase in the production of diesel and LPG. The remaining products recorded decreases in production, with JET as the largest one. Data relating to diesel clearly show an increased level of conversion of a barrel of oil into petroleum products of higher commercial value.

Production results recorded in 2020 were in line with trends in the demand on domestic market, which led to the maximum use of Polish refineries

capacity. In the second half of 2020 the domestic production was 176,000 m^3 higher than in the first half of the year. A small fraction of products was exported. Nonetheless, their volumes were much smaller than in the previous year.

FIG. 3 COMPARISON OF LIQUID FUELS PRODUCTION IN 2019 AND 2020 [in thousand m^3]

Source: POPiHN's own data

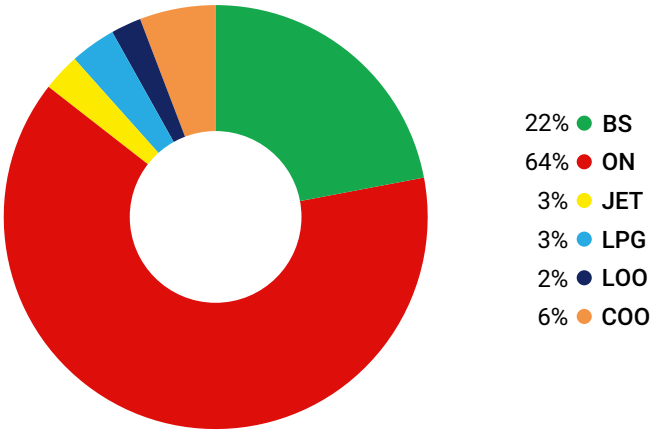
Description	2019	2020	Reference 2019=100
Petrols	6 196	5 671	92
Diesel	15 972	16 362	102
LPG	824	898	109
JET aviation fuel	1 659	738	44
Light fuel oil	607	595	98
Heavy fuel oil	2 473	1 496	60
OVERALL	**27 731**	**25 760**	**93**

25.8

m m^3

Liquid fuel production in 2020

FIG. 4 BREAKDOWN OF LIQUID FUELS EXPORTS IN 2020 [%]
Source: POPiHN's own data



Significant sections of domestic refinery production of petrol and diesel, as well as of exports, aimed at the Polish market, were blended with biofuels in order to reach the National Biofuels Target (NBT). In Poland fuel blending with the use of biofuels, and also other additives, is treated as production. Such an approach slightly increases the production pool when compared to the processing of crude oil in refineries alone. The use of biofuels improves the environmental effect of fuel combustion, yet, unfortunately, it negatively influences the economic results of fuel producers since biofuels are significantly more expensive than traditional fuels produced from crude oil. In 2020 the costs of the fulfilment of the NBT grew even more as the biofuels target was raised from 8 to 8.5% by energy value. It is a high threshold, even with the possibility of using the substitution fee. Therefore for the producers it meant to continue with the production and sales of B100 fuel, which is hard to sell domestically.

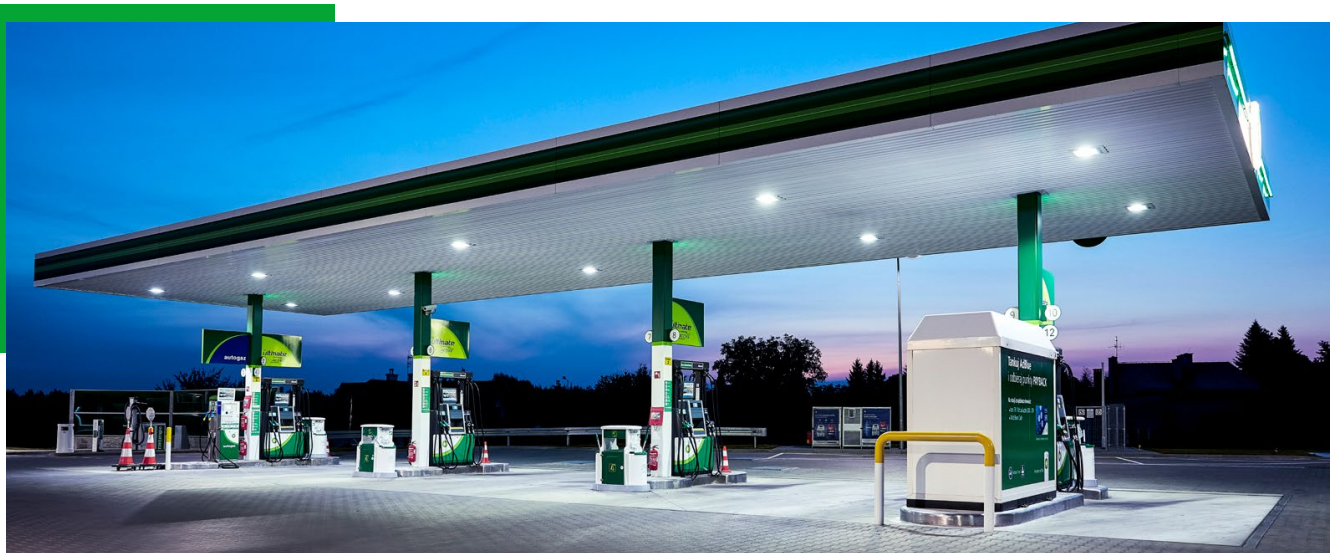
Production of diesel, which is the main product of national refineries, increased by 390,000 m^3 (by 2%), and of LPG by 74,000 m^3 (by 9%). There was a decrease in the production of petrols by 525,000 m^3 (by 8%). The biggest decrease in percentage was recorded in the production of JET aviation fuel, i.e. 921,000 m^3. The production of both types of heating oil also witnessed a decrease. As regards heavy fuel oil, its production decreased by nearly 1 m m^3, whereas of light fuel oil by 12,000 m^3.

The structure of fuel production in 2020 is presented in Fig. 4.

The structure of production balance slightly changed compared to the previous year. Although petrols maintained its 22% share, diesel significantly increased its share (by 6 percentage points). The share of JET aviation fuel decreased by 3 percentage points, and so did the share of heavy fuel oil. In accordance with historical results, diesel continued to be a dominant product in the balance of domestic refineries also in 2020; its share in the overall production spectrum even increased and amounted to 64%. The second position belonged to petrol with the share of 22%, the same as last year.

As noted above, the production of liquid fuels also includes the process of mixing (blending) standard fuels with biofuels and additives. In

2020 the necessity to meet the requirements of the NBT, which companies that produce fuels and import them from abroad were obliged to fulfil, forced adding alcohol and esters to the vast majority of petrol and diesel introduced onto the market. Additionally, in order to meet the requirements of the legislative act it was also necessary to sell a sufficient amount of B100 fuel because simply adding biofuels to standard fuels was not enough to fulfil the NBT. Preliminary market information shows that POPiHN members achieved the imposed NBT. It is estimated that in 2020 around 344,000 m^3 of ethanol and around 1 061,000 m^3 of methyl esters were added to fuels. These amounts were similar to the previous year's, and taking into consideration decreases in the production, their share in the final product was bigger. Direct sales of B100 fuel were estimated at about 216,000 m^3, which means that there was a decrease by approximately 84,000 m^3 in comparison to the previous year. This type of fuel was practically unavailable in retail trade, and in wholesale trade it was quite unpopular. Its vast majority was sent outside Poland. Such a significant decrease is mostly due to the necessity of settling blending on a quarterly basis, as well as decreased fuel demand.



Fot.: BP EUROPA

IMPORTS OF LIQUID FUELS
(sum of actual imports and intra-Community acquisitions) (Fig. 7 and 8)

Domestic refineries allocated practically the entire fuel production stream in the domestic market. Despite reduced consumption resulting from anti-pandemic measures, imports of fuels were necessary to satisfy the domestic market demand, yet to a smaller extent than in 2019. It particularly concerned diesel and LPG. Imports were carried out by the leading players on the domestic market (refineries and international oil companies operating in Poland) and the so-called independent operators. Data available at the time of elaborating the report show that in 2020 the total volumes of imports were lower than those from 2019. Altogether 9.9 m m^3 of fuel was purchased abroad, i.e. about 900,000 m^3 less than in the previous year. The above means a 9% decrease. At the same time, it was the third consecutive year in which less fuel was imported, yet this time it was due to the pandemic and not to a growing domestic production or export restrictions. The difficulties at the borders and the reduced domestic traffic resulted in effective control activities and, as a consequence, it can be assumed that the majority of products brought into the country were officially reported and registered. Decreases in purchases abroad were recorded for all types of fuel, yet they varied among themselves. Speaking of main fuel types, the largest decreases were observed in imports of light fuel oil, as the volumes imported to Poland were lower by as much as 33%. Decreases by 10% were recorded in the imports of petrols and LPG; as regards diesel, the decrease amounted to 6%. JET aviation fuel imports, which were non-existent, were most severely affected by the pandemic restrictions. Besides, less heavy fuel oil was imported. Since 2016 diesel has constituted the most significant share in the imports to Poland and that was also the case in 2020. Just as in the previous year, total imports of petrol, diesel, LPG and light fuel oil, carried out by the so-called independent operators (companies other than POPiHN members) were higher than the imports of the most prominent market players. The above resulted from significant purchases of LPG and light fuel oil, mostly imported to Poland by independent operators. When it comes to diesel and petrol, POPiHN members imported more of these products. Nonetheless, it was the overall volume, especially of LPG, that was decisive. Throughout 2020 in the case of 4 main fuel types foreign purchases carried out by the biggest operators on the Polish market were 2% higher than in the previous year. Simultaneously, the dynamics of foreign purchases by independent operators in the case of this product group decreased by 14%.

In 2020 the imports of diesel decreased by 343,000 m^3. In case of petrol it was 75,000 m^3, heavy fuel oil fell by 23,000 m^3 and in case of JET aviation fuel the decline amounted to 35,000 m^3. Foreign purchases of LPG decreased by 418,000 m^3, while of light fuel oil by 36,000 m^3.

The decrease in the officially registered imports of liquid fuels in relation to 2019 fell by 9%, yet for 6 main fuel types the imports amounted to 30% of overall market supplies.

In 2020 there were no major changes in the structure of supplies from abroad. The imports of petrols and light fuel oil slightly grew in importance at the expense of LPG (a decrease by 1 percentage point). Diesel maintained its share in the whole imports ‚pie'.

While comparing the volumes of 4 main fuel types (P, D, LPG and LFO), we can see that the independent operators brought 40% more fuels into the country than POPiHN members, i.e. the biggest market operators. Nevertheless, at the same time the above results amounted to a decrease of 25 percentage points compared to the previous year's results. In the group of described fuels big oil companies imported around 4.1 m m^3, which was about 69,000 m^3 more than in the previous year. Independent operators decreased their purchases abroad by approximately 941,000 m^3, bringing into the country approximately 5.7 m m^3 fuel from the described product group.

FIG. 5 BREAKDOWN OF LIQUID FUELS IMPORTS IN 2020 [%]

Source: POPiHN's own data

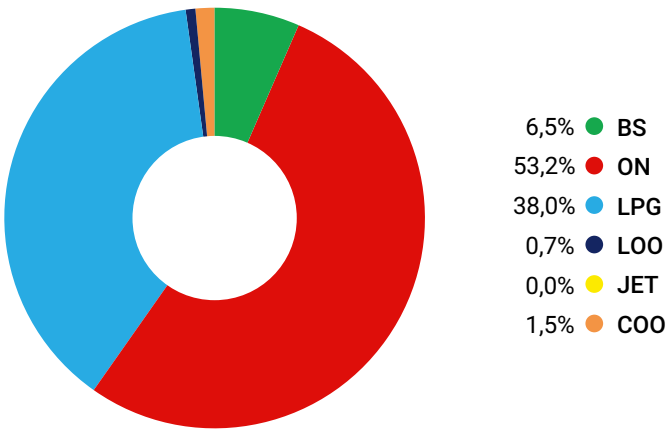


FIG. 6 COMPARISON OF IMPORTS AND ACQUISITIONS OF LIQUID FUELS IN 2019 AND 2020 [in thousand m^3]

Source: Ministry of Finance and POPiHN's own data

Description	2019	2020	Reference 2019=100
Petrols	723	648	90
Diesel	5 616	5 273	94
LPG	4 188	3 770	90
Light fuel oil	110	74	67
JET aviation fuel	35	0	-
Heavy fuel oil	168	145	86
OVERALL	**10 840**	**9 910**	**91**

Fot.: GRUPA LOTOS

FIG. 7 SOURCES OF PETROL IMPORTS [%]

Source: Ministry of Finance and POPiHN's own data

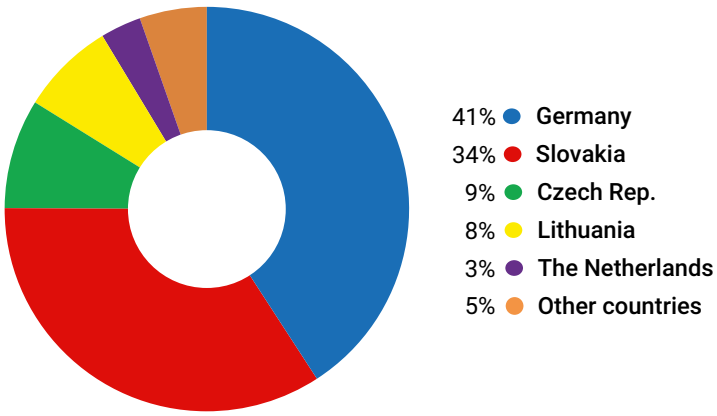
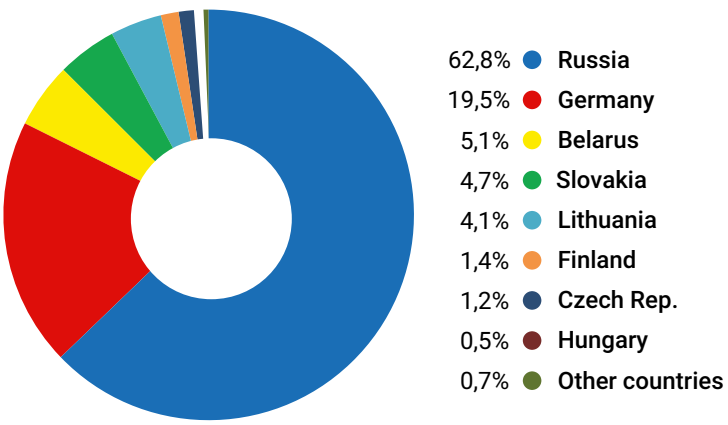


FIG. 8 SOURCES OF DIESEL IMPORTS [%]

Source: Ministry of Finance and POPiHN's own data



68%

Diesel imported from the territory of the non-EU countries

Sources of imports of petrol are shown in Fig. 7. The most substantial amounts of this fuel type were imported to Poland from Germany, Slovakia and the Czech Republic. Supplementary supplies came from Lithuania and the Netherlands. Imports from other countries were fragmented and constituted around 5% of supplies. Purchases in Germany grew in importance (their share increased by 9 percentage points) along a stable position of Slovakia.

Imports of diesel traditionally showed a larger variety of source countries than petrol. As before, main suppliers were Russia, Germany and Belarus. Other important source countries for companies importing diesel were also Slovakia and Lithuania. Around 68% of the product was imported from beyond our eastern border, i.e. the territory of the non-EU countries (which was 6 percentage points more than in the previous year). Altogether, the East, including Lithuania, provided around 72% of the whole diesel imports (3 percentage points less than in the previous year). Germany's share in the pool grew by 2 percentage points.

EXPORTS OF LIQUID FUELS (sum of actual exports and intra-Community supplies)

Exports of liquid fuels (sum of actual exports and intra-Community supplies) (Fig. 9 and 10) in 2020 amounted to 2.1 m m^3. The above result was 30% lower than in the previous year and it was the continuation of the trend from 2017-2019, when we also observed a decrease in exports in comparison to the previous year. This was to a large extent triggered by the pandemic-related restrictions, which reduced cross-border traffic. At the same time more domestically produced fuels were allocated internally than in the previous year; more distillates were also further processed into diesel, especially in Grupa LOTOS, whereas in the previous years they used to be exported. The collapse in the aviation market due to the pandemic on a global scale also led to a decrease in foreign deliveries of this product. In the end, a decrease in exports amounted to 925,000 m^3. Aiming at allocating domestic production internally and decreasing the production of heating oils also led to changes in the structure of products sent abroad. Even though over eight times as much diesel was exported as in the previous year, the volume of those deliveries was insignificant. The volumes of all other liquid fuels sent abroad witnessed a decrease compared to the previous year.

It is worth emphasizing that successful limitation of fraudulent activities of fuel traders – for whom the pandemic situation in other circumstances might have been a good time to increase their market share, alongside decreasing consumption – was reflected in a bigger internal allocation of fuels produced in Poland.

In terms of both volume and percentage the biggest decrease in foreign deliveries was recorded for heavy fuel oil. There was a significant decrease in foreign shipments of JET aviation fuel (by 39%), whereas fuels decreased by 14%. Despite witnessing a decline, heavy fuel oil remained the largest export product in this group of petroleum products. Its share in exports, alongside decreases in foreign deliveries of petrols and JET aviation fuel, remained at the level of 61%, yet it constituted a decrease by 16 percentage points compared to the previous year. The share of petrol grew by 3 percentage points to the level of 14%, while the share of diesel grew by 13 percentage points, also to the level of 14%. The share of JET aviation fuel witnessed a decrease by 2 percentage points.

The export deliveries of JET aviation fuel shown in Fig. 9 are deliveries directly carried out by domestic producers to recipients outside Poland. Nevertheless, a significant amount of this fuel production goes to domestic intermediaries, which provide airport deliveries to domestic and international carriers. The volume of these deliveries in 2020, mainly due to pandemic-driven air traffic restrictions, amounted to 575,000 m^3, i.e. around 777,000 less than in the previous year (by 57%).

While calculating the market of LPG, one should note that the so-called re-export of this fuel type (buying it outside Poland and then sending it outside Poland) in 2020 amounted to about 379,000 m^3. It was thus the second consecutive year, in which re-export of this fuel type did not exceed 0.5 m m^3.

The main destinations of exports and intra-Community supplies for petrol in 2020 were the Netherlands (68%) and Sweden (16%). Diesel was sent to Germany (48%) and the Czech Republic (39%). The largest volumes of heavy fuel oil were supplied to the Netherlands (62%) and Belgium (19%). JET aviation fuel was mostly delivered to Sweden (51%), Denmark (26%) and the Czech Republic (15%).

FIG. 10 BREAKDOWN OF LIQUID FUEL EXPORTS IN 2020 [%]

Source: POPiHN's own data

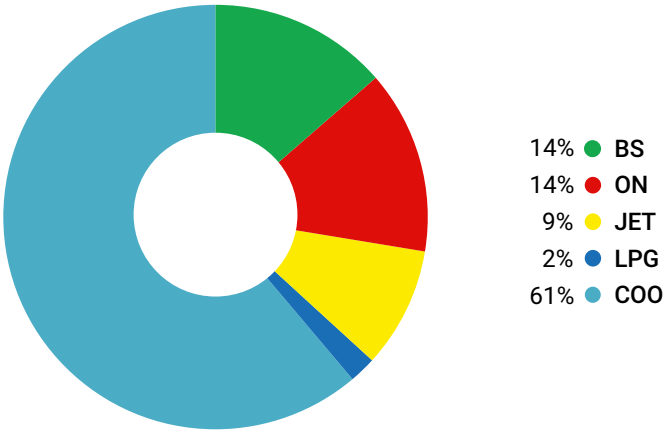


FIG. 9 STRUCTURE OF EXPORTS AND SUPPLIES IN 2019 AND 2020 [in thousands of m^3]

*Source: POPiHN's own data *) direct exports without re-exporting*

Description	2019	2020	Reference 2019=100
Petrols	335	287	86
Diesel	34	295	868
JET aviation fuel	319	194	61
LPG*)	0	43	–
Heavy fuel oil	2 346	1 290	55
OVERALL	**3 034**	**2 109**	**70**

DOMESTIC CONSUMPTION OF LIQUID FUELS IN 2020

Table 11 presents a preliminary comparison of the officially registered domestic consumption of liquid fuels in 2020 when compared to the official domestic consumption of liquid fuels in 2019. Final data, taking into account final calculations elaborated by the tax service of the Ministry of Finance on imports, exports and intra-Community purchases and supplies will be available in the second half of 2021. Therefore the results presented for 2020 should be treated as estimates.

The data on fuel demand in Poland in 2020 reflect the impact of pandemic on the domestic economy. The results are worse than the previous year's ones, although the number of newly registered cars in Poland grew by over a million and fuel prices were much lower than the year before, whereas national authorities kept the grey fuel market within limits. After 5 years of continuous increases in the demand the market came to a halt and the year ended up at a much lower level compared to 2019. Decreased official demand was recorded for all fuel types, yet JET aviation fuel was the mostly affected one. The smallest losses were recorded by heavy fuel oil and diesel markets. There was a significant decrease in LPG demand and a less significant one in fuel demand. As in previous years, the sales volumes of diesel, main fuel type for Polish economy, reached the highest levels. The fuel market declined threefold, yet its volumes were bigger than in the case of LPG. In the motor fuel segment autogas recorded the biggest decrease. The demand for this fuel type reached the level of 64% of petrol sales, i.e. 2 percentage points less than in 2019.

For all types of motor fuels (petrol, diesel and autogas) the market grew by 4% when compared to 2019. Thus it returned to the levels observed in 2018. The overall liquid fuel segment decreased by 6%. Movement restrictions introduced after the outbreak of the pandemic were the most important element which influenced the decrease in the consumption of petrol and autogas, despite the fact that in those difficult times there was an increased interest in the cars with spark-ignition engines and hybrids, both when buying new passenger vehicles and second-hand ones with low mileage. The epidemic and high temperatures in winter months of 2020 led to a 12% decrease in the overall LPG market. Such results, as in previous years, were calculated without including the so-called re-export (export of gas previously purchased outside Poland), which last year was 33% lower than in 2019. Taking into consideration also this decline, we could assume that the market for this fuel type decreased even more than what the data in the fuel consumption chart show.

