



Annual report 2023

POPiHN

Polska Organizacja Przemysłu i Handlu Naftowego

OIL INDUSTRY AND TRADE 2023



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DEAR READERS,

the past year has been very difficult for the fuel industry. The prolonged Russian-Ukrainian war destabilised the fuel market worldwide. The embargo on imports of finished fuels, which came into force on 5 February 2023, played a key role in reducing the energy dependence of European Union countries on Russia. Thanks to the good preparation of companies in the fuel sector, imposed sanctions did not adversely affect the balance of the market and did not lead to price increases. Earlier media predictions of impending fuel shortages and high retail prices exceeding PLN 10 per litre fortunately did not materialise. It was possible to launch new import destinations for crude oil and finished fuels. In the first months of the year we even recorded declines in fuel prices, thanks to high stock levels accumulated at fuel depots and stations at the end of 2022.

Although the European Union's VI sanctions package did not apply to LPG, some fuel companies voluntarily stopped trading in autogas imported from Russia. It, in turn, led to large differences in the profitability of this part of the fuel market. Stations selling more expensive western gas were unable to compete with those offering gas from Russia, cheaper by a few tens of gr¹ per litre. It was only in December that EU sanctions on LPG were agreed. They will come into force on 20 December this year. Are we in danger of a fuel crisis because of this? We are of the opinion that Poland can manage without Russian LPG. However, good use should be made of the time to prepare the market for sanctions, with a particular focus on optimising rail logistics linking the ARA market and domestic seaports with inland terminals.

Between September and November last year, the Polish fuel market experienced disturbances, both in the wholesale and retail segments. The fuel deficit was caused by a large disproportion between local wholesale prices and quotations of petroleum products on global exchanges. Consequently, fuel imports necessary to balance the market were reduced to a minimum as they became unprofitable. Polish filling stations offered fuels at prices much lower than in neighbouring countries, which led to a large-scale 'fuel tourism' and an increase in retail sales. Fuel depots introduced numerous restrictions on direct supplies to companies in heavy transport, agriculture and construction, which further increased sales at filling stations and disturbed the market balance. The growing fuel demand was what some depots were periodically unable to meet. In such

a situation, logistics chains lengthened due to picking fuels up from more distant terminals. The above made it difficult to plan deliveries and increased waiting times for delivery to stations. As a consequence, fuels began to be periodically in short supply at both depots and filling stations. Subsequently numerous fuel companies suffered noticeable financial losses.

Despite the difficult economic situation, the above-described disturbances and the significant fuel exports from Poland to Ukraine, in 2023 domestic sales of the three fuels increased by approximately 6.5% compared to 2022. The increase in legal sales translated, among other things, into record revenues that the industry paid into the public finance system. In total, last year tributes on fuel sales amounted to over PLN 93 billion (excluding the PLN 13 billion paid by ORLEN to the Price Difference Payment Fund). When strategically planning the energy transition, it is already worth considering now where the State will get its revenue from when it runs out of fossil fuel sales. New technologies for 'green' transport fuels can be developed provided that they are not heavily taxed. Besides, companies need large investments for carrying out research and developing the low-carbon economy. It is easy to set new ambitious emission reduction targets. It is, nonetheless, more difficult to develop concrete plans to achieve these targets, to secure adequate financing for them and to implement them.

This is the environment in which most of the 'Fit for 55' package was adopted. In April, the regulation on carbon dioxide emission levels for cars and vans was amended. It was agreed that from 2035 onwards, the emissions reduction level for cars entering the EU market would be 100%. In May, a reform of the emissions trading scheme was passed; the scheme is to cover, among other things, fuels in the transport sector (EU ETS II). Meanwhile, in October a revision of the rules on renewable energy sources (RED III) was adopted. At the same time, there was an adoption of a regulation on ensuring conditions for the development of sustainable air transport (RefuelEU Aviation). These changes are expected to accelerate shifting away from fossil fuels.

'Oil Industry and Trade 2023' Report is precisely about how the fuel and lubricating oils industry is changing and what challenges it faces. We invite you to read the Report and wish you an enjoyable reading experience.

¹ [One Polish zloty (PLN) is subdivided into 100 grosz (gr)]

Leszek Wiwala
President & Director General

Krzysztof Starzec
Chairman of the Board of Directors

POPIHN MEMBERS IN 2023



STRUCTURE OF THE ORGANIZATION

BOARD OF DIRECTORS

- Current term of office is: June 2022 – June 2025.
- 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 Director
 - Krzysztof Strzelecki – AMIC Polska Sp. z o.o.
 - Rafał Pietrasina – ANWIM S.A.
 - Armen Konrad Artwicz – PKN ORLEN S.A.
 - Paweł Stańczyk – PERN S.A. (until July 2023)
 - Ireneusz Nieznański – Shell Polska Sp. z o.o.
 - Katarzyna Mazurek – Sloznaft Polska S.A.
 - Rafał Galli – TotalEnergies Marketing Polska Sp. z o.o.
 - Robert Brzozowski – UNIMOT S.A.