FIG. 11 ESTIMATED DOMESTIC LIQUID FUEL CONSUMPTION IN 2020 IN COMPARISON TO THAT OF 2019. [in thousands of m³]

Source: Ministry of Finance and POPiHN's own data

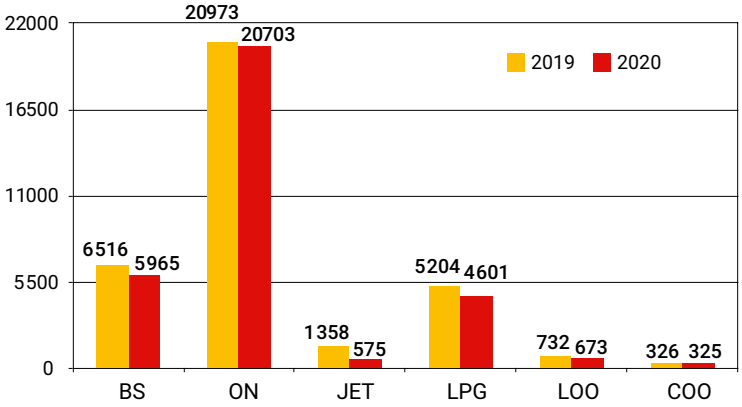
Description		2019		2020		Reference
		in thousand m³	share in consumption %	in thousand m³	share in consumption %	2019=100
Petrols	Consumption	6 516		5 965		92
	of which total imports	723	11	648	11	90
Diesel	Consumption	20 973		20 703		99
	of which total imports	5 616	27	5 273	25	94
LPG	Consumption	5 204		4 601		88
	of which total imports	4 188	80	3 770	82	90
Total for 3 fuel types	Consumption	32 693		31 269		96
	of which total imports	10 527	32	9 691	31	92
JET aviation fuel	Consumption	1 358		575		42
	of which total imports	35	3	0	–	–
Light fuel oil	Consumption	732		673		92
	of which total imports	110	15	74	11	67
Heavy fuel oil	Consumption	326		325		100
	of which total imports	168	52	145	45	86
OVERALL	Consumption	35 109		32 842		94
	of which total imports	10 840	31	9 910	30	91

Data available while elaborating the report clearly indicate that the biggest losses were recorded in the sales of JET aviation fuel. This market, which had been thriving in previous years, collapsed completely for several months just after the introduction of a flight ban due to the spread of the pandemic in Europe and worldwide. Although the year opened with good results and then there was an attempt to restore flights in autumn, the overall yearly balance was significantly negative and amounted to a loss at the level of 58%. The least affected by the tough pandemic circumstances was the diesel market, which used heavy transport to supply the Polish economy and population. Despite challenging conditions, the domestic demand for liquid fuels was fully satisfied and there were no recorded instances of market turbulences. Refineries, wholesalers and filling stations did not even stop for an hour, adjusting their operations to pandemic requirements. In spite of lower internal demand, fuel imported from abroad supplemented domestic production, yet in smaller volumes than in 2019.

The official consumption of fuel for diesel engines grew by 1% in relation to 2019, yet continued to exceed the level of 20 m m^3. The share of official imports in the diesel market supplies reached the level of 25%, i.e. declined by 2 percentage points in relation to the previous year's. The decrease in market supplies carried out by POPiHN members amounted to 3%, which was slightly more than the decrease of the overall market. The imports carried out by the Organisation's members recorded a decline of 13% compared to 2019, yet in the end amounted to over 0.7 m m^3 more than the supplementary imports carried out by independent operators, whose supplies grew by 6% compared to the previous year. Altogether 5.3 m m^3 of this fuel type was imported.

FIG. 12 COMPARISON OF LIQUID FUEL PRODUCTION IN 2019 AND 2020 [in thousand m^3]

Source: POPiHN's own data



The demand for petrol recorded a decline, even more than in the case of diesel. The interest in purchasing this fuel type fell by 8.5% due to the causes described above. It is, however, worth emphasizing that the majority of changes in sales volumes were due to the pandemic. The decline was mitigated by a slightly decreased price relationship between EU95 petrol and autogas, which always influenced the proportions of purchase volumes carried out by drivers who own cars with dual supply system. Last year Polish drivers used almost 6 m m^3 of petrol, out of which slightly over 0.6 m m^3 came from imports. Therefore imports supplied 11% of the total petrol market share – just as in 2019.

Fot.: AMIC POLSKA

We also observed a decrease, even larger than in the case of petrol, in the consumption of LPG, calculated according to the POPiHN's methodology (i.e. without including re-export). The overall result was 12% worse than in the previous year. It is currently estimated that the overall yearly consumption of LPG amounted to 4.6 m m^3. Re-export of this type of fuel amounted to almost 380,000 m^3, i.e. about 185,000 m^3 less than in 2019. Its imports equalled 82% of the market supply, which was 2% more than in the previous year. 3.8 m m^3 were supplied from abroad.

The demand for light fuel oil continued to shrink for another year in a row. This time the market needed only 673,000 m^3 of this type of fuel, i.e. about 59,000 m^3 less than the year before. It is assumed that next year the results for this type of fuel will be even lower. A vast majority of the supplies of this fuel type for domestic recipients (85%) was satisfied by domestic production. Official supplementary imports in 2020 decreased by approximately 36,000 m^3 and amounted to as little as 74,000 m^3.

JET aviation fuel market, mostly impacted by pandemic-driven restrictions, recorded the level of slightly about 0.5 m m^3. It was a decrease by almost 800,000 m^3 in comparison to the previous year. A decreased demand was largely satisfied by domestic production as imports were practically non-existent.

The domestic demand for heavy fuel oil remained at the level observed in the previous year. The market absorbed 325,000 m^3 of this type of heating fuel, out of which around 45% was imported. This type of fuel is produced in Polish refineries in the amounts significantly exceeding the domestic demand and therefore for years the surplus has been sent abroad in large quantities. Nevertheless, the above does not stop independent operators from importing some volumes of this fuel type.

Total official domestic consumption of the 6 types of liquid fuels amounted to almost 33 m m^3 and was lower by 2.3 m m^3 than the one in 2019. The decrease of the market amounted to 6%, within which the imports fell by 9%, with a share in the total market estimated at 30% (i.e. 1 percentage points less than in the previous year). The official imports of fuels supplied to the Polish market amounted to 9.9 m m^3, which was slightly over 0.9 m m^3 less than in the previous year.

The structure of fuel consumption in Poland has been presented in Fig. 13.

Compared with 2019, there were slight changes in the structure of liquid fuels consumption. In Poland the consumption of diesel continues to prevail and this time its share amounted to 63% of overall liquid fuels demand, i.e. 3 percentage points more than in the previous year. The share of JET aviation fuel declined by 2 percentage points, and among other fuel types there were insignificant shifts.

The domestic demand for liquid fuels is mostly satisfied by the production in domestic refineries. For these facilities selling on the internal market is more profitable than exporting. At the same time such sales provide more revenues for the national budget. Thanks to effective monitoring of illegal fuel trade there is no need to export fuels which can be allocated internally. The domestic production alone, however, does not satisfy the demand, especially for such fuels as diesel or LPG. The balance of international trade in fuels for Poland is presented in Fig. 14.

The broadly understood dominance of fuel imports over exports was over fourfold in 2020. Due to a 9% decrease in imports and a 30% decrease in exports the difference between supplies from abroad and foreign shipments was almost the same as the one observed in the previous year. The volume of imports is mostly influenced by diesel and LPG. Exports are mainly dominated by heavy fuel oil, yet since launching the EFRA installation to process middle distillates in Grupa LOTOS foreign shipments declined significantly. If in the coming years the Polish economy recovers from the pandemic and continues to grow, just like before 2020, and if at the same time the fleet of vehicles circulating on Polish roads continues to expand at the rate witnessed in recent years, we might assume that current proportions between imports and exports will increase for the benefit of imports. A growing market will require more and more fuels, and the only way of satisfying this demand will be through imports. However, within the coming years even an effective increase in the number of electric cars, which have started to dynamically occur on Polish roads, is unlikely to change this. International trading balance for the Polish fuel sector will continue to be shaped mainly by diesel and LPG imports. After the economy has started to recover, a new phenomenon might arise, consisting in the necessity of importing petrol as well. The demand for this fuel type will continue to grow due to a more and more visible trend of moving away from vehicles fuelled by diesel, alongside with a growing number of cars circulating on Polish roads. This increase in the segment of passenger cars will mostly be generated by petrol-fuelled or hybrid-petrol vehicles.

FIG. 13 BREAKDOWN OF LIQUID FUELS EXPORTS IN 2020 [%]

Source: POPiHN's own data

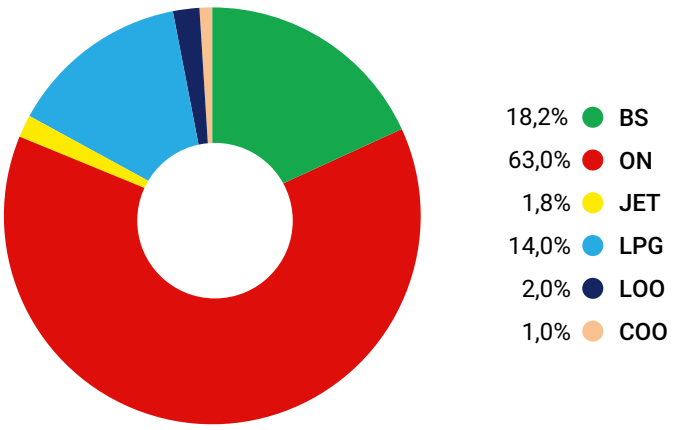


FIG. 14 BALANCE OF INTERNATIONAL TRADE IN LIQUID FUELS IN 2020 [in thousand m^3]

Source: Ministry of Finance and POPiHN's own data

**) – trade of domestic producers*

Description	Imports + Purchases	Exports + Supplies	Difference (2-3)
1	2	3	4
Petrols	648	287	361
Diesel	5 273	295	4 978
LPG	3 770	43 *)	3 727
JET aviation fuel	0	194 *)	(-194)
Light fuel oil	74	0	74
Heavy fuel oil	145	1 290	(-1 145)
OVERALL	**9 910**	**2 109**	**7 801**

Fot.: ANWIM

FILLING STATIONS IN POLAND

Since 2018 the statistics on the filling stations market in Poland have been run by the Energy Regulatory Office. The database of the country's infrastructure dealing in fuels has been continuously modified, yet it is also becoming more accurate year after year. The analysis for 2020 was carried out based on the data of the Office, as well as the information obtained from POPiHN members. In 2019 ANWIM S.A. joined the Polish Organisation of Oil Industry and Trade, which operated the stations under the logo of MOYA, and in the end of 2020 the ranks of the Organisation were strengthened by UNIMOT S.A., with the stations under the AVIA brand. Both these facts and increasingly reliable information from the Energy Regulatory Office make the estimates on the situation of the Polish fuel market more precise. More and more precise, especially in the light of still emerging information on stations operating without a concession, even though this number is decreasing year by year. Based on the Organisation's recent estimates, it results that at the end of the previous year the network of filling stations, which consists of publicly available sites selling at least petrol and diesel, comprised 7,739 outlets. Compared to the data from the end of 2019, this number grew by 111 stations. The increase in the number of stations can be explained by granting new concessions for fuel sales, increasingly accurate analysis of the market, but also the changes in the market, which is getting adjusted to new realities by modifying the structure of the filling stations' network, new investments or numerous acquisitions.

The market got adapted to clients' new requirements related to, for example, changes in the sales model due to the epidemiological situation in the country. It reflected the transformations resulting from new investments

FIG. 15 NUMBER OF STATIONS OF RETAIL OPERATORS IN 2018-2020 [in thousand m³]

Source: POPiHN's own data

	2018	2019	2020
Filling stations network	31.12.2018	31.12.2019	31.12.2020
Domestic Companies	2 282	2 306	2 324
Foreign companies	1 512	1 543	1 569
Independent Chains (operating under a common brand)	1 071	1 116	1 181
Other independent Operators (approx.)	2 708	2 467	2 478
Shops	192	196	187
TOTAL (approx.)	**7 765**	**7 928**	**7 739**

7 739

publicly available filling stations, which sell at least petrol and diesel

FIG. 16 FILLING STATIONS IN POLAND AT THE END OF 2020 [%]

Source: Energy Regulatory Office and POPiHN's own calculations

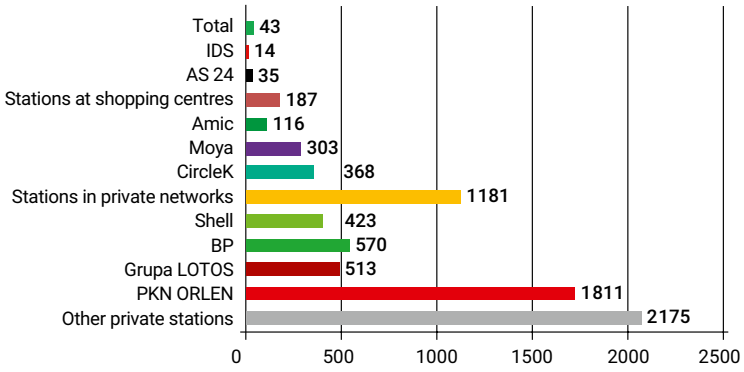
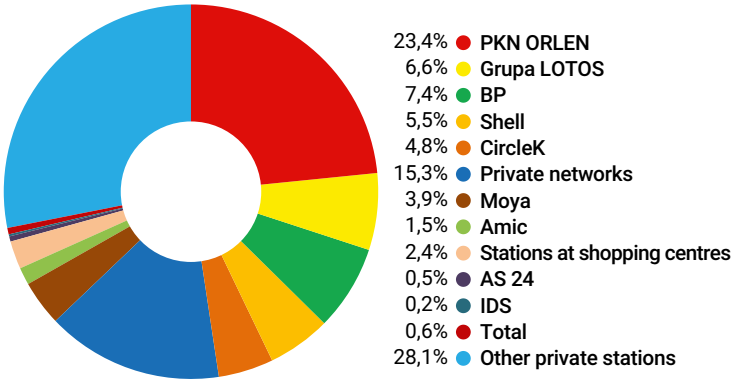


FIG. 17 BREAKDOWN OF FILLING STATIONS MARKET AT THE END OF 2020 [%]

Source: POPiHN's own data



or changes to the station's brand image. Acquisitions of stations from smaller operators to larger ones continued. A spectacular example of this would be the acquisition of e-MILA by ANWIM S.A., or finalising the acquisition of ARGE by BP. The acquisitions were mainly carried out in the segment of non-attached stations. They were performed by the largest domestic networks, also ones not attached to oil companies. The process of stations moving towards the model of a convenience store, i.e. a shopping and service centre where we can fill up, but also do basic shopping, rest during our journey, perform financial services, have something to eat or carry out basic car maintenance services, somewhat slowed down, which was to be expected in the difficult situation of pandemic restrictions. The ability to buy fuel without having to visit a filling station building gained in importance. Shopping applications at the pump were used for this, as well as the possibility of refuelling at fully self-service stations. The use of large and small catering facilities was restricted to meals served for consumption outside filling station buildings, whereas hotel services were restricted to business stays only. Filling stations operated under a full sanitary regime, taking care of the health safety of shoppers, but also of stations' employees. Great emphasis was placed on the availability of the necessary disinfectants in the facilities and for sale to the clients. Despite the difficult operating conditions, the costs involved in adapting the facilities to the new sanitary conditions and the losses in fuel sales caused by the numerous restrictions on the movement of citizens, the stations did not stop working for an hour and ensured the continuity of fuel supply to Poles and vehicles in transit. Worthy of mention is also the support provided by oil companies to medical services, for example ‚free coffee for medical professionals', serving medical vehicles out of turn,

Fot.: BP EUROPA

Fot.: CIRCLE K POLSKA

or purchasing medical equipment for hospitals and paramedic services.

At the end of 2020 the division of the market into the Organisation's members and the remaining operators was shaped in the following proportions: 55% to 45%. Thus POPiHN's members' market share increased by 2 percentage points. The Organisation's members owned 4,227 stations, while 3,512 stations belonged to the remaining operators. By category of owners of the overall number of stations, the following can be identified: 30% belonged to domestic companies, 20% to international ones, 2.4% to hypermarkets and 47.3% to private owners. The latter group comprised over 1,000 filling stations, which belonged to operators owning at least 10 stations functioning under one brand. The market share of this group of operators amounted to 19.2%. The process of acquiring independent stations by operators with a greater potential continued to take place also last year. Traditionally, franchising was the most common form of acquiring new stations, both for big domestic and international companies as well as private operators. Acquisitions were also carried out, although less commonly, by purchasing smaller private networks. Quite a large group of operators with good locations for their stations continued to run their businesses by themselves and did not undergo a consolidation of the market.

In 2020 the market leadership did not change. PKN ORLEN remained the market leader in filling stations in Poland. The BP network continued to be in the number two position, whereas Grupa LOTOS occupied the third place. National oil companies continued to operate under four brands, albeit on a smaller scale: ORLEN and BLISKA in case of PKN ORLEN and LOTOS and LOTOS OPTIMA in case of Grupa LOTOS. The number of PKN ORLEN stations under the green logo BLISKA decreased by 11 and closed the year with only 25 outlets. The number of economic stations of Grupa LOTOS decreased by 8 and amounted to 186. The measures aimed at harmonising the colours and offering a uniform standard of service at all filling stations within the network continued to develop in both companies. There was a growth in the segment of stations operating under international companies' logos in Poland. At the end of 2020 there were 1,569 such outlets, i.e. 26 more than in the previous year. In the segment of independent stations, MOYA, whose owner joined the POPiHN members' family in mid-2019, witnessed the best dynamics in terms of network development. Other private networks such as Grupa Pieprzyk or AVIA also continued to develop well. Franchising agreements were the main ways of acquiring new outlets, yet there were also new investments built from scratch within the networks of oil companies, large commercial companies, as well as independent operators.

Fot.: AMIC POLSKA

Preliminary estimates on the value of the retail market for fuel sales in Poland in 2020 oscillated around 109 bn PLN. The volume of fuels sold at filling stations was estimated at 26.7 bn litres (petrol, diesel and autogas). State budget revenue from taxation (VAT, excise duty, fuel surcharge, emission fee) from fuel sales amounted to around 65 bn PLN.

The number of filling stations under national companies' logos grew by 18 – just like in the previous year. The above resulted from new investments, but also improving the order and functioning in the network as the unprofitable stations were excluded, whereas patronage agreements of some outlets expired and were not renewed. Several older stations were upgraded and adjusted to new standards of service.

The network of motorways and express roads in the country is growing, whereas Poles are more and more willing to take advantage of this new option for fast travel. In 2020 there were 90 filling stations located on Polish motorways, i.e. 6 more than in the previous year. PKN ORLEN continued to be the leader in this category, operating 36 such filling stations, mostly located at MOP. Grupa LOTOS managed 23 such sites, BP had 16, whereas SHELL had 12 of them and CircleK owned 2 such outlets. Such sites, along with new stations located on motorways, are changing the geography of purchasing fuels by drivers. Even though fuel offered at this type of filling stations usually tends to be much more expensive, drivers do use them as they do not want to waste their time looking for other (cheaper) outlets somewhere close to main roads. Therefore filling stations, which until recently were natural facilities along these roads, are losing customers.

In 2020 PKN ORLEN increased the size of its filling stations network by 11 outlets, ending the year with 1,811 outlets. The company is systematically reducing the number of stations operating under the BLISKA logo: compared to the previous year, in 2020 it was reduced by 11, amounting to 25 stations owned at the end of the year. Outlets until recently functioning under the green logo of ORLEN are currently operating under the main logo of the oil company. The company also gained one motorway station.

Grupa LOTOS closed the year with 513 filling stations, i.e. 7 outlets more than in the previous year. 186 stations operated under the logo of LOTOS OPTIMA, i.e. 8 less than in the previous year. Just like in PKN ORLEN, some outlets changed their logo to LOTOS. The company opened up 2 new motorway stations.

International companies operating in Poland also expanded their networks. The vice-leader in the market, the BP company, owned 570 stations at the end of the year, Shell Polska owned 423 stations, 14 out of which operated in the self-service format, and CircleK closed the year with 368 stations, – i.e. 15 more than in 2019. Amic Polska had 116 outlets, i.e. the same number of stations throughout the year. TOTAL brand was present at 43 filling stations, having enlarged its network by 5 outlets. All the stations owned by the company operate under franchising agreements. ANWIM, which joined POPiHN in mid-2019, managed 303 outlets under the MOYA logo, which means that it enlarged its network by 59 outlets.

Just like in previous years, the segment of the so-called independent stations in Poland shrank in 2020. Some companies were closed down, others had their concessions verified positively or negatively, new outlets emerged and some rebranded to big oil companies' logos. Adopting the POPiHN's nomenclature (independent networks are the ones where under one logo there are at least 10 outlets), this group of operators expanded the number of their outlets to 1,181. In 2020 the most active private network was MOYA, which grew by 24% throughout last year. This was another year in a row of intensive development for the company (as in 2019 it grew by 20%), which is currently POPiHN member. Among other active operators there were Pieprzyk or UNIMOT, which developed the AVIA brand and at the end of the year it owned 61 stations in that network. The above means that the network grew by 11 stations, which had functioned as independent ones before. Since December 2020 the company has been among POPiHN members. Together with the development of independent brands, it is becoming more and more attractive for the remaining independent operators to enter into such alliances, especially given the fact that in such associations there are usually less strict operating rules than in the networks of big oil companies. For many private operators it is a significant argument to consider while changing the logo on their stations. Altogether, fuel stations belonging to this group of operators are in the number two position in terms of a group of organised outlets which carry out retail fuel sales. Such outlets are becoming a real competition to the filling stations owned by big oil companies, not only regionally, but across the whole country.

The number of filling stations owned by super- and hypermarkets in 2020 decreased by 9 outlets and amounted to 187. This disadvantageous change resulted from TESCO's withdrawing from the Polish market: the company's network was partially acquired by other operators. Outlets owned by super- and hypermarkets, despite constituting a relatively small market share, are attractive price-wise to the buyers and as a result they have high fuel sales volumes and their share in retail sales is usually three times higher than the share in the filling stations market. The pace of opening new stations at such retail outlets, announced the previous year, was arguably affected by the pandemic-driven trade restrictions.

Increasingly precise data from the database of the Energy Regulatory Office regarding fuel infrastructure in Poland along with more and more companies grouped in POPiHN allow to accurately determine the number of fully independent filing stations. This segment of the market is undergoing constant transformations, which is an added challenge while trying to clearly define how many outlets in the country actually operate as independent ones. Despite the above fact, we are getting closer to specifying this number. Gathered information shows that at the end of 2020 in Poland there were almost 2,500 outlets operating as independent or grouped into small local networks. The stations that were taken into consideration were the publicly available ones offering at least 2 fuel types (P and D). Apart from such stations there are also outlets that only trade in autogas or diesel, yet they are a significant minority when compared to the ones described above and thus they are not taken into account in our analyses.

Fig. 17 shows the percentage breakdown pie of the filling stations market in Poland, divided into groups of retail operators. Compared to the previous year, the group whose share in the pie increased the most, i.e. by 4 percentage points, was the one referred to as 'private networks', gathering companies that own at least 10 filling stations under one logo. Such integration of independent companies with big oil companies, which is, on the one hand, an increasingly growing competition for them, on the other hand led to a decline by 4 percentage points in the share of the remaining independent companies in the overall filling stations market. The remaining companies, including the biggest networks' operators, practically managed to maintain their positions and shares from the previous year.

Electric car chargers are a new element that has been appearing at filling stations for the past two years. As the number of electric powered vehicles continues to grow, battery charging services are becoming increasingly available at the stations across the country, which until now have been selling exclusively petroleum fuels. According to the data provided by the Polish Alternative Fuels Association, at the end of 2020, there have been a total of 1,364 charging stations, out of which 452 offered fast (DC), and 912 slow (AC) charging. POPiHN established that out of this number, 105 fast and 45 slow chargers were installed at filling stations that also sold classic liquid fuels, representing 23% and 5%, respectively, of all fast and slow chargers. Such services offered at filling stations, especially in regards to fast charges, are likely to become more widespread in the future, along with the annual growth of the number of registered EV's.

109 bn PLN

Estimated value of the retail market for fuel sales in Poland in 2020

THE RETAIL MARKET OF LIQUID FUELS
from POPiHN members' point of view

As in previous years, this section of the report is devoted to the description of phenomena and trends taking place on domestic market for retail sale of liquid fuels on the basis of data obtained from POPiHN members. The representativeness of the sample, based on which we evaluate the changes taking place on the market, increased as two companies joined the Organisation: in 2019, ANWIM S.A., managing the network of MOYA stations, and in 2020, UNIMOT S.A., administering the network of stations under the AVIA logo. Thus the network of POPiHN members' stations, including partner stations of Slovnaft, grew to 4227 outlets and at the end of the year in question amounted to 55% of all filling stations operating in Poland, publicly available and selling at least 2 types of fuel, i.e. petrol and diesel.

FIG. 18 FILLING STATIONS MARKET IN POLAND [%]

Source: Energy Regulatory Office's and POPiHN's own data

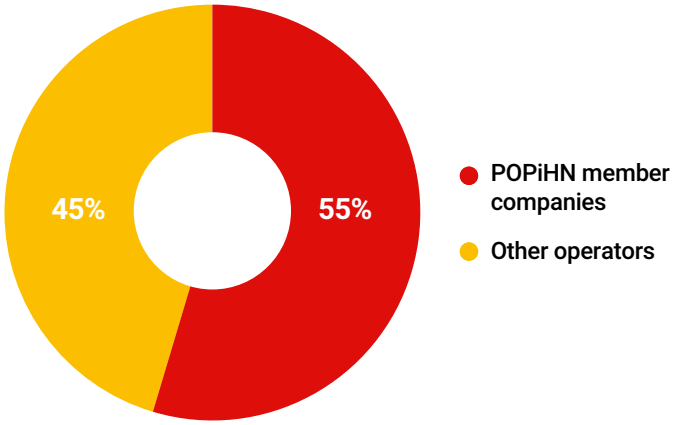
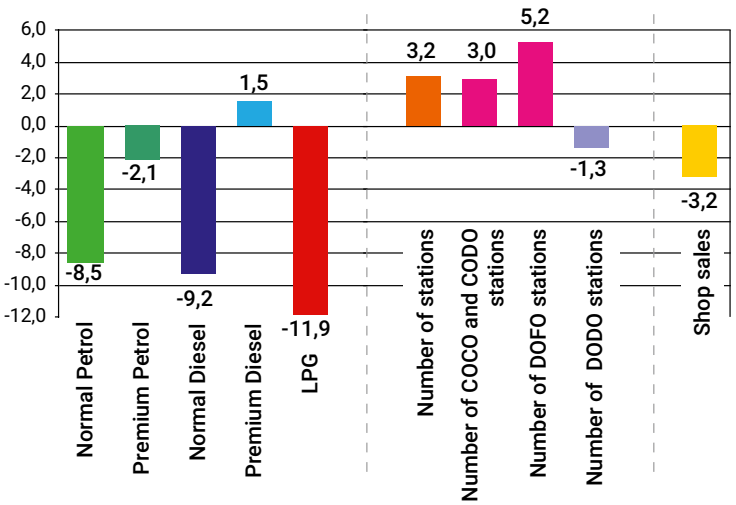


FIG. 19 CHANGES IN RETAIL SALES OF FUELS, IN NUMBER OF FILLING STATIONS AND IN SALES AT STATION SHOPS IN 2020 COMPARED TO 2019 [%]

Source: POPiHN's own data



The continuously updated database carried out by the Energy Regulatory Office supplements information on liquid fuels infrastructure gathered from POPiHN members. Based on the two above-mentioned sources, in 2020 it was possible to determine a real number of filling stations and then attempt at relating trends observed in the largest market operators to the whole filling stations market in Poland. It was also possible thanks to smaller networks continuously following the trends observed in the biggest shareholders on the retail market. There are some differences as regards the details, yet in general the trends are compatible regardless of the number of outlets in the network. The Organisation assumes that in Poland at the end of 2020 there were slightly over 7,700 filling stations, operating in the formula adopted for the analysis (publicly available outlets selling at least petrol and diesel).

The analysis is thus performed on a sample comprising about 55% of the market. The remaining part of the market belongs to the independent operators, from whom it is very difficult to obtain any information on their market data. Therefore the overall market can only be assessed by transferring the results and experiences of the biggest operators onto the remaining part of the market. Besides, it is rather more indicative of trends than of the actual activities of smaller operators, especially those who are not linked in alliances or purchasing groups.

The stations operating under the logo of POPiHN members in Poland in 2020 performed around 71% of overall retail sales of petrol, about 49% of diesel and 4% of autogas. Such shares allow to present the trends and changes occurring on the whole market for retail sale of fuels. The number of outlets of the POPiHN members, which constitute the majority in the whole pool of filling stations, also allow assessing other activities apart from fuel sales. What we mean is, namely, non-fuel retail operations carried out at the station shops as well as other services such as fast food outlets, relax during the journey or basic services related to vehicle maintenance. The standards of service and scope of non-fuel activities implemented at the stations of the market leaders serve as a model to be followed by other companies selling fuels to drivers. It should be noted, however, that in this group of operators the following are appreciated: a certain degree of freedom and greater adaptation to local expectations as regards fuel sales and shop supplies. Nonetheless, under franchising regime, such loosening of rules is more difficult, and often impossible.

The most important changes in the retail sales market for fuels in POPiHN members' station networks and their operations are shown in Fig. 19. Compared to 2019, standard fuel sales were negative, unlike the year before and due to the reasons described in the previous chapters of the Report. The negative result was observed in the sales of premium fuel, just like the year before, yet at that time it was due to the prices of fuels. However, it is worth emphasizing that in terms of percentage, the decreases for this type of fuel were smaller than for standard

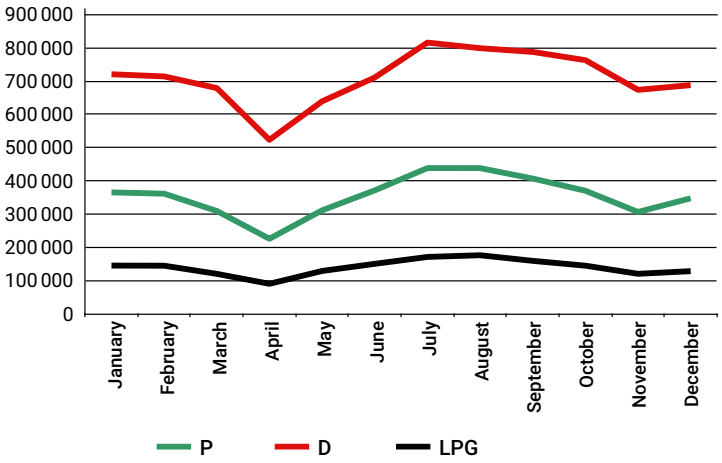
petrol. High-octane and upgraded petrol prices were much lower than the year before, which favoured purchasing such fuels. The same was true for diesel, in the case of which premium type sold even better than in the previous year. A significant decrease in demand, the biggest out of all fuel types, was observed for autogas. The number of stations under POPiHN members' logos grew. Those companies acquired the biggest number of outlets through the franchising formula (DOFO), yet there was also an increase in the number of their own stations, often built from the scratch, operating within the biggest networks. Such movements mean that the consolidation of the filling stations market was increasing around the biggest market operators, both big oil companies and the ones from the independent stations sector. The above is also confirmed by a decrease in the number of stations operating under DODO formula.

Compared to the previous year, station shops, which, apart from car accessories, offered increasingly diversified scope of FMCG goods, as well as other everyday goods, and which expanded their fast-food offer and vehicle maintenance services, witnessed a marked decline in sales. The above resulted from pandemic restrictions. The number of shops at filling stations increased alongside the development and modernisation of the station market. Filling stations' operators are aware of the fact that a regionally customised trade and service offer is the best bait to attract drivers and customers who more and more often come to filling stations without cars. This is why the offer is constantly being expanded. Pandemic times will one day come to an end, and then new investments will result in new income, allowing filling stations to be maintained and workers to earn decent wages.

Premium fuels, with their own names given to them by individual brands, were mostly sold by the stations owned by oil companies. It should be noted that in this segment of sales there also appeared independent companies, elaborating their fuels with higher performance parameters, while some independent operators sold high-octane petrol as well. In 2020 there was an increase in the sales of premium diesel, and the dynamics of declines in the sales of premium petrol was lower than in the case of standard petrol. Lower prices of premium fuels (compared to the previous year) favoured their sales. The above fact was appreciated by drivers, who already in previous years discovered a positive influence of such fuel on the engines' condition and its pro-environmental benefits. Similarly to the previous years, such fuels were more expensive than the standard ones by 0.25 – 0.35 PLN per litre, yet their price, for a long time remaining below the level of 5 PLN per litre, was a major incentive to buy them. In the overall retail petrol sales volumes of the POPiHN members the share of premium type was slightly bigger than the previous years' and amounted to approximately 11%, whereas in the overall petrol market in Poland it was 8.5%. The market share for premium diesel amounted to 13% in the overall retail market for POPiHN members, which translated to 5.5% of the overall domestic sales. Thus, there was an increase in the share of premium fuels in the overall sales volumes of liquid fuels. Furthermore, a larger volume of such

FIG. 20 SALES OF MOTOR FUELS AT POPIHN MEMBERS' STATIONS IN 2020 [m³]

Source: POPiHN's own data



fuels was sold. Therefore, whenever the prices allow them to do so, the drivers increasingly appreciate exploitation aspects related to purchasing better quality fuels and are willing to buy them in larger volumes, even if the costs are higher than while purchasing the same amount of standard fuel.

The forecasts elaborated by POPiHN in 2020 assumed increases in the sales of regular EU95 petrol and regular diesel, which, based on the then available data, was very realistic. Unfortunately, the pandemic and the restrictions related to it changed everything. In fact, the year started well and during the first two months the sales were increasing, yet starting from March, the trend reversed. As a result, throughout 2020 stations owned by oil companies, as well as other outlets sold less standard fuels than the year before. Altogether filling stations owned by POPiHN members recorded a 9% decrease in standard petrol sales and a 9% decrease in standard diesel. The diesel market was somewhat saved by sales outside filling stations – to direct wholesalers, which in the end resulted in a smaller decrease in the overall sales volumes of this fuel type than in the case of petrol, which is almost entirely sold through filling stations. Once again, the strength of the Polish economy, for which diesel is the most important transport fuel, despite difficult pandemic conditions, had a stabilising effect on the sales volumes of this energy carrier.

In 2020 POPiHN members expanded their networks, mostly by gaining new outlets in DOFO formula from filling stations belonging to private operators. Apart from this currently most effective method of gaining stations, new investments were also undertaken, leading to an increase in the number of stations operating under the formula of COCO and CODO. Instead, cooperation with companies operating stations under DODO agreements continued to be abandoned.

For independent operators, just like in the previous years, the franchising formula was the most popular method to expand the brand, yet also in this segment there were new sites built from scratch.

The increase in the number of POPiHN members led to an increase by 3% in the number of shops

Fot.: ANWIM

FIG. 21 CHANGES IN RETAIL SALES AT FILLING STATIONS IN 2020 [month/month as %]

Source: POPiHN's own data

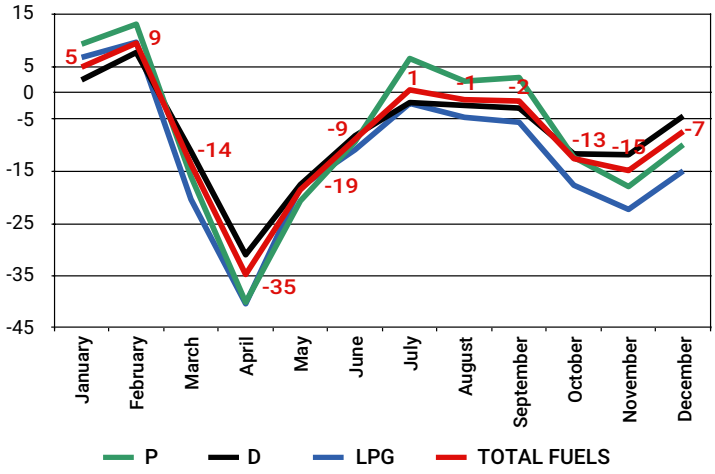
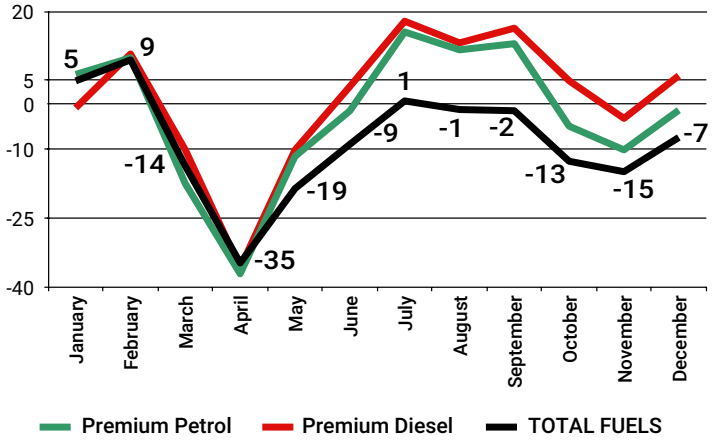


FIG. 22 CHANGES IN PREMIUM FUEL SALES AT FILLING STATIONS IN 2020 [month/month as %]

Source: POPiHN's own data



operating within these filling stations. The dynamics as regards the number of active sites at the end of the year grew by 4%. Unfortunately, the increase in the number of outlets did not trigger the increase in the sales volumes. The unambiguous reason for the above were the restrictions in movement forced by the pandemic. Such declines were observed for the overall number of shops, yet there were sites with better sales volumes than the year before.

The decrease in the turnover value of sales in the segment of shops at POPiHN members' stations amounted to 3.2%, while for an individual shop the sales statistically decreased by 6.1%. Such was the scale of the impact of the pandemic. The sales volumes were somewhat strengthened by purchases carried out in non-trading weekends. It was, however, observed that the Poles are becoming less and less interested in doing the shopping on such free weekends. In such a difficult situation even expanding the offer (by, for example, protection and personal hygiene products) and range of goods together with a growing number of shops did not translate into positive results. It did, however, slightly limit the declines. Effective operations of a shop to a large extent depend on the frequency of visits to a filling station in order to fill up, and in 2020 such activities were significantly limited.

Fig. 20 presents monthly retail sales at POPiHN members' filling stations [month/month as %] The moment when the pandemic struck is clearly visible and the seasonal nature of sales is more marked than the year before. The above can be interpreted as the Poles' desire to unwind when the epidemic restrictions were loosened during the holidays. The results towards the end of the year again reflect reintroducing the restrictions.

In 2020 POPiHN members' filling stations operating under the DOFO formula recorded the lowest falls in sales volumes, i.e. (-4%). For COCO and CODO stations the decreases equalled, respectively, (-9%) and (-12%). Such results were to a certain extent

influenced by a bigger increase in the number of stations operating under franchising agreements than stations in other groups, but also by the location of certain groups of stations, which was very visible in the pandemic. Similar decreases as in the case of all fuel types overall were also observed for individual fuels. Also in such breakdown the falls were the lowest in the case of stations under franchising agreements.

Margin levels obtained from fuel sales slightly grew when compared to the previous year, and at the same time they were still not sufficient to enable filling stations to maintain themselves just from the fuel sales. Margin levels were positively influenced by relatively good prices in retail trade, which allowed operators to achieve slightly better profits from the sale of every litre of fuel. Nonetheless, a station shop continued to be a place where most station's profits from the operation of the entire site were generated. Only very specialised or complex companies can allow running stations whose only task is to provide fuel for vehicles. The pandemic significantly reduced the income generated from shop sales, including mainly catering services.

Changes in fuel sales at the stations owned by POPiHN member companies between individual months of 2020 are presented in the diagram in Fig. 21.

After two first months of the year there was a decrease in sales volumes to the level of (- 35%), and for some fuels even to (- 40%). In holiday months there was hope for increases in demand. They were observed for petrol, among others, yet reintroducing pandemic-related restrictions in the autumn again lowered the sales by 15%. In the light of slightly loosened COVID-19 restrictions, the Poles spent their holidays in the country, which was also reflected in fuel sales.

For the year as a whole, the average decrease rate of fuel sales at stations owned by POPiHN member companies was 8.4%, whereas diesel sales showed a decrease of 8%, petrol – also 8%, and autogas – a decrease of 12%.

Analysis of petrol and diesel sales growth data of POPiHN members and results of total official fuel consumption in the country shows similar decreases in petrol sales and bigger decreases for diesel. Autogas sold better at the stations belonging to POPiHN members than at independent ones.

Overall fuel sales volumes were slightly strengthened by the sales of premium fuels, which, despite being more expensive than standard ones, witnessed a smaller decrease in sales dynamics. In the case of petrol this relationship was, respectively, (-8%) to (-2%), whereas for diesel it was (-8%) to (+2%).

In the 2019 Report POPiHN assumed that then, while observing price levels and trends on the market of new and second-hand cars, there would be further faster sales growths of enhanced fuels. Perhaps, taking into consideration the results from the beginning of the year, the holiday months and the end of 2020, this forecast might have come true had it not been for the pandemic, which dramatically changed the market. As regards petrol, good sales volumes in the above-mentioned periods did not manage to guarantee a positive result for the whole year (-2%). It was better when it comes to diesel, the sales of which grew by 1.5% on average annually. We can assume that once the pandemic has been brought under control and the related restrictions lifted, there is still space for improvement

FIG. 23 MARKET OF SHOPS AT FILLING STATIONS OF POPIHN MEMBERS IN 2020 [%]

Source: POPiHN's own data

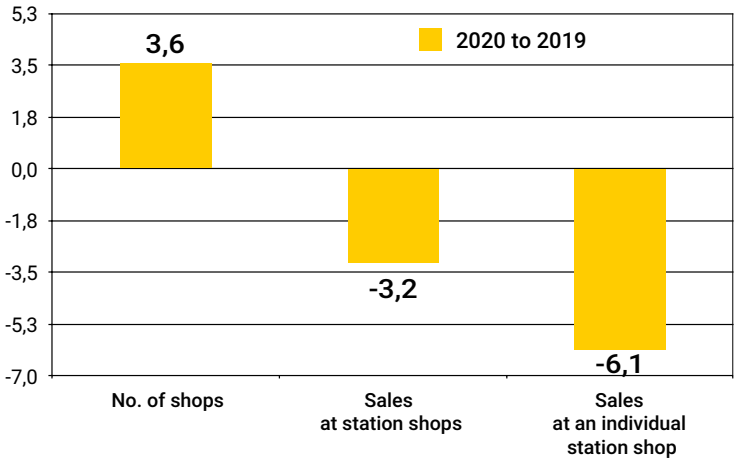
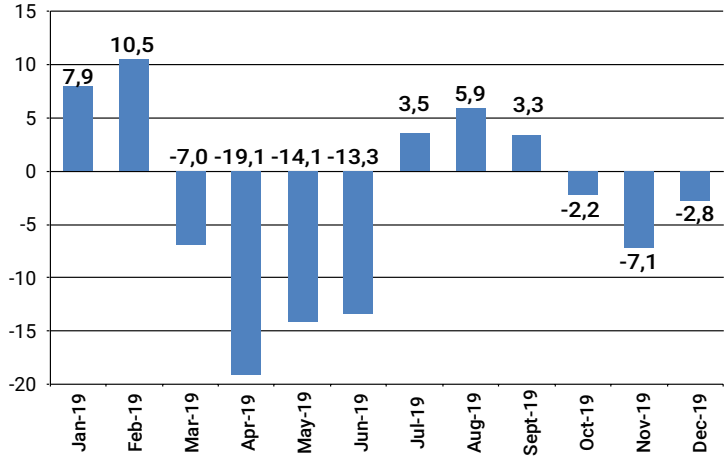


FIG. 24 CHANGE IN VALUE OF SALES IN SHOPS OF POPIHN MEMBERS IN INDIVIDUAL MONTHS OF 2020 COMPARED TO 2019 [%]

Source: POPiHN's own data

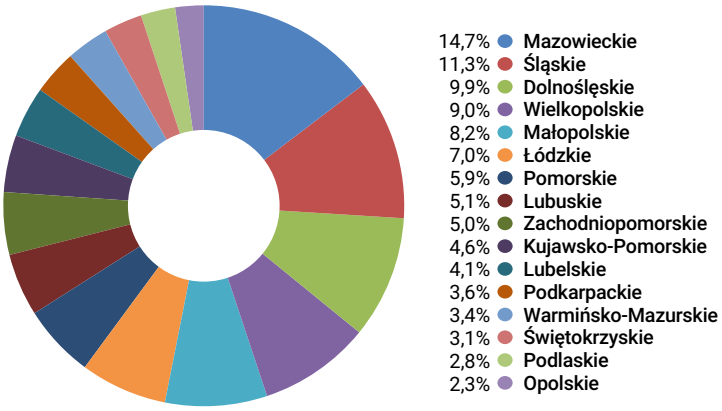


in premium fuel sales, especially given the fact that severe winters may be back and E10 petrol with increased alcohol content in standard fuel is planned to be introduced into the market. Besides, according to market research, Poles plan to buy new and younger second-hand vehicles, and such purchases favour enhanced fuels. As long as pricing conditions, regarded as a litmus test for premium fuels, do not restrict this market, we can expect positive sales in volumes year over year, starting from 2021.

With the use of information gathered by POPiHN members and the official database on fuel logistics elaborated by the Energy Regulatory Office it was possible to determine that at the end of 2020 in Poland there were around 7,700 publicly available filling stations, trading in at least two types of fuel (P, D). Among them, 4,149 outlets (the calculations exclude Slovnaft partner stations as POPiHN does not have data regarding this

FIG. 25 DISTRIBUTION OF RETAIL SALES OF FUELS BY POPIHN MEMBERS IN POLAND IN 2020 [%]

Source: POPiHN's own data



network) operated under the POPiHN members logo, out of which 4,093 sold fuels at the end of the year. The remaining part underwent renovations or modernisations. The above means that the number of active outlets grew by over 3%. The increase was a result of carrying out new investment projects, opening some of the stations after their modernisation, but also taking over a certain number of stations from the independent sector. Within the group at the same time work was underway on optimising the localisation of stations in the network and sales policy, carried out in difficult market conditions. On the one hand, it led to terminating some cooperation agreements, but on the other hand to concluding many new ones. The above changes resulted in the increase of own stations in the group of POPiHN members by 3% to 2,879 and stations operating under franchising formula by 5.2% to 976. The number of stations under DODO arrangements witnessed a 1.3% decline, amounting to 294 outlets.

Alongside the increase in the number of POPiHN members' own stations, we observed a growth in the number of stores located at filling stations. Altogether, at the end of 2020 the total number of stores operating under the formula COCO+CODO was 3,064 (93 more than in 2019), out of which 3,020 stores (105 more than in 2019) were engaged in commercial activities at the end of the year. Unfortunately, in the difficult pandemic reality the growth in the number of stores was not accompanied by increasing turnovers in those stores. POPiHN does not have information on sales volumes from all the shops operating at filling stations under POPiHN members' logo. DOFO and DODO formulas allow certain freedom when it comes to supplying shops with the goods and some variations when compared to the sales policy implemented at the stations shops under CODO and COCO formulas. Therefore franchisors do not have complete data on sales volumes from shops at outlets other than their own stations. Therefore the data used for analyses comprise information gathered from affiliated companies' shops operating at stations under CODO and COCO formulas and active at the end of 2020. The number of such sites amounted to 2707, which, compared to 2019, is an increase by 60. The turnover of shops in this group of outlets decreased altogether by 3.2% and

Fot.: TOTAL

Fot.: UNIMOT

equalled around 5.9 bn PLN. The turnover of a single shop decreased by 6.1% and on average was on the level of about 2 m. PLN.

As we can see in Fig. 23, neither expanding the sales offer nor more non-trading Sundays nor even another batch of vehicles newly registered in Poland did not manage to prevent sales volumes from decreasing. Pandemic-driven restrictions and thus fewer drivers and clients without vehicles visiting filling stations, as well as food served only as takeaway option led to significant decreases in turnover at the outlets in question. Filling stations, especially in smaller locations, were often the only source of most needed goods, including products for personal protection against COVID-19, in places without pharmacies or grocery shops operating on Sundays or during night-time. Filling stations and their shops operated non-stop, providing their employees and clients with adequate anti-pandemic protection, both outside at the pumps and inside shops.

The graph in Fig. 24 shows overall sales volumes in stores located at filling stations between individual months in comparison with the same months in 2019. We can clearly see a good beginning of the year, the first lockdown, reduced restrictions during in holiday months and renewed pandemic-related restrictions towards the end of the year. In such a difficult situation a decrease in sales volumes by slightly over 3% should be considered a very good result.

Pandemic-related restrictions only marginally changed the geographical distribution of fuel sales in Poland. The information shown in this graph was based on data provided by POPiHN members, yet it can most probably be applied to overall retail sales volumes of fuels in Poland. Traditionally, the province with the biggest sales volumes of vehicle fuels was still Mazowieckie, whereas the lowest volumes were recorded in the Opolskie province. Sales in 5 provinces continue to exceed the overall sales volumes in the remaining 11. The largest increase in sales volumes was recorded in Śląsk (by +2 percentage points). For the remaining provinces the changes in sales volumes oscillated around maximum +1 or (-1) percentage point.

The graph shows total sales of petrol, diesel and autogas. Separate sales of each of these fuel types present minor discrepancies from the presented graph, however, they are so small that the general scheme is assumed to fully display the retail sales trends in Poland.

PANDEMIC-RELATED RESTRICTIONS ONLY MARGINALLY CHANGED THE GEOGRAPHICAL DISTRIBUTION OF FUEL SALES IN POLAND.

DEMAND FORECAST FOR THE POLISH MARKET UP TO 2030

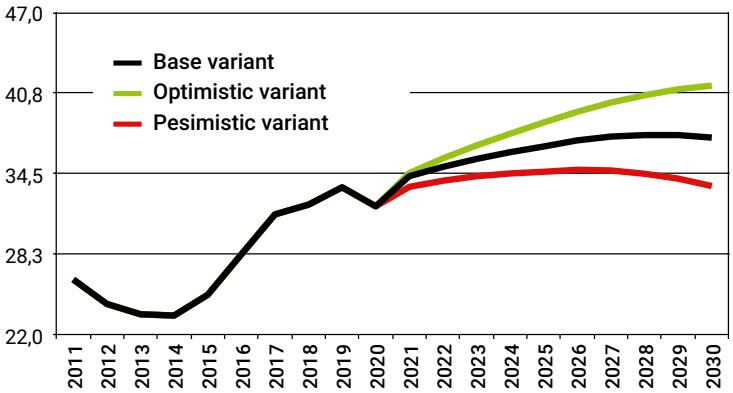
COVID-19 pandemic has caused changes throughout the global economy. Crude oil and finished fuels market did not resist those changes either. Significant reductions in the demand for oil products, also in Poland, led to modifications in the liquid fuel demand scenarios elaborated every year by the Polish Organisation of Oil Industry and Trade. The new version was developed based on the latest trends observed both in Poland and around the world with the use of expertise of the employees of POPiHN member companies and the Organisation's office. Available data on fuel consumption in Poland for 2020 as well as the trends from the previous years have been taken into account. Different variants of the possible effectiveness of combating the pandemic were analysed, as well as the possible changes in social habits, which may become ingrained even in the absence of pandemic threats. The results of petrol, diesel, liquefied petroleum gas, and light fuel oil consumption – far from levels projected just a year ago – indicate how delicate the matter is in regards to petroleum fuels market. Virtually none of the scenarios from the previous forecast did anticipate the market to collapse to such extent as it happened in 2020. In case of the Polish economy, the sales of diesel have a major impact on the shape of the entire petroleum sector. In the face of the pandemic, relatively limited dips in the demand for this particular fuel have prevented further downturn in the market. In the past, this market segment was the main area of illegal fuel trade. Nevertheless, owing to services' efforts and limited cross-border traffic, the grey economy was kept a marginal level while the epidemiological restrictions were in place, i.e. an otherwise seemingly favourable time for illicit trade. This allowed to maintain production at a relatively high level and curb production losses at domestic refineries. Additionally, substantial drops in supply and retail prices for motor and heating fuels have positively contributed to fuel sales and, to some extent, alleviated the impact of the crisis. Moreover, in spite of fewer new registrations than a year ago, the fleet of ICE vehicles has grown. A total of ca. 1.2 m cars were either purchased from dealerships or imported from abroad. Analytical works on the updated version of scenarios also aimed at including, besides the fallout of the pandemic, the most recent changes in the economy in regards to fuel consumption, energy transformation, and the new circumstances shaped by the growing impact of the European Green Deal. Several variants of the scenarios were preserved to reflect the possible trends in Polish economy and in buying habits of Polish drivers.

The new variants of the base and optimistic scenarios predict efficient curtailment of anti-epidemic measures as early as in 2021, through widespread vaccinations and society's boosted natural resistance to COVID-19. It was also assumed that in the near future the prices of crude oil and finished products on international markets would for sure be higher than in 2020, yet rather stable and similar to the levels observed at the end of 2020. It was assumed that the USD-PLN exchange rate would remain similar to the previous year's. The main focus points in Poland include the post-pandemic economic recovery driven by national funds and European support – both under the Economic Recovery Plan and the new 2021-2027 budgetary perspective. These measures should result in growth of investments in infrastructure and in the transition of Polish economy towards zero emissions targets. The assumption was maintained that in the next couple of years there would be no significant changes in the drivers' preferences and that there would be more interest in buying cars with petrol engines, hybrid and electric ones rather than vehicles with diesel engines. It was also assumed that social subsidies, e.g. in the form of 500+ programme would be maintained, that there would be increases in the average domestic salary and the unemployment level would be low. Another assumption was that alternative fuels in the next few years would not significantly influence the traditional fuel market.

The baseline scenario was constructed on the assumption that from 2021 onwards the Polish economy would grow again at a rate of over 4% of GDP annually, that the trend increasing the efficiency in combating the shadow economy in the coming years would continue and that the range of fluctuations in the USD-PLN exchange rate would not exceed 10% of the level of PLN 3.7, observed at the end of 2020. This scenario assumes that in the long term crude oil quotations would be maintained at the level of between 50 and 70 USD/bbl. Although contingencies unpredictable today, such as the ones related to the pandemic, can significantly change the worldwide demand for energy resources, it is assumed that a decline in crude oil demand should not exceed 20-30%. It will obviously affect the price quotations, yet it can be quickly compensated by production cuts in the OPEC+ countries. Thus it was assumed that crude oil prices should remain stable for about two years. Then there is likely to be an increase up to the level of approximately 80 USD/bbl annually. Additionally, the steps expected to be taken in Europe, the United States, and China, aimed at phasing out petroleum fuels and replacing them with more ecological energy carriers, should translate into a stable situation on the international oil market. This seems

FIG. 26 SCENARIO FOR LIQUID FUELS DEMAND IN 2020-2030 (in m m³)

Source: POPiHN's own data



Fot.: SLOVNAFT-MOL GROUP

to be reflected by the flexible production from shale reservoirs in the US in the context of high increases of raw material prices. It is expected that 2021 will bring increases in fuel consumption after the pandemic and that the demand will reach the levels from 2019. This trend will be maintained, yet the increase will slightly slow down after 2021 and translate into growths of the volumes of essential fuels, which will have to be supplied mainly from abroad. The growth effect should be achieved through continuous (over the next 3-4 years) increases in demand for diesel and petrol. Petrols – used in pure petrol and hybrid vehicles – should gain a larger share in the individual transport market, at the expense of diesel-powered passenger cars. Due to the growing cost of purchase of liquid petroleum gas and not including LPG in the list of alternative fuels, which allow the vehicle to enter clean air zones in the cities, it is assumed that over the next several years, LPG-powered cars will be gradually substituted with hybrid or electric vehicles (e.g. taxis, city supplies, car rentals). Despite high market saturation, it is expected that the number of cars in Poland will continue to grow. This comes as a consequence of the increasing level of wealth of the society, pandemic-induced habits of avoiding public transportations, construction of new roads, and lack of incentives for using collective transport. It is likely that, for a time, lingering pandemic-induced habits will positively contribute to using passenger cars for holiday and business travels. In the long run, as recommended by the EU, the role of public transport, especially in medium-sized and big cities, as well as in long distance travels, is expected to grow. The above will be possibly related to the implemented, especially in city centres, limitations on using individual vehicles, restrictions in the number of parking spaces, increases in parking fees, as well as limiting urban space, adapting to the needs of motorists. Public transport, together with car-sharing, will become more and more ecological thanks to using an increasingly growing range of vehicles powered by alternative fuels. Railway and airplanes – powered with more environmentally-friendly fuels – will be promoted for long-haul traffic. Similarly to previous scenarios, it is assumed that a downward demand trend for light fuel oil shall continue, which is related to switching to other energy carriers (photovoltaic energy, natural gas, biogas). In this scenario the domestic market demand for liquid fuels in 2030 is currently estimated at around 37 m m^3, i.e. approximately 1 m m^3 less than it was forecast in 2020.

The optimistic scenario assumes, apart from the same assumptions as for the baseline variant, quickly exiting the pandemic constraints and slightly lowering the level of crude oil and fuels quotations (by approximately 20% in relation to the data presented above). Besides, it assumes a slower development of the sector of vehicles running on alternative fuels, especially electric car market, which, considering our remuneration levels and the prices of such vehicles in Poland, is highly probable. Moreover, it is predicted that there will be a potential increase in the growth rate of the domestic economy, with a GDP of over 5% per year. This would significantly increase the need to use bigger volumes of diesel. In this scenario the domestic market demand for liquid fuels in 2030 is estimated at around 41 m m^3, i.e. approximately 2 m m^3 less than it was previously forecast.

The pessimistic scenario assumes a long-lasting fight with the pandemic and its consequences, lower prospect for growth of the Polish economy on the GDP level below 3%, and economic slowdown in the EU. Besides, it forecasts a significant depreciation of the Polish zloty (PLN) compared to other currencies, which would lead to increases in the prices for final consumers. Another variant, yet with a similar effect, would be a destabilisation of the international situation

and substantial increases in the prices of crude oil, causing significant increases in the costs of the functioning of the Polish economy. Rising internal inflation might translate into increases in fuel prices and more fiscal burdens. As was almost always the case in the past, the fuel sector will be hit first, which might affect a decreasing demand. An increase in fiscal burdens and high fuel prices could, once again, get the grey fuel market moving. Taking into consideration these pessimistic assumptions, the demand for liquid fuels in 2030 is estimated at 33.5 m m^3, which is significantly less than in the baseline version of the scenario.

The year 2020 will go down in history as the first year in a long time when the demand for petroleum fuels has substantially shrank, thus breaking the uninterrupted growth tendency. Presumably, the global demand for crude oil has declined by ca. 6%. The pandemic has taken the entire economy by surprise, and companies from fuel sector are not an exception. Maintaining business continuity became the overarching objective for the firms, especially in the initial stage of the introduction of mobility restrictions and during the lockdown of society at the end of the year, imposed in response to the second wave of the pandemic. Across the majority of countries, including Poland, the decline in fuel sales in the initial stages of the epidemic amounted to as much as several dozen percent, both month-on-month and in relation to the corresponding month of the preceding year. Fuel companies needed to adjust their operations to these challenging circumstances. Alongside steps aimed at limiting as much as possible the decrease in sales, actions were taken to protect the health of workers and clients. Emergency contingency plans were implemented, in order to maintain continuity of production, logistics, and sales. These actions seem to have worked: there has been not a single hour that the drivers would be denied the supply of motor or heating fuels.

As this report is being prepared, it seems that the world is likely to return to the 2019 situation, with the global demand for crude oil amounting to ca. 100 m bbl per day. At least such is the beneficial impact of the vaccine, according to analysts' predictions. This is not, however, the end of the fossil fuels era. Some of the countries that managed to control the pandemic are recovering from the crisis at a rate of development that even surpasses the one from before COVID-19. China estimates to reach its peak demand for crude oil in 2025. Also according to International Energy Agency and OPEC projections, 2021 will see a rebound in the global petroleum market. The presented POPiHN forecasts predict that the growth of demand for classic fuels in Poland will not cease to grow before the year 2027/2028. Therefore, if the pandemic is successfully put under control and the economy goes back to business-as-usual (although probably in a slightly changed form) the petroleum sector will recover, or perhaps even become stronger. This will be driven by the growing number of cars, changing travel habits of Polish citizens, and the need to cover economic losses more quickly. Yet, today some things can only be assumed, as nobody knows how long the pandemic will last and what will its final impact be. One thing remains certain: the world cannot exist without energy, nor can it grow. Meanwhile, new sources, i.e. other than crude oil, are too scarce in the global scale, to put oil out of the game.

Other challenges that lay ahead of the petroleum sector are related to shifting today's industry to low-carbon economy, in line with the new requirements of the 'Green Deal'. The objectives of the sustainable environmental policy are attainable with the reasonable use of the knowledge and the capital of fuel companies. Building low-carbon economy is bound to define the new identity of the transport sector for the next few of years, and thus it will set new objectives also for the petroleum industry. It is impossible to substitute billions of litres of petrol and diesel fuel that power millions of cars on Polish roads overnight. Today, the key alternative fuels include LPG and natural gas. Eventually, it is the 'green' hydrogen that has the potential to become the fuel of the future, being a mean of powering vehicles that offers the lowest emissions. Bio-methane, synthetic fuels, and electricity from renewable energy sources will also play an important role over the next few decades. The world of tomorrow is green, and so should be the goals of the companies involved in production and processing of crude oil. There is no turning back from this path. EU regulations and funds invested in electromobility – in a broad sense – by car manufactures leave no room for alternatives. Today it seems that

Europe will shift towards electric passenger cars and hydrogen-powered vehicles for heavy transport and rail. Air transport is more likely to switch to synthetic or biofuels, while seaborne transport will be powered with natural gas or hydrogen. We are entering a period when the drivers and transport companies will be given a wide selection of fuels to choose from, and petroleum fuel will become just one of the many.

In the new budgetary perspective of the EU environmental protection programmes will play a major role. Huge amount of money is planned to be spent on energy transition until 2027. Refineries and fuel traders also need to find their share in this transition. In our market conditions, traditional fuels used to date: petrol, diesel and autogas will continue to form the basis in road transport for a dozen or so years. Wealthier countries are turning to electrical energy, perceiving it as the fuel of the future for transport. Currently electric vehicles in our country represent a tiny fraction in the whole car fleet and this situation is not very likely to change in the short term, nor even in the longer one. Furthermore, other alternative fuels such as biofuels or hydrogen still have to wait before they are applied on a wider scale unless the technological revolution accelerates significantly and surprises us with its possibilities. Current outlook makes it clear that even though classic, conventional fuel motors still represent substantial technological potential, and are capable of meeting the increasingly stringent environmental requirements, they will be gradually pushed out from the market – either through technology or fiscal policies.

MOTOR FUEL PRICES

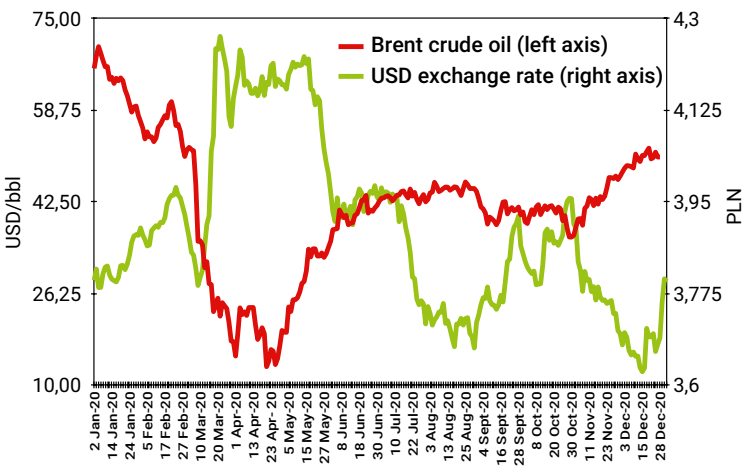
POPiHN's forecast for 2020 accurately predicted slight retail price increases of main fuel types compared to 2019, as well as average diesel's price higher than 95EU petrol's. Only the second assumption came true. The pandemic took its toll on the demand for fuel and thus on fuel prices observed in wholesale trade and at filling stations. The March dip in quotations brought prices at Polish filling stations back to early 2016 levels. In mid-May prices started to grow, yet at a slow pace and at a level still lower than a year ago. In the second half of the year we witnessed a gradual, but still slow strengthening of petrol, diesel and autogas prices. From the beginning of the year until mid-June diesel prices in Poland were higher than 95-octane petrol prices, but this price difference was constantly decreasing. In the second half of the year the trend reversed and we saw the dominance of petrol prices, although also at a minimal level. Summing up 2020, it can be concluded that the discussed year was quite favourable for drivers refuelling their vehicles at filling stations. Throughout the whole year fuels cost on average 12% less than the year before. At the same time, the levels of retail prices allowed filling stations' operators to maintain their margins at quite high levels, taking into consideration previous results. Besides, fuel producers also earned margins at a decent level as falls in crude oil quotations were bigger than wholesale and retail price movements. Favourable retail prices stimulated domestic demand, even at the height of the lockdown, thus limiting the scale of its decline. The demand was also sustained by the reluctance to use public transport during the pandemic and opting for individual vehicles.

From the beginning of March 2020 until the end of the year the prices of diesel at filling stations did not exceed the level of 5 PLN/l. In the case of EU95 petrol such situation lasted for the whole year. Last year a litre of 95-octane petrol was on average 0.59 PLN cheaper, while a litre of diesel cost 0.63 PLN less than in 2019. Nevertheless, the price of autogas decreased by 0.11 PLN/l, which slightly reduced the profitability of using this fuel type in vehicles equipped with installations that allowed for it. Retail price of diesel was higher than the price of 95-octane petrol from the beginning of the year until mid-June, and then for the remaining part of the year petrol was more expensive. Thus in the holiday season the EU95 petrol prices exceeded diesel's prices, yet the difference between the two fuel types' prices was not too big. The average annual retail price difference between these two types of fuel equalled 0.02 PLN in favour of diesel. In 2019 we witnessed a similar situation, yet with the difference of 0.06 PLN. In 2020 the price range for 95-octane petrol was from 4.98 and 3.84 PLN/l. For diesel the price ranged from 5,19 to 3,96 PLN/l in the period of the biggest reductions, i.e. in mid-May. Thus the difference between the lowest and the highest 95-octane petrol price throughout the year equalled 1.14 PLN/l, whereas the same difference for diesel amounted to 1.23 PLN/l. Despite lower costs of fuel, there was no increase in the domestic consumption, which was a natural consequence of pandemic restrictions. Fuel prices had a slightly stabilising impact on the level of purchases, but they were not the decisive element. At the same time they allowed filling stations' operators to earn margins from fuel sales, on average throughout the year, at a level higher than in the previous year, yet still insufficient to maintain the stations only thanks to fuel sales.

Prices quoted at the pylons on Polish filling stations were influenced by the fluctuations on international crude oil and fuel markets and the ratio of the PLN purchasing power against the USD. In both cases, the restrictions on movement, implemented in almost all countries of the world, had a huge impact. Unfortunately for Polish drivers, the zloty's exchange rate against the US dollar somewhat weakened on an annual average, which slowed down the pace of further price reductions. The drop was at a level of 2%. The most important element shaping the price levels in our geographical area, namely average annual Brent crude oil prices, reached the level of 41,7 USD/bbl, which was 35% below the 2019 level. At the beginning of 2020, quotations of crude oil were shaped at the level of almost 69 USD/bbl, and then, alongside the progress of the price war between crude oil producers and then the growing impacts of the pandemic, there was a series of price decreases down to the level of about 13 USD/bbl in the end of April. Since then, crude oil prices started to go up. There was a slight decrease in prices during the second wave of the pandemic after the holidays, and at the end of the year crude oil quotations were shaped at the level of 51 USD/bbl. Starting from March 2020, the situation in the oil sector was significantly affected by the coronavirus pandemic. However, the progress of the pandemic was an important, though not the only factor shaping the cost of fuel purchases. It had such a significant impact on the fuel market that everybody forgot the initial impetus for price reductions, which was the price war between the major players in the oil market. The virus only exacerbated the crisis in the oil and fuel market and led to an acceleration of the decision by OPEC+

FIG. 27 PRICES FOR BRENT CRUDE AND THE USD EXCHANGE RATE IN 2020

Source: e-petrol.pl, POPiHN



countries to introduce restrictions on production limits. Oil prices returned to their 2016 levels, which forced reduction measures at major oil producers, and this, in consequence, had global implications – also for the Polish market. At the beginning of the year there were frequent signals indicating possible price reductions, compared to the previous year, as a result of movements on international commodity stock exchanges, related to the price war between OPEC and Russia, as well as the US-China tensions in trade relations. The conflict between the USA and China was smouldering in the background, yet ongoing, though with varying intensity during the period in question. Nonetheless, the real slump in quotations took place in mid-March, when road and air traffic restrictions related to the spread of the pandemic began to affect the market. The declines slightly slowed once it was clear that an OPEC+ deal to cut oil production would be reached. The prices started to go up and the increase continued until the end of July. Then we witnessed a period of relative stabilisation – the mechanism for reducing oil production cuts started to work. At the same time bigger quantities of oil from the US, Nigeria or Iran started to enter the market. More significant price increases were recorded at the end of the year, when there were indications of the possibility of OPEC+ countries extending oil production restrictions, as well as information from pharmaceutical companies about successful vaccines against COVID-19. Phenomena similar to the ones observed in the case of oil were recorded for fuels traded on the international commodity stock exchanges. It is worth noting that the increases recorded for fuels were very similar to the ones for crude oil. The decreases in diesel were 2 percentage points higher than in the case of crude oil, whereas for Premium petrol it was 3 percentage points. Bigger declines forced by surplus of fuels on international markets ‚pulled down' global crude oil quotations. On the Polish market net wholesale prices were shaped by the changes in stock market quotations of fuels and the changes in the PLN-USD exchange rate, as well as by the counter-epidemic measures taken by the Polish government. Besides, there were increases in fuel surcharge, not fully compensated by lowering the excise rate. The annual average price reductions turned out beneficial for individual drivers and transport companies, but at the same time the state's budget recorded decreasing revenues generated by VAT and additional fees.

As in previous years, the fuel prices on the Polish market are shaped by producers and traders on the basis of the so-called import parity, the main components of which are commodity market prices of fuels and the PLN exchange rate against the US dollar. Fiscal levies that have to be contributed to the state budget are also taken into consideration. The changes in the import parity determined the direction of changes in wholesale and, consequently, retail prices.

Brent crude oil prices, which determine prices for the European market, are shown in Fig. 27.

The restrictions in crude oil production, introduced in 2017 and continued in 2018-2020 by the OPEC+ countries, were enforced quite rigorously. At the same time US shale oil production decreased. As shown by the annual results, production limiting activities carried out by OPEC+ brought the expected outcome in the form of lowering oil surplus on international markets and stabilising crude oil quotations after the first pandemic-related shock; at the end of the year the quotations even increased.

According to the newest forecasts by the Energy Information Administration (EIA) and OPEC, a significant improvement in crude oil demand is expected in the second half of 2021, provided that the vaccine against COVID-19 will have proved effective worldwide. With prolonged periods of low prices and no increase in demand, crude oil production companies will focus their operations on the most efficient deposits. However, recent reports show that new oil fields have been discovered and could be activated if the demand increases. American shale gas producers, who in 2020 significantly limited the number of active rigs, are also waiting for improved conditions.

Economic results presented by domestic producers of fuel prove that despite the pandemic restrictions, these operators did their best to avoid fuel shortages on the market. The state's budget, however, witnessed losses in revenues generated by direct and indirect taxes, even though in 2020 in Poland taxes constituted significantly over 50% of the fuel price, which usually guaranteed high state revenues from the oil sector.

Factors affecting domestic wholesale and retail prices (prices of crude oil, prices of main fuels and the dollar exchange rate) were as follows in 2020 (Fig. 28).

The interdependence of crude oil prices and the USD exchange rate in the Polish market is shown in Fig. 29.

Comparison of trends for crude oil and fuels is presented in Fig. 30.

A significant downward trend in crude oil quotations was visible from the beginning of May until May. Then the declines slowed down and stabilised, compared to similar periods from the previous year. Trends for diesel and Premium petrol were the same as for crude oil (Fig. 30).

FIG. 28 COMPARISON OF ANNUAL AVERAGE PRICES FOR CRUDE OIL, LIQUID FUELS AND THE USD EXCHANGE RATE IN 2019 AND 2020

Source: Prices from e-petrol.pl for Brent crude FOB Sullom VOE, for fuels CIF NWE ARA

Description	2019		2020		Reference 2020 to 2019
	Value	Units	Value	Units	2019=100
Prices for Brent crude	64,38	USD/bbl	41,71	USD/bbl	65
Prices for Premium petrol	619,1	USD/t	392,3	USD/t	63
Prices for diesel 10 ppm S	598,8	USD/t	373,6	USD/t	62
USD exchange rate	3,8399	PLN	3,9046	PLN	102

Trends observed on international crude oil and fuel markets were almost automatically reflected on the Polish market. Almost, as Poland has its national currency and the price levels are to a certain extent influenced by the PLN-USD exchange rates. On average in 2020, compared to the previous year, fuel quotations decreased, yet at the same time Polish currency depreciated against US dollar. Tax burdens due to fuel charge changes continued to increase. Changes in average annual ex-refinery prices for Polish oil companies are shown in tables 31 and 32.

95-octane petrol prices offered by Polish producers, which are directly related to stock market quotations, decreased less than the quotations of this type of fuel worldwide (Fig. 30). This was partially due to the depreciation of the Polish zloty, but also crude oil transaction prices, logistics costs and the volume of demand.

Comparisons of diesel prices in the Polish refinery market are given in Figure 32.

Similarly as in the case of petrol, the decrease in domestic diesel fuel prices was less than one might expect, looking at falls in quotations in international stock markets (Fig. 32).

In 2020 until mid-June 95-octane petrol retail price was cheaper than diesel's, whereas in the remaining months it was slightly more expensive. All in all, throughout the year, average diesel prices were higher than petrol's.

FIG. 29 FLUCTUATIONS IN BRENT CRUDE PRICES AND IN THE EXCHANGE RATE OF THE USD IN 2020 COMPARED WITH AVERAGE IN 2019 [%]

Source: POPiHN and e-petrol.pl

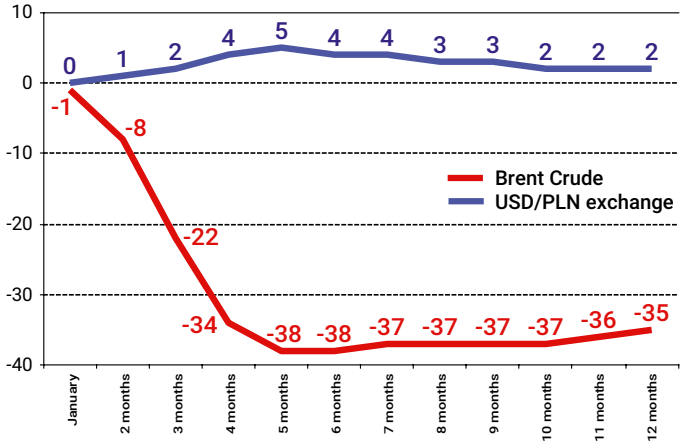


FIG. 30 FLUCTUATIONS IN CRUDE OIL AND FUEL QUOTATIONS IN 2020 COMPARED WITH 2019 AVERAGES [%]

Source: POPiHN and e-petrol.pl

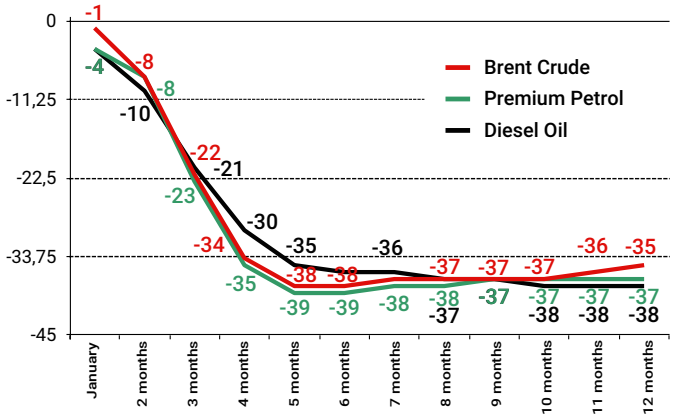


FIG. 31 COMPARISON OF ANNUAL AVERAGE WHOLESALE PRICES OF PETROL AT DOMESTIC FUEL PRODUCERS

Source: PKN ORLEN SA, Grupa LOTOS SA, POPiHN

Description	2019		2020		Reference 2020 to 2019
	Value	Units	Value	Units	2019=100
EU95 petrol gross (without VAT)	3 914	PLN/1000 l	3 386	zł/1000 l	87
Excise	1 540	PLN/1000 l	1 523	PLN/1000 l	99
Fuel surcharge	133	PLN/1000 l	153	PLN/1000 l	115
Emissions fee	80	PLN/1000 l	80	PLN/1000 l	100
EU95 petrol net	2 161	PLN/1000 l	1 630	PLN/1000 l	75

FIG. 32 COMPARISON OF ANNUAL AVERAGE WHOLESALE PRICE COMPONENTS OF DIESEL AT DOMESTIC FUEL PRODUCERS

Source: POPiHN's own study based on data of PKN ORLEN SA and Grupa LOTOS SA

WDescription	2019		2020		Reference 2020 to 2019
	Value	Units	Value	Units	2019=100
Diesel with S 0.001% gross (without VAT)	4 31	PLN/1000 l	3 410	PLN/1000 l	85
Excise diesel with S 0,001%	1 171	PLN/1000 l	1 154	PLN/1000 l	99
Fuel surcharge	298	PLN/1000 l	321	PLN/1000 l	108
Emissions fee	80	PLN/1000 l	80	PLN/1000 l	100
Diesel with S 0,001% net	2 482	PLN/1000 l	1 855	PLN/1000 l	75

FIG. 33 COMPARISON OF MOTOR FUELS' RETAIL PRICES

Source: POPiHN's own study based on data from e-petrol.pl and WPNP

Description	2019		2020		Reference 2020 to 2019
	Value	Units	Value	Units	2019=100
Average retail price of EU95	5,00	PLN/litr	4,41	PLN/litr	88
Average retail price of ON	5,06	PLN/litr	4,43	PLN/litr	88
Average retail price of autogas	2,14	PLN/litr	2,03	PLN/litr	95

A comparison of the retail prices of EU95 petrol, autogas and diesel in the years 2019-2020 is shown in the table (Fig. 33).

The price relations EU95 petrol/autogas favoured, like in previous years, the latter one, yet the profitability of switching to a different fuel slightly diminished. In 2020 the autogas to 95-octane petrol price ratio was on average around 46% all year round, while in the previous year it was 43%. The price trends of individual fuels on the domestic market are shown by the graphs in Fig. 34 and 35.

FIG. 34 RETAIL PRICES OF EU95, DIESEL, LPG AND LFO IN 2006-2020 [PLN/1000 L]

Source: POPiHN's own study based on data from e-petrol.pl and WPN

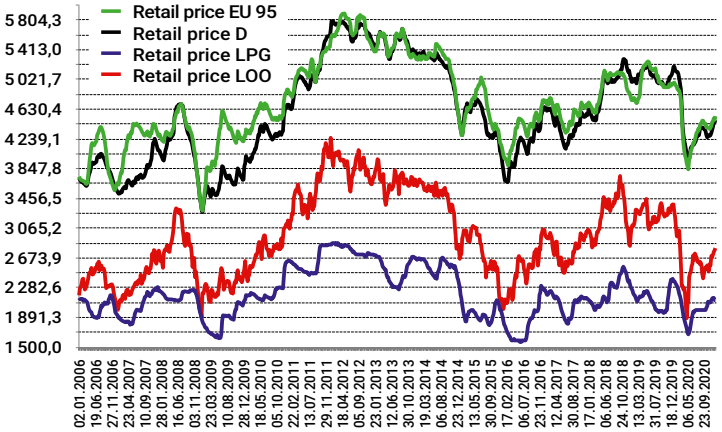
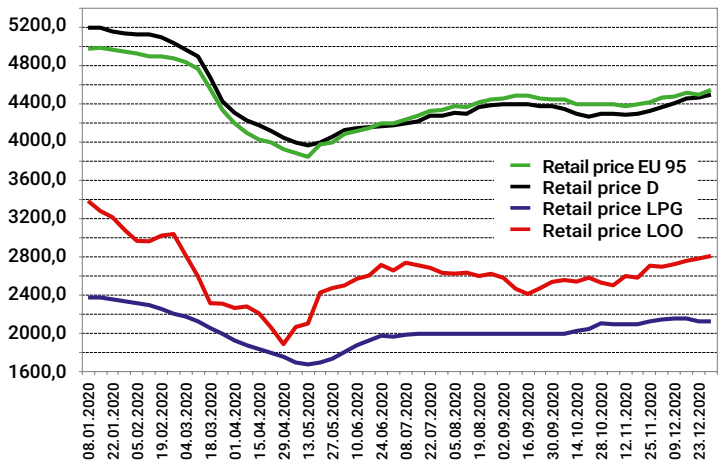


FIG. 35 RETAIL PRICES OF EU95, DIESEL, LPG AND LFO IN 2006-2019 [PLN/1000 L]

Source: POPiHN's own study based on data from e-petrol.pl, WPN and ARE



The downtrend in average annual retail fuel prices, which started in 2013, was stopped in 2017 and since then we observed increases in average annual prices. The trend reversed again in 2020. Current market situation suggests that if, on the one hand, the new tightening-up rules in the production of crude oil are maintained and, on the other hand, it is possible to boost the world economy while halting the spread of the pandemic, then it is possible that 2021 is going to be finalised with slightly higher prices than the previous year's ones.

Graph 36 shows the relations between quotations on the international commodity stock exchanges and retail prices of fuels in Poland.

Margins on fuel sales in 2020 were higher than the ones achieved in the previous year. Nevertheless, the margin levels were so low that keeping a filling station afloat depended, once again, to a large extent, on non-fuel sales and offering various additional services. Unfortunately, pandemic-related restrictions also limited this revenue channel for filling stations.

The factors determining the retail prices in various parts of the country were the level of demand and the scale of competition between different operators, as well as the range of goods offered at stations' shops and the comprehensiveness of additional services available at this difficult time for the economy and for drivers. The restrictions in individual regions of the country, which varied during the initial phase of the epidemic, also had their impact.

In recent years, there has been an increase in fuel purchases at stations along expressways and motorways. In 2020 this trend slowed down and drivers started to refuel their vehicles more often near where they lived. The above was influenced by traffic restrictions, but also by shifting away from public transport, due to the possibility of infection, to individual transport by private car and also by various types of single-track vehicles. It was possible to see that the price difference between filling stations in cities or along national roads – compared to prices at stations along expressways – got significantly reduced. Moreover, no one is surprised anymore by big seasonal price spread among some areas of the country. Especially taking into consideration this year's short holidays, fuel was sold more expensive along the main transit routes and in the seaside and mountain resorts. In 2020 the provinces which sold the most expensive

Fot.: SHELL POLSKA

fuel in the country were the following: Mazowieckie, Małopolskie, Podkarpackie and Zachodniopomorskie.

The factors which determine retail prices in Poland are taxes imposed on fuels. Figure 37 presents average tax burdens for motor fuels in 2020.

In the year in question, and in the case of all motor fuels, the fuel surcharge was raised twofold. At the same time, the rate of excise duty was reduced twofold. Emissions fee rates for petrol and diesel did not change. The VAT did not change either, remaining at the level of 23%. In the case of fuels, VAT is a tax on the net price increased by specific taxes (excise, fuel surcharge, emissions fee). On average throughout the year the tax burdens included in fuel prices decreased in relation to 2019. In monetary terms it was 108 PLN for EU95 petrol and 111 PLN for diesel less to pay to the state for every 1,000 litres of sold fuel.

With net prices lower by 25% compared to the previous year's, there was an increase of tax burdens in fuels' end consumer price. That increase equalled 9% for both EU95 petrol and diesel. On average, in 2020 taxes represented 59% of 95-octane petrol and 54% of diesel retail price. It was 5 percentage points more than in 2019 for both 95-octane petrol and diesel.

FIG. 36 CHANGES IN QUOTATIONS FOR FUELS ON INTERNATIONAL COMMODITY STOCK EXCHANGES AND IN RETAIL PRICES OF EU95 PETROL AND DIESEL IN POLAND IN 2020 COMPARED TO 2019 AVERAGE PRICES [%]

Source: POPiHN and e-petrol.pl

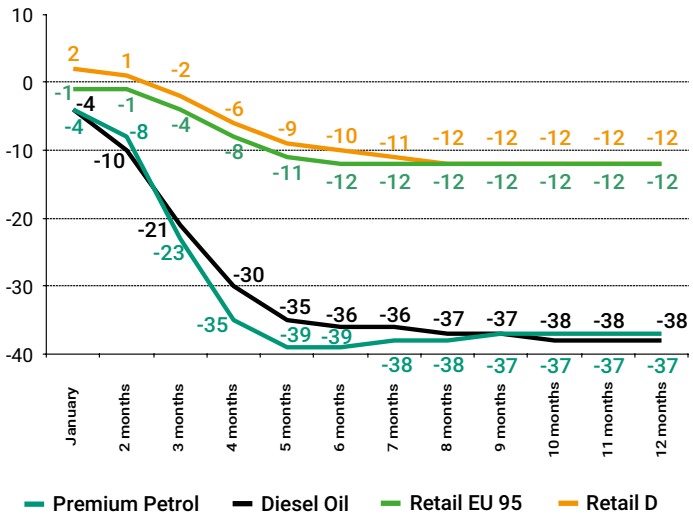


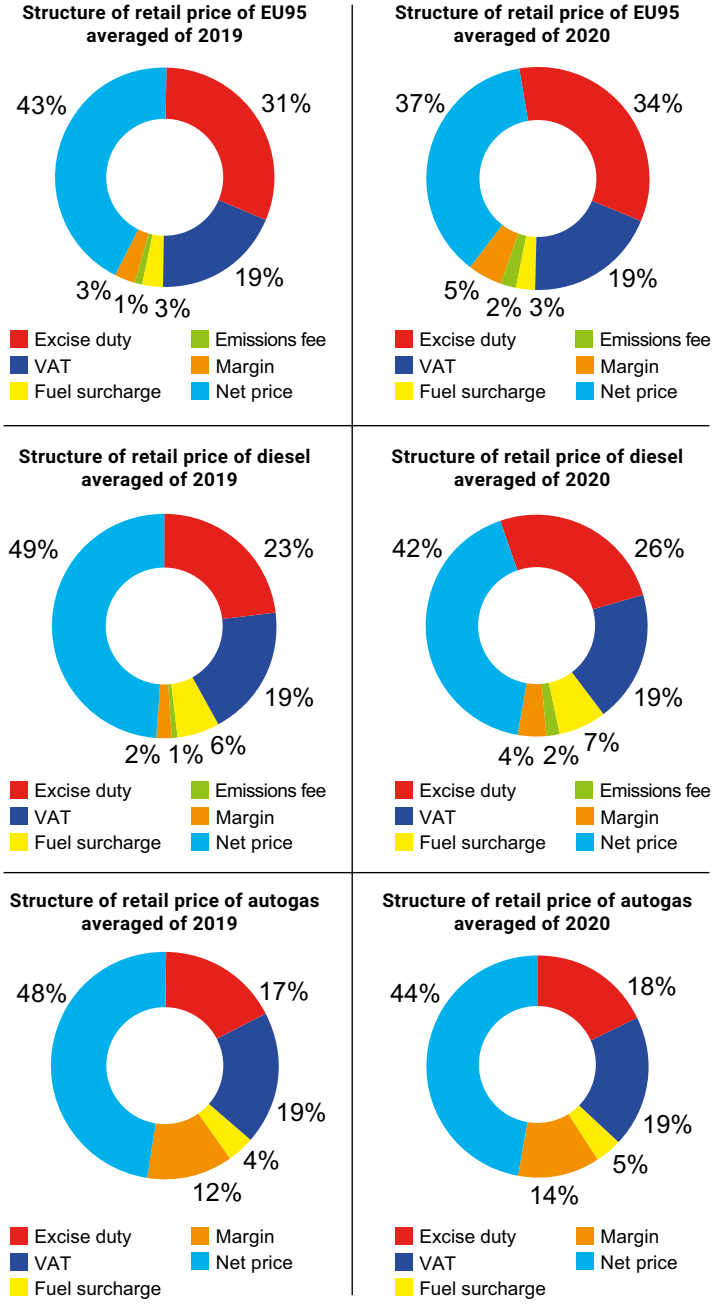
FIG. 37 COMPARISON OF TAX BURDENS ON MOTOR FUELS IN 2019 AND 2020 [in thousand m³]

Source: POPiHN's own data

Description	2019		2020		Reference 2020 to 2019
	Value	Units	Value	Units	2019=100
Total taxes for EU95 (VAT +excise+fuel surcharge)	2 688	PLN/1000 l	2 580	PLN/1000 l	96
Total taxes for diesel (VAT +excise+fuel surcharge)	2 494	PLN/1000 l	2 383	PLN/1000 l	96
% share of taxes in retail price of EU95	54	%	59	%	109
% share of taxes in retail price of ON	49	%	54	%	109

FIG.38 STRUCTURE OF RETAIL PRICE OF MOTOR FUELS IN 2019 AND 2020

Source: POPiHN's own calculations



The structure of annual average retail prices for EU95 petrol and diesel is presented in the charts in Fig. 38.

In terms of values, the price structure is the following.

The table below (Fig. 40) shows the comparison of prices of motor fuels in the European Union with domestic prices at the end of December 2020.

While analysing the price levels in Poland, other EU countries and the United Kingdom, we have seen that for years the prices in our country (converted into euro) are among the lowest in the European Union. Such situation was also observed in 2020 and it is confirmed by the prices from the end of December, presented in the table. Such relationship was observed for both petrol and diesel. In the last month of 2020 average domestic retail prices of EU95 petrol were 19% lower and those for diesel 12% lower than the average prices for the whole European market. Compared to December 2019, this is 7 percentage points more for EU95 petrol and 3 percentage points more for diesel. Relatively speaking, therefore, the differences increased in favour of drivers in Poland.

At the end of 2020 domestic net prices (excluding taxes and converted into euro) of EU95 petrol were lower than the average European prices by 7%, while in case of diesel by 8%. Net prices in all analysed countries are quite similar, and the differences in retail prices are mainly caused by taxes applicable in different countries and levels of margins.

In December 2020 for EU95 petrol the difference between the highest and the lowest net price observed in EU countries was EUR 210 (which is EUR 30 more than in the previous year), whereas the difference between the highest and the lowest retail price was EUR 664 per 1,000 litres (i.e. EUR 113 more than in the previous year). The above means that there was an increase in the net price spread and at the same time the difference between the prices at the dispensers increased. For diesel the difference between net prices equalled EUR 249 per 1,000 litres (EUR 17 more than in the previous year), and the difference between retail prices was EUR 514 per 1,000 litres (EUR 67 more than in the previous year). Also in this case there was an increase in the difference between the prices. Retail prices of both fuel types grew more than their net prices, which means that margins achieved from their sales increased. Undoubtedly, decreases in the quotations of fuels on international

commodity exchanges contributed significantly to the above-mentioned situation.

Poland is one of the European countries with the highest applicable rate of VAT for fuels, but due to relatively low (after conversion into euro) net prices the actually paid VAT continues to be in the middle of the European rates. At the end of December 2020 the difference between the amount of VAT paid on EU95 petrol, compared to the EU average, was 13%, which was 5 percentage points more than in the previous year. For diesel the same difference increased to 8%, i.e. 7 percentage points. The amounts of excise tax paid (after conversion into euro, including fuel surcharge and emissions fee) respectively for EU95 petrol and diesel were 31 % and 25 % lower than the European averages. Compared to the previous year, this is 5 percentage points more fore for EU95 petrol and 6% more for diesel.

Analyses show that when buying fuel across the entire EU and the United Kingdom, the taxes constitute over 50% of the 95-octane petrol and diesel retail price. In the previous year in some countries these taxes did not exceed this threshold, but significant net price decreases changed this relationship. As we can see in the graphs, taxes that Poles are burdened with constitute a slightly smaller percentage of the fuel retail price than in the case of drivers in the majority of EU countries, but there are also countries where it is less than in Poland. Additionally, the range of taxes paid across the EU in case of 95-octane petrol slightly increased. When we compare December 2020 and December 2019, the difference

FIG. 39 STRUCTURE OF RETAIL FUEL PRICES IN 2019 AND 2020 (IN PLN/L)

Source: POPiHN's own calculations

	Eurosuper 95 petrol							Diesel							Autogas					
	Retail price	Excise	VAT	Fuel surcharge	Emis. fee	Margin	Net price	Retail price	Excise	VAT	Fuel surcharge	Emis. fee	Marża	Net price	Retail price	Excise	VAT	Fuel surcharge	Margin	Net price
Średnia rok 2019	5,00	1,54	0,94	0,13	0.08	0,15	2,16	5,06	1,17	0,95	0,30	0,08	0,09	2,48	2,14	0,38	0,40	0,09	0,25	1,02
12 mies. rok 2020	4,41	1,52	0,82	0,15	0,08	0,21	1,63	4,43	1,15	0,83	0,32	0,08	0,21	1,85	2,03	0,37	0,38	0,10	0,28	0,90
% zmiany	-11,8	1,3	-11,8	12,6	0,0	35,3	-24,5	-12,5	-1,8	-12,5	5,8	0,0	142,6	-25,4	-5,1	-1,9	-5,1	8,7	11,7	-11,8

FIG. 40 AVERAGE RETAIL PRICES AND TAXES IN EU MEMBER STATES AND IN POLAND AT THE END OF DECEMBER 2020 (in EUR/1,000 l) 1 EUR = 4,6148 PLN

Source: Weekly Oil Bulletin EIA

	Eurosuper 95					Diesel (EN 590)					
	Sale price	Price without taxes	Excise	VAT amount		Sale price	Price without taxes	Excise	VAT amount	VAT [%]	
1	2	3	4	5	6	7	8	9	10	11	
Austria	1 072,0	404,1	489,2	178,7	Austria	1 043,0	464,0	405,2	173,8	20	
Belgium	1 301,0	475,0	600,2	225,8	Belgium	1 323,0	493,2	600,2	229,6	21	
Bulgaria	896,5	384,1	363,0	149,4	Bulgaria	890,5	411,8	330,3	148,4	20	
Croatia	1 214,9	495,8	512,1	243,0	Croatia	1 186,1	542,9	406,0	237,2	25	
Cypr	1 067,2	457,1	439,7	170,4	Cyprus	1 088,0	503,6	410,7	173,7	19	
The Czech Republic	1 064,5	391,1	588,7	184,7	The Czech Republic	1 050,8	451,7	416,7	182,4	21	
Denmark	1 458,3	546,1	620,5	291,7	Denmark	1 235,2	556,0	432,2	247,0	25	
Estonia	1 244,0	473,7	563,0	207,3	Estonia	1 050,0	503,0	372,0	175,0	20	
Finland	1 419,0	422,4	722,0	274,6	Finland	1 296,0	532,3	512,9	250,8	24	
France	1 357,9	440,3	691,3	226,3	France	1 261,4	442,1	609,1	210,2	20	
Greece	1 432,0	445,4	709,4	277,2	Greece	1 160,0	516,6	418,9	224,5	24	
Spain	1 184,7	506,4	472,7	205,6	Spain	1 069,0	504,5	379,0	185,5	21	
The Netherlands	1 561,0	481,7	808,4	270,9	The Netherlands	1 243,0	515,6	511,7	215,7	21	
Ireland	1 275,4	414,7	622,2	238,5	Ireland	1 180,7	440,4	519,5	220,8	23	
Lithuania	1 095,3	439,2	466,0	190,1	Lithuania	1 011,7	464,1	372,0	175,6	21	
Luxembourg	1 071,0	443,3	472,1	155,6	Luxembourg	975,0	478,3	355,0	141,7	17	
Latvia	1 155,5	435,0	520,0	200,5	Latvia	1 033,8	428,4	426,0	179,4	21	
Malta	1 340,0	586,2	549,4	204,4	Malta	1 210,0	553,0	472,4	184,6	18	
Germany	1 281,0	449,8	626,7	204,5	Germany	1 112,0	488,2	446,3	177,5	19	
Portugal	1 405,0	475,0	667,3	262,7	Portugal	1 262,0	513,4	512,6	236,0	23	
Romania	974,6	454,1	364,9	155,6	Romania	977,3	486,9	334,4	156,0	19	
Slovakia	1 194,0	451,3	543,7	199,0	Slovakia	1 062,0	487,3	397,7	177,0	20	
Slovenia	1 002,7	376,4	445,5	180,8	Slovenia	1 067,2	410,9	463,9	192,4	22	
Sweden	1 388,4	462,2	648,5	277,7	Sweden	1 405,2	660,2	464,0	281,0	25	
Hungary	1 022,7	447,5	357,8	217,4	Hungary	1 072,8	500,6	344,1	228,1	27	
The Great Britain	1 260,1	408,9	641,2	210,0	The Great Britain	1 309,3	448,5	642,6	218,2	20	
Italy	1 427,6	441,7	728,5	257,4	Italy	1 304,3	451,7	617,4	235,2	22	
POLAND	**983,8**	**416,5**	**380,4**	**186,9**	**POLAND**	**973,0**	**451,3**	**336,8**	**184,9**	**23**	
European average	**1 219,6**	**449,6**	**554,1**	**216,0**	**European average**	**1 137,6**	**489,3**	**446,8**	**201,5**		
Price in Poland against average European price	**81%**	**93%**	**69%**	**87%**	**Price in Poland against average European price**	**86%**	**92%**	**75%**	**92%**		

FIG. 41 RETAIL PRICES OF EU95 PETROL IN UE MEMBER STATES AND IN THE UK AT THE END OF DECEMBER 2020

Source: Weekly Oil Bulletin EIA

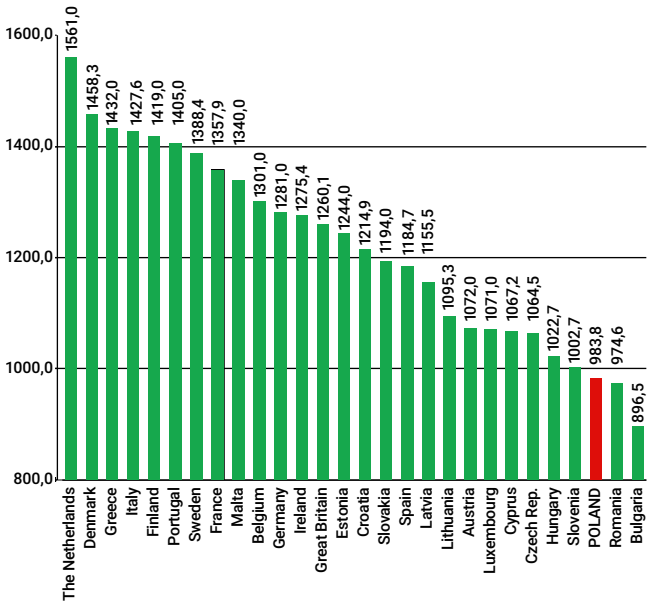


FIG. 42 RETAIL PRICES OF DIESEL IN UE MEMBER STATES AND IN THE UK AT THE END OF DECEMBER 2020

Source: Weekly Oil Bulletin EIA

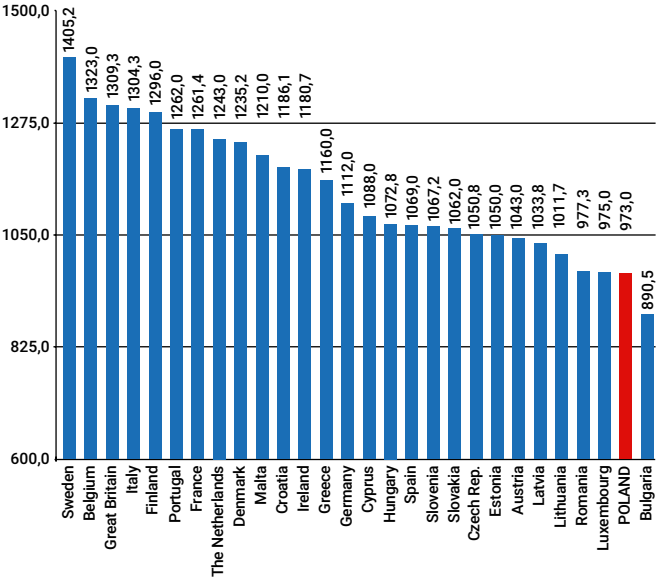


FIG. 43 SHARE OF TAXES IN RETAIL PRICE OF EU95 PETROL IN EUROPEAN COUNTRIES AND IN THE UK AT THE END OF DECEMBER 2020

Source: POPiHN's own data

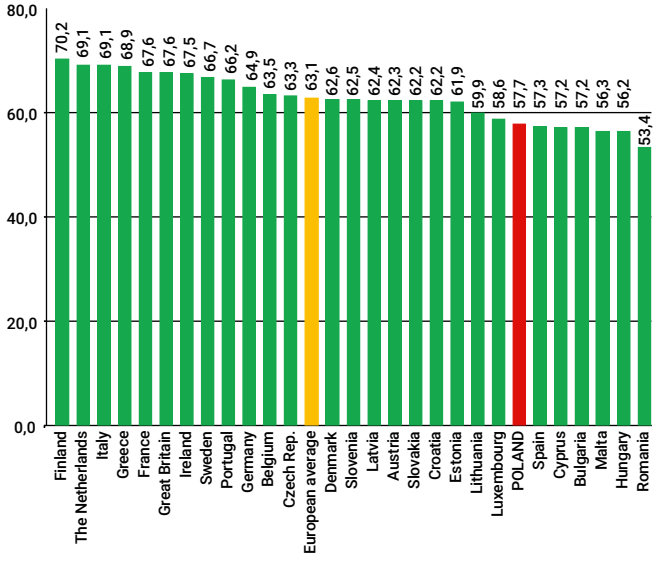
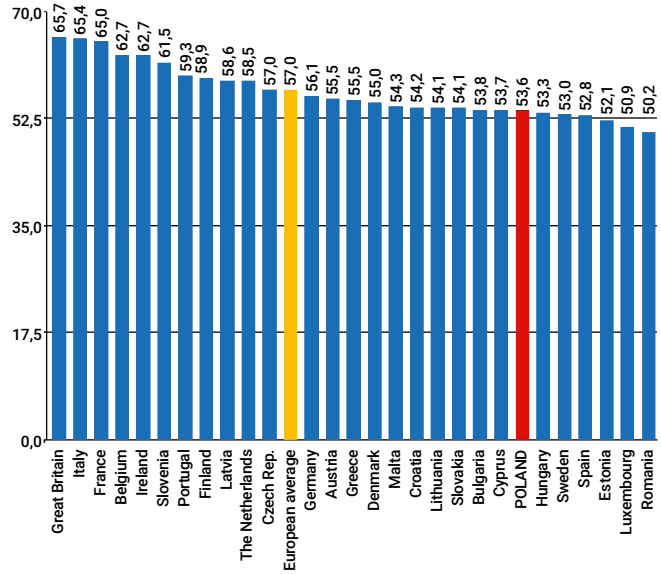


FIG. 44 44 SHARE OF TAXES IN RETAIL PRICE OF DIESEL IN EUROPEAN COUNTRIES AND IN THE UK AT THE END OF DECEMBER 2020

Source: POPiHN's own data



between the highest and lowest share increased by 1.2 percentage point and amounted to 16.8 percentage points. For diesel, this difference amounted to 15.5 percentage points, i.e. 2.7 percentage points less. The lowest tax share in the prices of both EU95 petrol and diesel was recorded in Romania. A comparison of the total tax burdens on fuels in the EU countries at the end of 2020 is presented in Fig. 43 and 44.

In December 2020 in the European Union EU95 petrol was the cheapest at filling stations in Bulgaria, Romania and Poland. Drivers could buy diesel cheaper than in Poland only at filling stations in Bulgaria. Therefore it was profitable to come to Poland from any EU country directly neighbouring with us in order to fill up one's car completely. Unfortunately, the pandemic situation significantly

Fot.: GRUPA LOTOS

LUBRICATING OILS MARKET

The results presented for 2019 differ from those presented in the Annual Report for 2019. This is due to changing the methodology for estimating the lubricating oil market outside POPIHN. The updated methodology has allowed for a better reflection of market changes. The estimation also takes into account the impact of the legal modifications that took place in November 2019, in terms of excise duty rates.

The second decade of the 21st century was a period in which plans were drawn up and decisions taken to define the priorities of the European economy for the coming decades. Direction: ecology. Electrification of transport, the spectre of upcoming emission standards so stringent in their assumptions that they make it practically impossible to continue using combustion engines in the automotive industry, all this puts a question mark on the future of the oil industry. Does the set direction mean a verdict?

Undoubtedly, it means changes. However, the scope and dynamics of these changes seem to have been exaggerated. Electrification of transport is a process that will last for decades, depending not only on consumer preferences, but also on the availability of charging infrastructure for electric vehicles. It should be borne in mind that the technical possibilities of electric propulsion systems are still subject to many limitations, which at the moment rule out the mass electrification of heavy goods transport. Industry will also still need a wide range of lubricants, especially in view of the continued focus on growth in consumption.

The Polish market for lubricating oils reached a volume of 219,270 tonnes in 2020, which, compared to the 2019 result of 235,241 tonnes, represents a 6.79% y/y decline in the overall sales level.

Among the reasons for the contraction in the market, the restrictions introduced due to the COVID-19 pandemic can be pointed out first and foremost. The restriction of movement affected the decline in passenger car traffic, which was evident in the performance of both the fuel industry and the automotive oil segment. The industrial oil segment also suffered, due to the extraordinary operating conditions of the customers of these oils. A particular example is the temporary suspension of production in the automotive and furniture industries, which, due to the collapse in the market for certain services, translated into an overall 2.8% decline in Polish GDP in 2020. Among the non-pandemic factors, one should point out the changes to the tax law introduced in November 2019, in terms of unifying excise duty rates on oils, regardless of CN codes, which proved problematic for some entities that based their sales on CN 3403 classification. Growing number of formalities required of enterprises operating in the lubricating segment caused an increase in operating costs, which had a particularly adverse effect on smaller market participants

Data for 2020 show a slight decrease in the share of the automotive segment in favour of the industrial segment compared to the proportions recorded in 2019.

Analysing shifts in the market structure, what stands out is a significant decrease in the share of oils intended for passenger cars. This segment shrank by over 10% in 2020. The changes in shares observed in the segment of engine oils are perfectly in line with the current trend. Among engine oils for passenger cars, synthetic oils are consistently increasing their share in the segment and currently account for more than ¾ of the entire market of oils intended for passenger cars. The share of engine oils for passenger cars in the structure of the whole lubricating oils market shrank by 1.08 pp., while in the structure of the automotive segment oil market, the decrease amounted to 3.85 pp. The market situation was completely different for heavy duty engine oils, which in 2020 recorded an increase in sales by 3.59% y/y. In this segment special attention is drawn to synthetic oils. Their sales increased by over 22%, which translated into an increase in their share in the structure of the entire lubricating oils market by over 0.5 pp.

In the segment of lubricants for industry, the dominance of hydraulic oils was still visible. The increase in their sales in 2020 by 2.19% y/y translated into an increase in their share in the structure of the entire market by 1.52 pp. The diversified category of ‚other industrial' recorded a 1.42% y/y decrease in sales in 2020, but their share in the market structure increased by 0.73 pp. and amounted to 13.47%.

FIG. 45 TOTAL MARKET FOR LUBRICATING OILS IN 2020

Source: POPiHN's own data

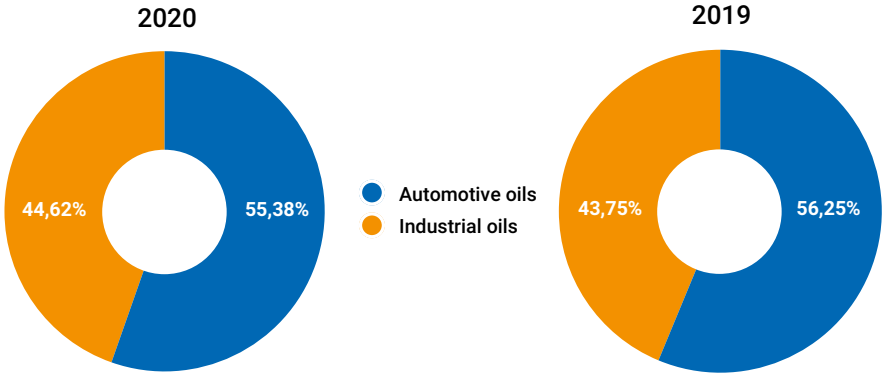


FIG. 46 COMPARISON OF THE STRUCTURE OF THE MARKET FOR LUBRICATING OILS IN 2019 AND 2020 [%]

Source: POPiHN's own data

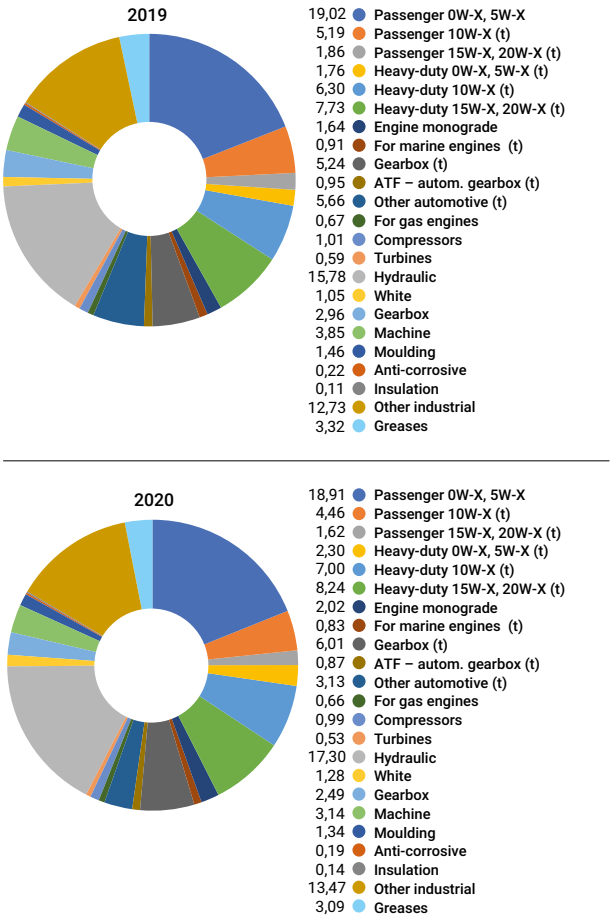
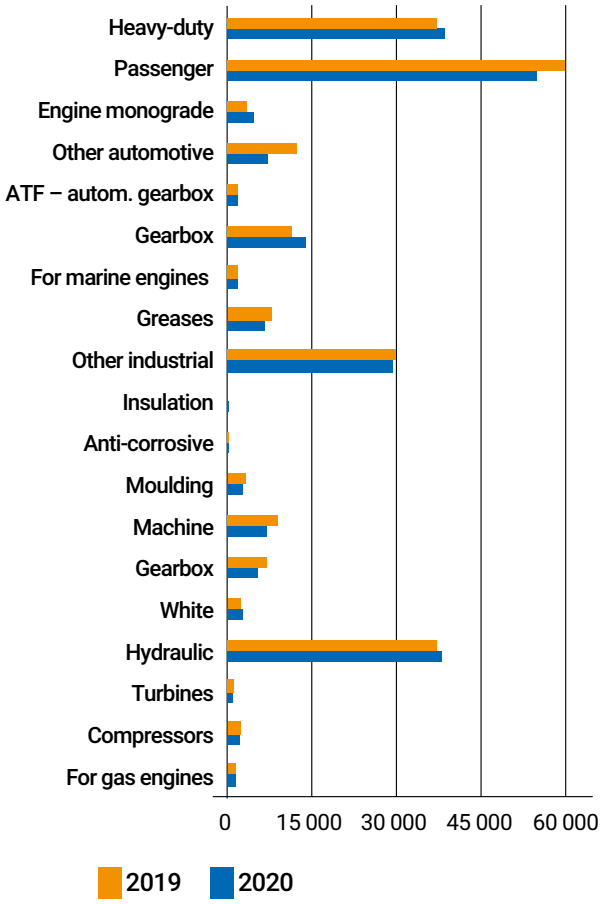


FIG. 47 COMPARISON OF SALES OF CHOSEN LUBRICANT TYPES IN 2019 AND 2020

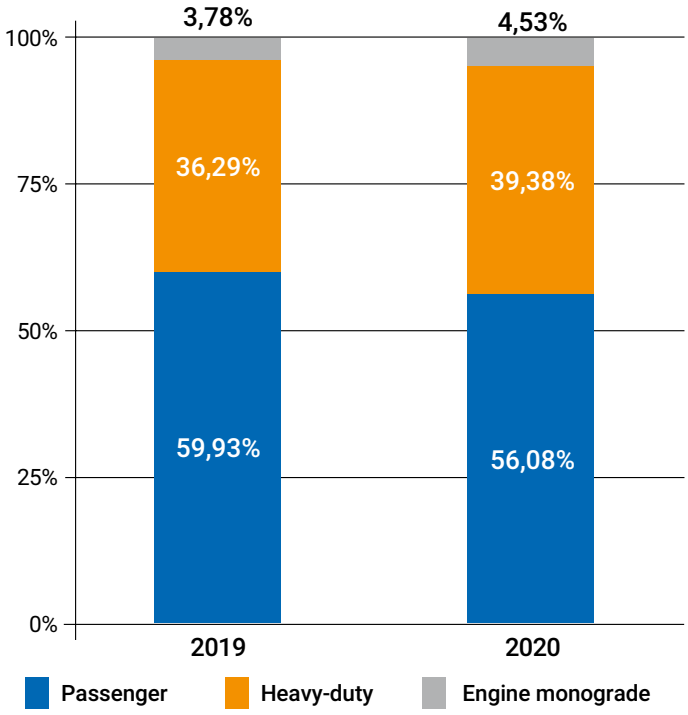
Source: POPiHN's own data



Fot.: TANQUID POLSKA

FIG. 48 AUTOMOTIVE ENGINE OILS

Source: POPiHN's own data



ENGINE OILS FOR THE AUTOMOTIVE INDUSTRY

Almost 45% of all lubricating oils sold in Poland are engine oils for automotive industry. Within the automotive segment sales, they account for an 80% share.

In 2020 sales volumes of engine oils for vehicles in Poland amounted to 97,657 tonnes. In the previous year, sales volumes amounted to approx. 102,309 tonnes, so the decrease equalled 4.53% on a yearly basis.

The decline observed in 2020 can almost entirely be attributed to engine oils for passenger cars, which recorded a decrease in sales of 10.65% y/y. At the same time, an increase in sales of heavy-duty engine oils by 3.59% was noted. Surprisingly, an increase in sales (14.45%) was also recorded in monograde oils, but combined with the niche (4.5%) share of these oils in the automotive engine oils segment, this increase had little impact on the result of the entire segment.

Broader than just engine oils, sales of all automotive oils in 2020 equalled 121,435 tonnes. This represents a decrease of 8.23% compared to 2019. The only subgroup outside of engine oils with increases in sales volumes (6.88%) is gearbox oils. The largest decrease in sales (-48.49%) was recorded for oils classified as ‚other automotive'.

FIG. 49 AUTOMOTIVE ENGINE OILS AGAINST THE OVERALL LUBRICATING OILS MARKET IN POLAND [%]

Source: POPiHN's own data

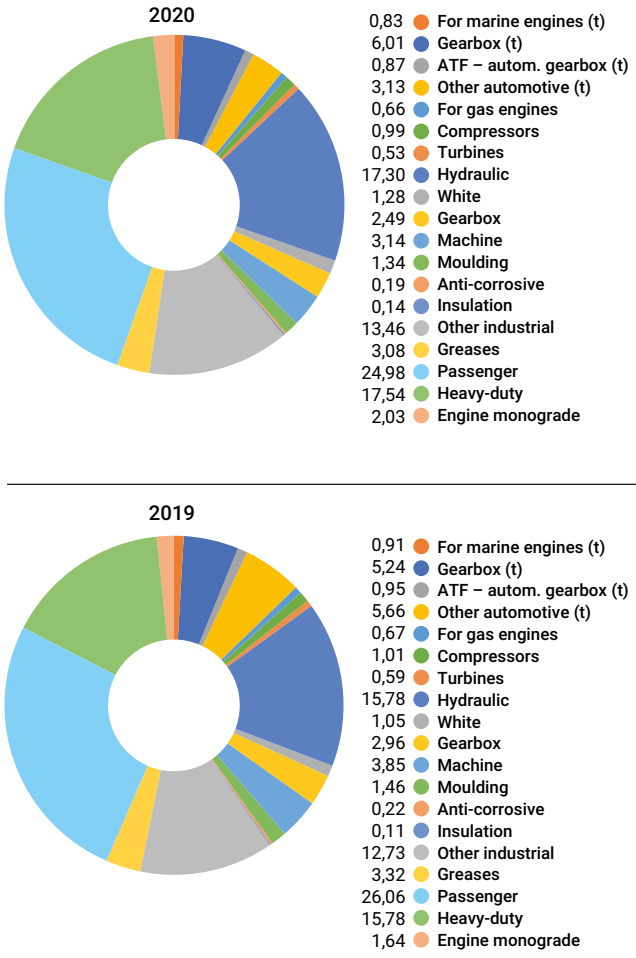
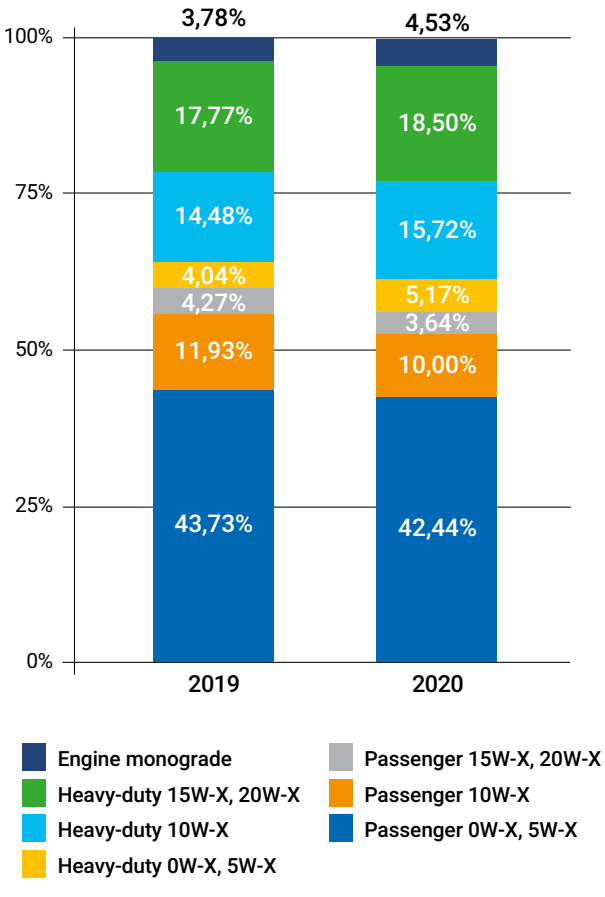


FIG. 50 STRUCTURE IN THE SEGMENT OF THE AUTOMOTIVE ENGINE OILS IN 2019, 2020

Source: POPiHN's own data



Fot.: FUCHS OIL CORPORATION

PASSENGER CARS MOTOR OILS (PCMO)

The segment of engine oils for passenger cars shrank in 2020 by 10.65%. Such a large decrease is a direct consequence of unprecedented travel restrictions, which significantly reduced passenger car traffic.

In the observed period from May to December 2020, the number of passenger vehicles on roads in Poland decreased by 8.42% y/y (own elaboration, data: GDDKiA). Taking into account the strict lockdown announced in mid-March 2020, also maintained in May, it is estimated that the decline in passenger vehicle traffic in the whole of 2020 amounted to about 10% y/y.

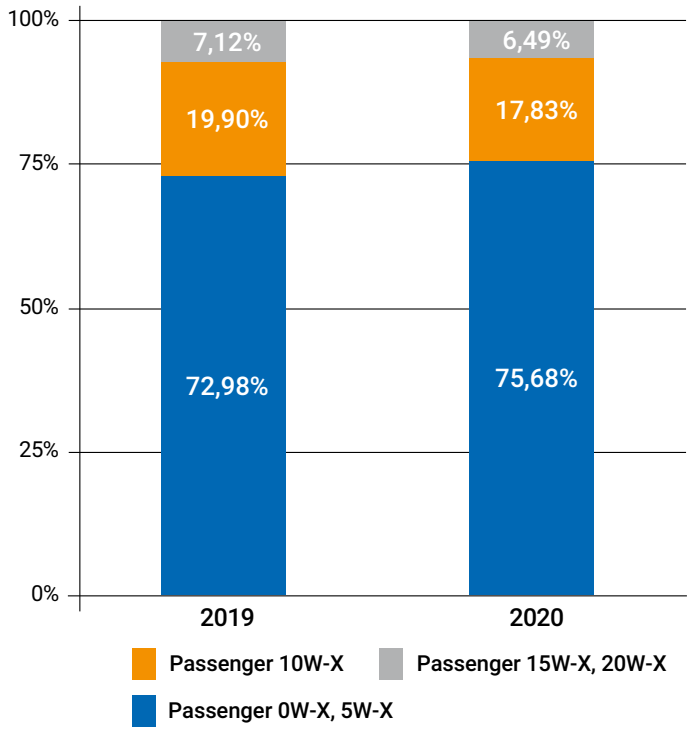
It should be noted that a fall in sales was recorded for all categories, including synthetic oils (-7.34%), sales of which increased year on year due to the progressive replacement of cars on Polish roads with more technologically advanced ones. Semi-synthetic and mineral oils are still recording drops in sales - last year it was respectively (-19.94%) and (-18.58%).

A further downward trend by tonnage can be expected in the coming years. This is due to the replacement of older generation products with new ones that do not require such frequent replacement.

It was a difficult year for the market of engine oils for passenger cars. The annual sales figures clearly illustrate the impact of pandemic-related traffic restrictions. However, other factors must also be taken into account. In this segment, there is a significant impact of legal regulations on the sales structure. So far, the impact of environmental regulations functioning as the so-called 'Green Deal' was forecast to reduce demand for engine oils. Currently, the most serious threat to this segment is the European Commission's work on the Euro 7 standard, which, due to its exceptionally rigorous nature, in reality may be understood as a specific ban on the production of vehicles with combustion engines. It would consequently result in the forced electrification of the passenger car segment and a drastic drop in sales of engine oils.

FIG. 51 PASSENGER CARS ENGINE OILS WITH REFERENCE TO VISCOSITY CATEGORIES (EXCLUDING MONOGRADE OILS) – MARKET STRUCTURE IN 2019, 2020

Source: POPiHN's own data



HEAVY-DUTY ENGINE OILS (HDEO)

In 2020, 38,466 tonnes of heavy-duty engine oils were sold in Poland, which represents an increase by 3.59% compared to 2019.

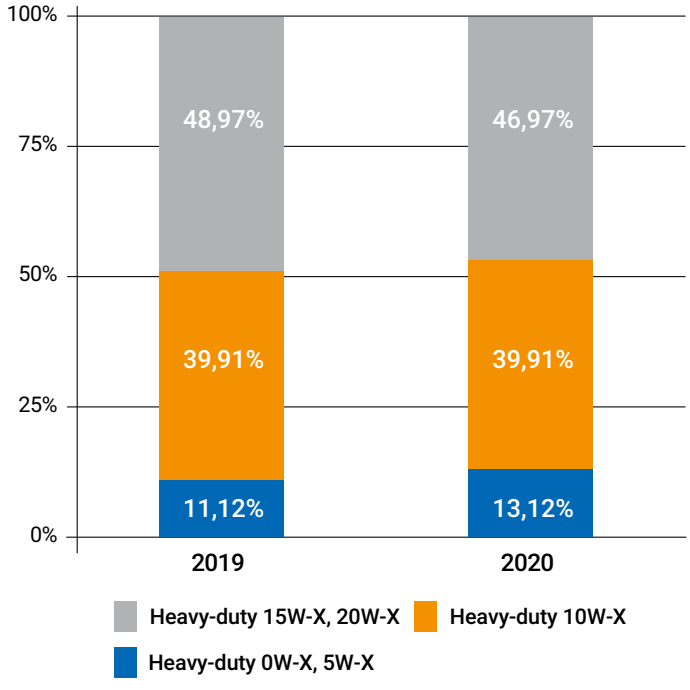
Paradoxically, this level of sales may have been helped by the COVID-19 pandemic. This is because it had a significant impact on the reduction of passenger transport, but together with the buoyant development of the e-commerce industry, it gave a boost to the TSL industry. Considering the significant position of Polish transport companies in European road transport, the increase in sales of heavy-duty engine oils observed in 2020 seems fully justified. This can also be seen in numbers: the observed heavy-duty traffic on Polish roads, between May and December 2020, increased by 4.33% y/y.

Mineral oils with the highest viscosities (15W, 20W) still have a dominant share in this segment. This share, however, has been falling steadily for years, with a decrease by 2 pp. in 2020. The share of oils with medium viscosities remained unchanged year-on-year, despite a 3.60% increase in sales in terms of tonnage. Synthetic oils achieved significant growth (22.21%) in terms of tonnage, which translated into a 2 pp. increase in segment share.

The specific operating conditions of heavy-duty vehicles call into question the electrification of this transport segment. Taking into account the still existing serious technological limitations in the area of electric batteries for heavy-duty vehicles, in the near future electrification is not forecast to have a significant impact on the structure of the segment of heavy-duty engine oils.

FIG. 52 HEAVY-DUTY ENGINE OILS WITH REFERENCE TO VISCOSITY CATEGORIES (EXCLUDING MONOGRADE OILS) – MARKET STRUCTURE IN 2019, 2020

Source: POPiHN's own data



LUBRICANTS FOR INDUSTRY

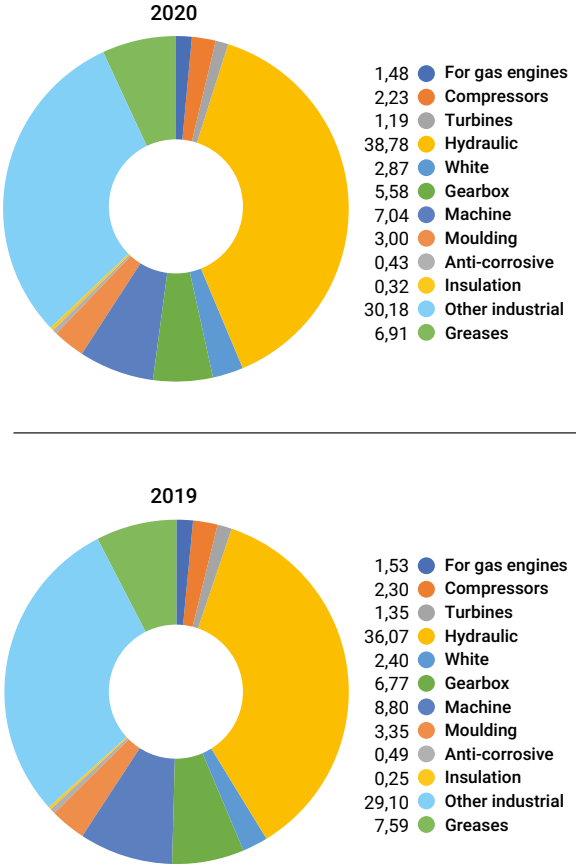
Last year, 97,835 tonnes of industrial lubricating oils were sold in Poland. The above means a decrease by 4.93% compared to 102,912 tonnes sold in 2019.

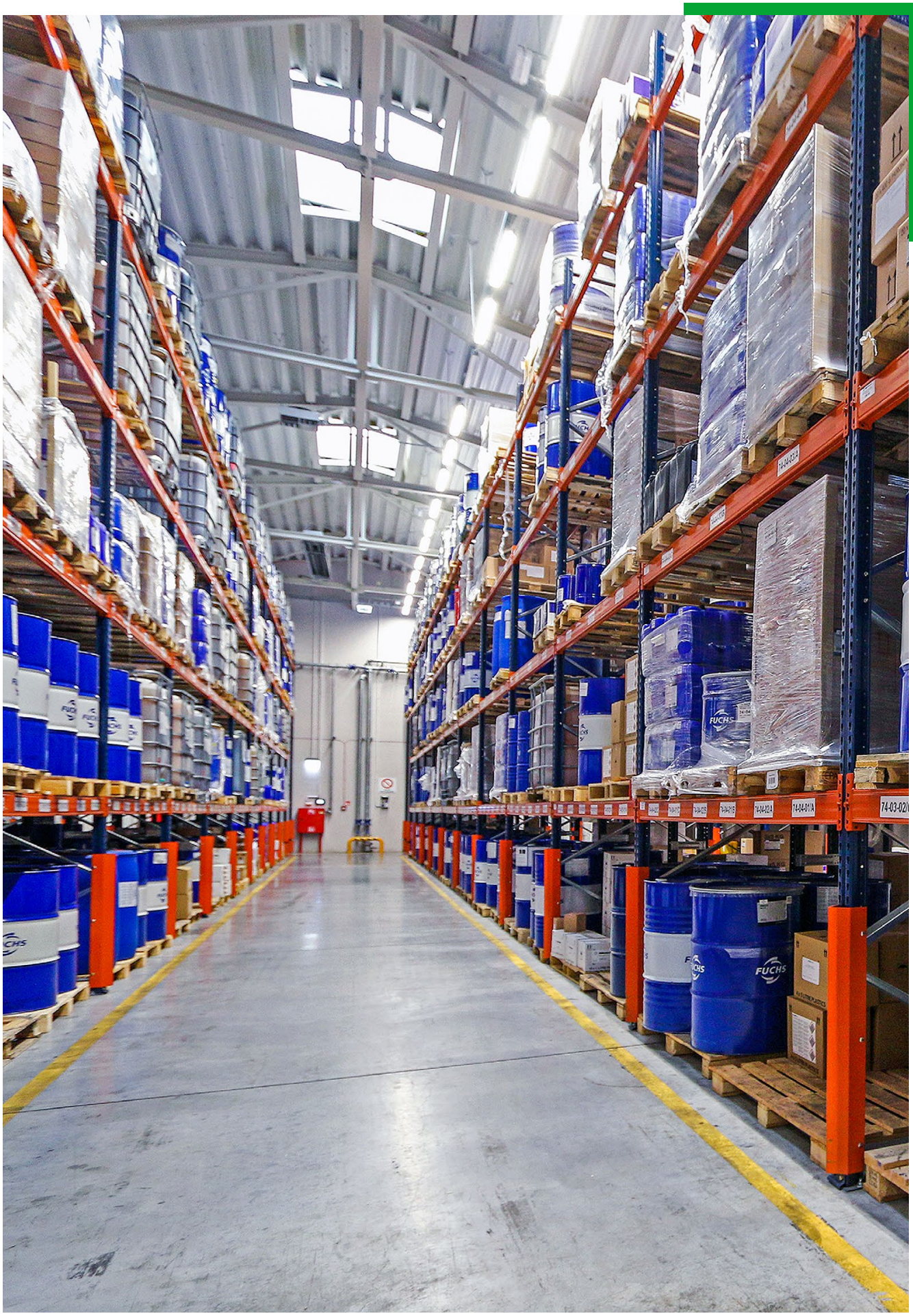
Among the major factors influencing the contraction of industrial oils market, the restrictions related to the COVID-19 pandemic played a key role. Some industries, such as automotive and furniture, temporarily halted production in 2020. This stagnation could not be made up for during the year.

In 2020 there was an increase (2.19%) in sales of hydraulic oils, which translated into a 2.7 pp. increase in their share in the industrial segment. The second largest group in the segment, 'other industrial', shrank by 1.42%, but increased its share in the industrial segment by 1 pp. Taking into account changes from 2020, hydraulic oils and 'other industrial' represent more than 2/3 of the total industrial oils segment. In addition to hydraulic oils, sales growth was also recorded for insulation (22.99%) and white oils (13.97%), but due to their small share in the segment, these increases did not significantly affect the result of the industrial oils segment.

FIG. 53 INDUSTRIAL OILS – MARKET STRUCTURE IN 2019, 2020

Source: POPiHN's own data





Fot.: FUCHS OIL CORPORATION

INFORMATION ON CRUDE OIL AND LIQUID FUELS LOGISTICS

Even during the pandemic PERN has kept its pace. The company has maintained a steady supply of raw materials and fuel supplies for its clients.

The year 2020 was yet another test for companies managing critical infrastructure, such as PERN. The outbreak of Coronavirus resulted in an introduction of a series of sanitary restrictions, forcing adjustment of operating activities to new guidelines. The prime objective, however, was – and continues to be – to secure uninterrupted operations and to minimise risks generated by the spreading of the pandemic.

PERN HAS INTRODUCED SANITARY PROCEDURES INCREASING THE SAFETY OF ITS WORKERS AND BUSINESS PARTNERS.

Implemented procedures allowed for maintaining a steady supply of raw material for refineries and fuels for filling stations.

Meanwhile, as the investment programme of the company continued, new storage tanks entered into service. In spite of detecting cases of infections at construction sites, a number of tanks – e.g. a 10,000 m^3 tank in Boronów fuel depot, two tanks 10,000 m^3 in Emilianów depot, or the 32,000 m^3 tank in Małaszewicze – were completed ahead of schedule. Large-scale investments in raw materials storage were carried in Gdańsk Depot and Oil Terminal in Gdańsk. Also in this case, works have been completed without major deviations from the schedule.

THE FOUNDATION OF PERN GROUP HAS DONATED 1.2 M PLN TO FIGHT THE EPIDEMIC.

The company, being responsible for critical infrastructure, focuses primarily on securing seamless supply of raw materials for refineries and fuels for filling stations.

Apart from carrying out strategic objectives in a challenging environment of the pandemic, PERN has also provided financial and material assistance to those affected by the Coronavirus, and offered support to hospitals both in cash and in kind.

PERN contractors were given an opportunity to benefit from an anti-crisis package that consisted of reduced invoice payment periods, maximum acceleration of wire transfers, and payment support for supplied machinery and equipment. In total, the programme benefited 56 companies in various forms.

56 companies

have benefited from PERN anti-crisis package.

Two fuel tanks at Emilianów Fuel Depot, 10,000 m^3 each, were put into service at the turn of 2020/2021. The tanks were commissioned before the delivery date in spite of the pandemic.

Fot.: PERN

Fot.: PERN

In 2020 PERN commissioned five raw material storage tanks of 100,000 m³ each and one of 45,000 m³. They are located at the coast of the Baltic Sea, at Gdańsk Depot and Oil Terminal in Gdańsk.

Fot.: PERN

DURING THE PANDEMIC PERN IS SUCCESSFULLY IMPLEMENTING A BOLD DEVELOPMENT PLAN: THE SLOGAN ‚ENERGY INDEPENDENCE WITHIN CRUDE OIL AND FUELS' HAS BECOME REALITY.

Today, energy security is a fundamental aspect of state sovereignty.

The 2019 crisis, caused by contaminated crude oil from Russia, only confirmed that actions taken by the Polish Government and petroleum companies are an effective insurance policy for such situations. The key issue is to diversify Poland's petroleum sources and supply routes.

Ever more often Polish refineries purchase crude oil in different regions of the world. We are importing oil not only from Russia, but also from the North Sea, Saudi Arabia, and the United States. Regardless of what kind of crude reaches Poland – and, indeed, all different kinds are imported – PERN is equipped to secure flexible transport to refineries and preserve its quality.

Having the evolution of market trends and client expectations in mind, PERN has commenced implementing a bold MEGA-INVESTMENTS programme to tackle emerging challenges.

PERN MEGA-INVESTMENTS

PERN has already concluded a major part of its expansion works on crude oil storage tanks. In 2020 six new tanks with a capacity of almost 550,000 m³ have been constructed at Gdańsk Depot and Oil Terminal in Gdańsk. One final 45,000 m³ tank at the Oil Terminal in Gdańsk will enter into service in mid-2021. The investment substantially contributes to the flexibility of PERN's logistics system and makes it possible to receive all kinds of oil by sea and separate it in dedicated tanks.

„Yet again, PERN has proven that it delivers on obligations arising from Company's strategy, and, first and foremost, on meeting the prime objective, which is securing undisturbed supplies of oil to our country from any part of the world. The infrastructure that we have today allows for effective diversification, facilitating stable development of the economy"

Igor Wasilewski, Chairman of PERN Management Board

PERN 2016-2020 CAPEX AMOUNTED TO ALMOST 1.6 BN PLN

SIX NEW TANKS AT THE BALTIC COAST IN 2020 TRANSLATE INTO EXPANDING STORAGE CAPACITY BY ADDITIONAL 550,000 M³.

Stage I of expanding storage capacity in fuel segment was completed as early as in 2019 (128,000 m³ in 4 tanks in service at Koluszki and Nowa Wieś Wielka Depot). Commissioning of more tanks steadily continues under stage II of the works. In mid-2020 a tank located in Koluszki was put into service, followed by tanks in Boronów, Emilianów and Małaszewicze at the turn of 2020/2021 – altogether it is a total of almost 100,000 m³ capacity. Works at two fuel depots, in Dębogórze and Rejowiec, are nearing conclusion as well, and in Q2 of 2021 clients will receive a total of additional 128,00 m³ of storage capacity.

Under the MEGA-INVESTMENTS programme, PERN is carrying out two linear investments. The first one is an approx. 100 km long product pipeline from Boronów to Trzebinia. It will connect a PERN Fuel Depot in Boronów with PKN ORLEN Fuel Terminal in Trzebinia. The aim of constructing the pipeline is to increase the security of supplies to southern Poland by extending the range of pipeline transports from PKN Orlen. The Boronów-Trzebinia pipeline is an environmentally-friendly means of transporting fuel that, apart from limiting transport of petroleum products by local roads, offers a series of benefits for towns and municipalities along its route. The contractor for this investment was selected by PERN in January 2021.

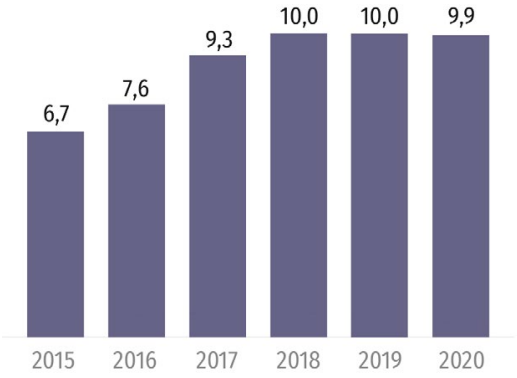
The other linear investment is the II conduit of the Pomeranian Section of the reversible Gdańsk-Płock crude oil pipeline. This project is of strategic importance for energy security of the country. The goal is to create additional infrastructure that will increase pumping security and will become a back-up for transports within the Pomeranian Section. The pipeline will be almost 240 km long. As of now, design works are underway. Once the PKN Orlen partners for the process of PKN Orlen and GK Lotos merger are known, it will become possible to take the decision to initiate construction works. All this, of course, while taking into account the issues of national energy security.

PERN STRATEGIC OIL AND FUEL INFRASTRUCTURE IN POLAND

MODERNISING FUEL DEPOTS IN RESPONSE TO CLIENT EXPECTATION

Steps taken by the Polish government resulted in a radical reduction of grey market for fuels. This, in turn, entails the necessity to create additional capacities, in order to allow the fuel to be legally stored.

FUEL LOADING FOR ROAD TRANSPORT



STAGE I OF EXPANDING FUEL STORAGE CAPACITY, CONCLUDED IN 2019, COMPRISES 4 TANKS WITH A TOTAL CAPACITY OF 128 TYS. M³

PERN is implementing a three-stage programme to increase fuel storage capacity.

Currently, the company is successfully concluding the second stage and, in spite of the Coronavirus pandemic, it is commissioning part of the tanks ahead of schedule. By 2020 the company's capacity grew by over 220,000 m³. This also includes the three last tanks, with a total capacity of over 50,000 m³, put into service in early 2021.

STAGE II OF EXPANDING FUEL STORAGE CAPACITY IS BEING FINALISED. ONCE IT IS COMPLETED, PERN WILL BE OFFERING ITS CLIENTS A TOTAL OF 222,000 M³ IN 9 TANKS.

PERN: GUARANTEEING SAFETY IN THE MARKET

At the end of 2020 PERN laboratories received positive assessment from Polish Centre for Accreditation. This stands as a testimony to the high standards of analyses carried out by Company experts, which is fundamental for the clients and the quality of fuels distributed at the stations. Modern equipment and experienced staff at the laboratories guarantee that the products sent to filling stations from PERN meet quality requirements. This is crucial for consumers' safety.

DĘBOGÓRZE FUEL DEPOT: A WINDOW ON THE WORLD

Petroleum products terminal in Dębogórze is currently one of the foundations of Poland's diversified liquid fuels supply system. It is the only transshipment terminal that allows for major scale imports of fuel by sea from any part of the world. The investments undertaken by PERN will allow the Dębogórze Fuel Depot to enhance the potential of the so-called Maritime Fuel Hub. Comprehensive development plan includes, among other things, increasing storage capacity, upgrading and expanding pipeline transportation, and extending a railway front.

PERN SUPPORTS COMPANIES IN REACHING THE NBT

PERN is modernising its fuel depots in order to allow its clients to meet the National Biofuels Target (NBT), i.e. reach a 14% share of renewable energy in transport by 2030.

PERN is already carrying out works on expanding biocomponents storage capacities for fatty acid methylesters (FAME) and bioethanol. Tender procedures concluded thus far include the expansion of 2,800 m³ esters storage facilities across five locations, i.e. fuel depots in: Koluszki, Emilianów, Wola Rzędzińska, Kawice, Małaszewicze, and a 300 m³ bioethanol tank at Nowa Wieś Wielka Fuel Depot.

Other tender procedures currently underway include expansion of esters storage capacities at Nowa Wieś Wielka and Rejowiec Fuel Depots.

While maintaining high standards, PERN is actively seeking to increase energy efficiency of its own infrastructure through, among other things, a series of pro-ecological initiatives, such as upgrading water treatment plants, sewage, lighting, and petrol vapour recovery systems.

EFFICIENT CLIENT SERVICE AT THE DEPOTS

PERN has finalised tasks related to modernisation of road tanker fronts at Koluszki and Kawice Fuel Depots. Similar works are underway at four more locations: Nowa Wieś Wielka, Boronów, Rejowiec, and Wola Rzędzińska.

The objective is to construct 'multi product' filling stations. Thanks to this the driver will be able to pick up any composition of fuels and additives at one station, without the need for the tanker to go to another loading island. As part of the modernisation of the road tanker fronts, the filling lines are equipped with state-of-the-art modules for dosing the company's additives.

At the end of 2020 the company also launched a modern Transport Operator's Portal, offering a series of online tools that accelerate and facilitate access to PERN services for transport companies. The Portal features information on transports awaiting loading or loading fuel at a given facility, and serves as a database on drivers and transport companies' vehicles, as well as transports currently en route. After the first few weeks since its launch, over 100 transport companies were already using the Portal. This novel solution greatly reduced the time necessary for registering drivers and vehicles collecting

fuel at PERN fuel depots. It also eliminated paper requests, sent via traditional mail, the handling of which took up to several days, and prompted the shift towards digital solutions. The change simplified the procedures for registration, verification, and permission to access depot, reducing the processing time to just 30 minutes.

INVESTMENTS IN AUTOMATION

A series of investments are carried out at PERN fuel depots with the aim of implementing automated technological processes solutions, as well as bringing up depots' control and visualisation systems to the newest global standards for industrial control systems.

The main goal is to increase the level of operational safety of particular installations through, among other things, monitoring statuses of specific actuators and metering devices and signalling to parent level system. Easier access to key technological parameters will allow the operators to take decisions more quickly and will substantially reduce human factor in the flow of information concerning the working status of particular installations.

Comprehensive automatics upgrading begun at PERN in 2018. One of the first systems to be modernised was the Central Dispatching System, along with the Leakage Detection System. The process is set to be completed in 2021. Automatics upgrading is an investment in an even higher level of reliability and safety, offering trouble-free operations in a 24/7 regime. The system is designed to include all PERN depots, i.e. fuels and raw materials storage, as well as pipelines.

The tanks themselves also feature state-of-the-art automatics. Floating-roof raw materials and fuel tanks are equipped with monitoring systems that control the position of the roof and notify of any incidents and possible machinery failures. Both newly-constructed and overhauled tanks at raw materials and fuel depots have additional safety measures, such as emergency shut-down, which allows for stopping processes safely in the event of a failure or human error.

PERN PHOTOVOLTAICS PILOT

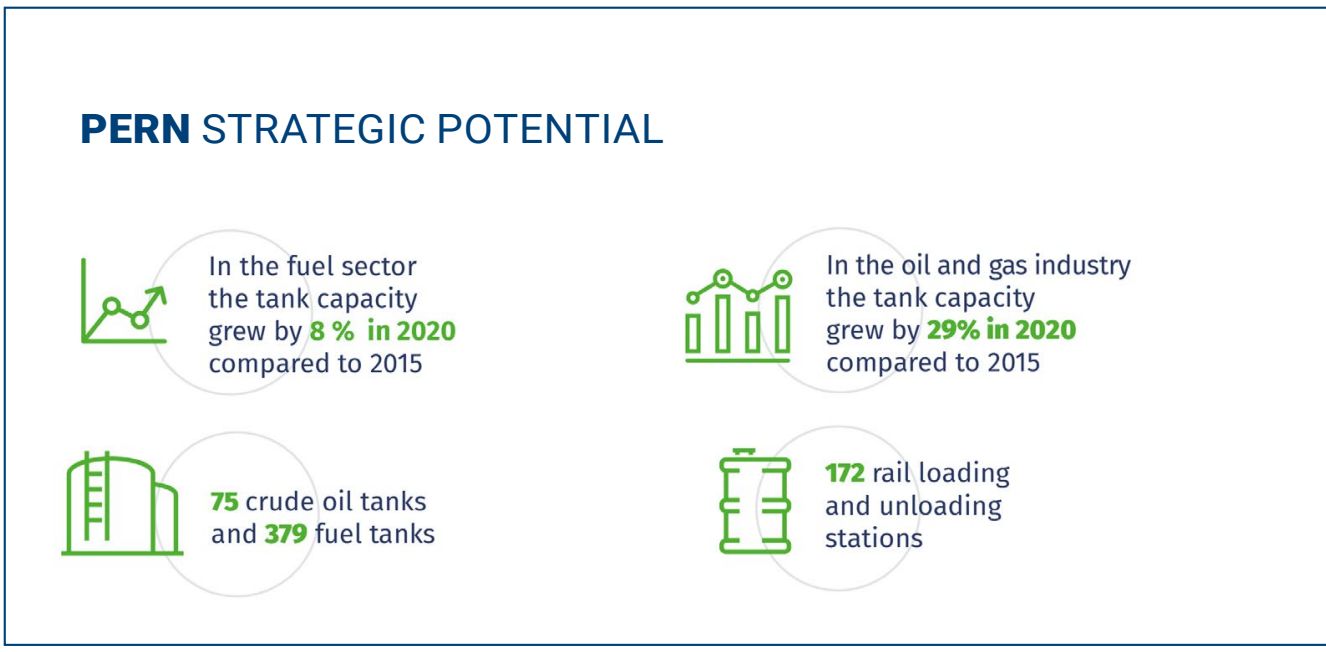
In autumn 2020 PERN has initiated a pilot operations of its first PV installation. The installation, located at Boronów Fuel Depot, is the result of implementing one of the dissertations prepared by a team of PERN employees involved in the PERN Management Academy. It is expected to offer savings amounting to several percent of energy consumption costs. Depending on the success of this project, other implementations will follow.

PERN recognises the potential of alternative sources for electric power generation, hence, as part of the pilot project, we are installing photovoltaic panels in Boronów, in one of our fuel depots. The contract for the works has already been signed, the technical and design consultations have been concluded, and the construction site has been handed over to the contractor.

PERN: THE LEADER IN PETROLEUM AND FUELS LOGISTICS IN POLAND – A SUMMARY

PERN is the leader in raw materials and fuels logistics. Securing crude oil supplies to largest fuel producers in Poland and Germany makes it a strategic company for guaranteeing energy security of Poland and the European Union.

The company manages a network of petroleum and fuel pipelines, operating 4 oil and 19 fuel depots across Poland. This allows PERN to offer efficient petroleum logistics and maintain fuel availability throughout the entire country. By the end of 2020 the company was employing 1629 persons.



IN 2020 THE COMPANY INTRODUCED AN INTEGRATED MANAGEMENT SYSTEM UNDER FIVE ISO STANDARDS

Business Continuity Management and Information Security Management systems are the newest additions to Company's Integrated Management System, implemented and certificated by the Office of Technical Inspection (UDT-CERT). Currently, five areas of PERN activities are functioning in line with the international ISO standards, including quality management, environmental management, and health and safety at work. UDT-CERT certificates confirm that PERN has implemented and applied the requirements of the international ISO standards.

ERN's Integrated Management System meets the requirements of the following standards:

ISO 9001 – Quality Management Systems,
ISO 14001 – Environmental Management Systems,
ISO 22301 – Business Continuity Management Systems,
ISO 27001 – Information Security Management Systems,
ISO 45001 – Occupational Health and Safety Management Systems.

The system covers all organisational units of the company. It set the principles governing core processes, as well as management and auxiliary processes that jointly allow for reliable

and safe implementation of key activities, i.e. pipeline transport, storage, and transshipment of crude oil and liquid fuels.

IN 2021 PERN AIMS TO RECEIVE CERTIFICATION UNDER ISO 50001 – ENERGY MANAGEMENT SYSTEMS

ARMONISED STRUCTURE OF THE CAPITAL GROUP

In the 2016-2020 period PERN harmonised the structure of the PERN Capital Group. The Group comprises five companies.

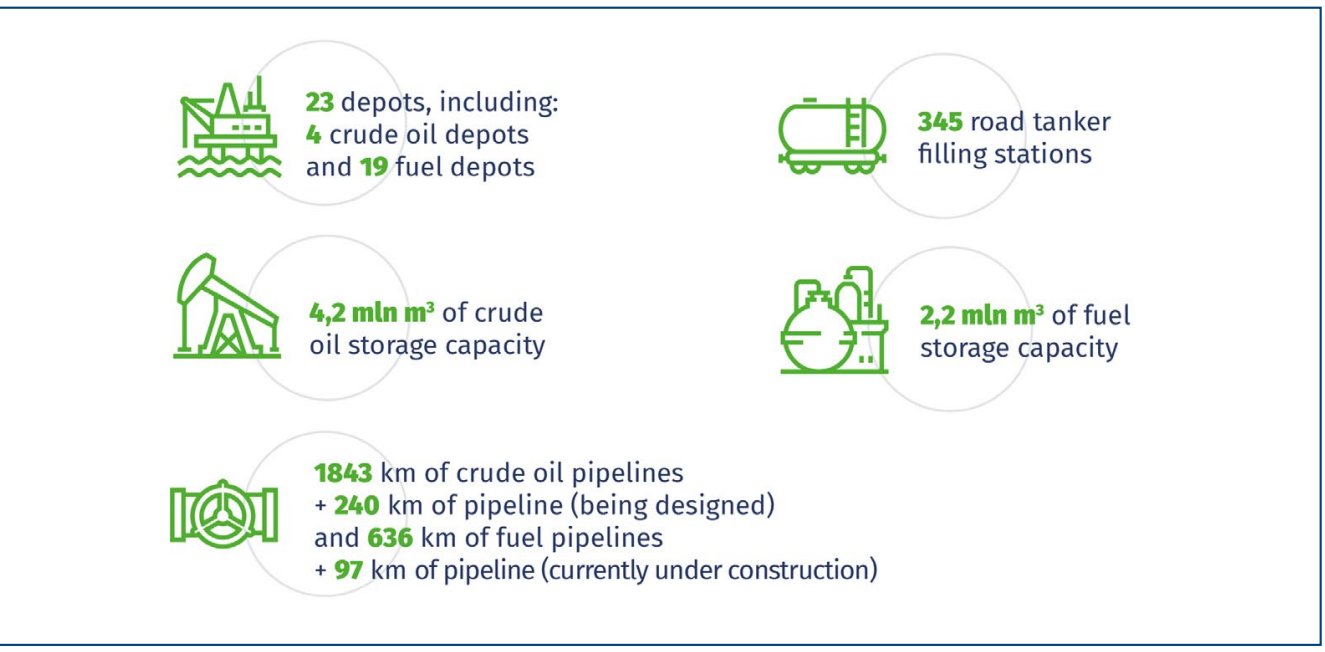
Naftoport Sp. z o.o. – 66,67% PERN shares.
Company responsible for crude oil and petroleum products transshipments in Port of Gdańsk. The company is a crucial element of crude oil transit and supplies to Polish and German refineries, as well as land-to-sea petroleum products transshipment.

Naftoserwis Sp. z o.o. – 100% PERN shares.
The largest Polish provider of specialised technical maintenance services for fuel depots (including servicing, repair works, and tank cleaning), as well as pipeline diagnostics services.

Naftor Sp. z o.o. – 100% PERN shares.
Security company, equipped to carry out tasks related to protecting physical and technical security of facilities of particular importance to the economic interests of the state.

'Siarkopol' Gdańsk S.A. – 100% PERN shares.
Company responsible for sea exports of Polish fossil sulphur to global markets. Apart from handling granulated sulphur, Siarkopol offers transshipment and storage of liquid petrochemical, chemical, and plant-based products.

MPR Sarmatia Sp. z o.o. – 28,8% PERN shares.
A special-purpose vehicle established in 2004 by two shareholders: PERN S.A. and Ukrainian 'Ukrtransnafta' S.A. with the aim of developing the project of the Euro-Asian Crude Oil Transit Corridor. Current shareholders (apart from its founders) include: State Oil Company of the Azerbaijan Republic (SOCAR), Georgian Oil and Gas Corporation (GOGC) LLC, and the Lithuanian AB 'Klaipedos Nafta'.



POPiHN

Polska Organizacja Przemysłu i Handlu Naftowego

ul. Rejtana 17 lok. 36, 02-516 Warszawa,
tel/fax: 22 848 36 05, popihn@popihn.pl

www.popihn.pl