MANAGEMENT BOARD

Leszek Wiwala – CHAIRMAN-DIRECTOR GENERAL

OFFICE

- Krzysztof Romaniuk – Director of Fuels Market Analysis
- Jan Strubiński – Director of Regulatory
- Joanna Lewandowska – Office Manager
- Nadia Rybczyńska – Senior Specialist on communication, safety and environment (until June 2023)

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 2023:

Petrol.....	0,741 Mg/m ³
Diesel.....	0,833 Mg/m ³
Light fuel oil.....	0,828 Mg/m ³
LPG.....	0,539 Mg/m ³

PRODUCT DENSITIES USED IN MASS TO VOLUME CONVERSIONS IN 3RD QUARTER OF 2023:

Petrol.....	0,748 Mg/m ³
Diesel.....	0,834 Mg/m ³
Light fuel oil.....	0,828 Mg/m ³
LPG.....	0,533 Mg/m ³

PRODUCT DENSITIES USED IN MASS TO VOLUME CONVERSIONS IN 2ND QUARTER OF 2023:

Petrol.....	0,738 Mg/m ³
Diesel.....	0,831 Mg/m ³
Light fuel oil.....	0,830 Mg/m ³
LPG.....	0,541 Mg/m ³

PRODUCT DENSITIES USED IN MASS TO VOLUME CONVERSIONS IN 4TH QUARTER OF 2023:

Petrol.....	0,744 Mg/m ³
Diesel.....	0,837 Mg/m ³
Light fuel oil.....	0,829 Mg/m ³
LPG.....	0,530 Mg/m ³

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CHALLENGES FACING THE FUEL INDUSTRY IN POLAND

FUEL SECURITY

The war in Ukraine has destabilised the global market for oil, fuels and other energy carriers. For more than two years, the issue of fuel security has been frequently raised in the domestic public debate. In this context, it is worth noting the definitions of this term in the national legislation. **The country's fuel security is a state which makes it possible to cover the current demand of consumers for crude oil, petroleum products and natural gas, in a specified volume and time, to the extent enabling the proper functioning of the economy**¹. The quoted content strongly emphasises the importance of fossil fuels at the current stage of social development. Whether we want it or not, today's socio-economic development depends on the smooth operation of oil companies.

The economic sanctions imposed on Russia have had a significant impact on shaping new practices in the area of fuel security. It is worth mentioning that POPiHN members withdrew from offshore oil supplies from Russia well before 5 December 2022 when EU sanctions came into force. At the same time, supplies by pipeline were reduced to the contractual minimum. On 5 February 2023, all diesel deliveries from Russia were halted, and starting from 25 February 2023, there was an unannounced halt to deliveries by pipeline from Russia. What was difficult to imagine a few years ago has become a reality. Thanks to a great deal of work it was possible to secure the Polish fuel market, avoiding shock therapy for the economy and society.

In the context of sanctions, it is worth citing earlier concerns about the expected effects of their entry into force. As early as in January 2023, the media threatened that a litre of diesel would soon cost as much as PLN 10². Meanwhile, nothing of the sort happened. The fuel industry rose to the challenge, managing to maintain stable fuel supplies and prices. The availability of fuel for Polish consumers was guaranteed, care was taken to ensure a high level of stocks in fuel depots and tanks at filling stations, production was carried out at domestic refineries and supplies from abroad continued, mainly by sea.

New import directions for crude oil and finished fuels allowed logistics chains to be maintained. However, it was not without turbulence. In the first half of last year there was a situation where some foreign fuel deliveries had to be stopped due to, among other things, a lack of storage space. The excess of supply over demand caused fuel prices, especially diesel, to drop significantly in the second quarter.

In the following months, especially in the September-November period, the situation reversed completely. As already mentioned in the introduction to this Report, significantly lower fuel prices in Poland compared to neighbouring countries led to an excess of demand over supply. Sales at filling stations, not only in border areas, were so high that transport companies could not keep up with fuel deliveries. In such a situation, an increase in refinery and retail prices was to be expected. Unfortunately, market mechanisms did not work and fuel prices at stations continued to fall. The two domestic refineries could not cover such a large demand within Poland. The fuel imports necessary to cover market shortfalls, with extremely low domestic prices, were unprofitable. Price discrepancies increased further after 21 September, when a ban on exports of finished fuels was introduced in Russia³. Many Polish transport, construction and agricultural companies, which had counted on a reduction in wholesale fuel prices after the holidays and had not concluded appropriate forward contracts beforehand, were not ready for such a development. For these companies, fuel supplies unexpectedly turned out to be much more expensive than the prices offered at retail. Drivers from these companies diverted their demand to filling stations, further disrupting the supply chain. At the refineries and at depots, fuels were there all the time, but not everywhere in the right quantities. Once again, rail logistics encountered difficulties. Delays of cargo trains led to some depots going into emergency release mode. This, in turn, resulted in the need to pick up fuels at more distant depots, resulting in congestion at terminals and additional unnecessary driving time. As a result, some filling stations experienced periodic petrol and diesel shortages.

¹ The legal definition of 'state's fuel security' is set out in Article 2(1)(1) of the Act of 16 February 2007 on stocks of crude oil, petroleum products and natural gas and the principles of dealing with threats to state's fuel security and oil market disturbances (Journal of Laws 2023, item 1650).

² <https://energia.rp.pl/paliwa/art37728681-nawet-10-zi-za-litr-moze-kosztowac-diesel-w-i-kwartale-2023-w-polsce> (accessed 20.02.2024), <https://www.tokfm.pl/Tokfm/7,103085,29435149,zla-wiadomosc-dla-kierowcow-ekspert-indicates-how-high-prices.html> (access: 20.02.2024).

³ EU importers had to compete for finished fuels on the world market with Brazil or Turkey and other countries that had previously bought Russian fuels. The Kremlin's actions should be read as an attempt to put pressure on the EU. The lack of Russian diesel on the world fuel market just before the start of preparations for the winter season was expected to disrupt supplies and push up diesel prices; A. Fedorska, W. Jakóbiak, 'Russia halts fuel exports. Poland has stocks', <https://biznesalert.pl/rosja-eksport-paliw-zakaz-dekret-polska-zapasy-strategiczne/> (access: 26.02.2024).



Fot.: ORLEN S.A.

The above circumstances should be urgently taken into account as part of the preparatory work for the implementation of the sanctions on Russian LPG, which were successfully passed in the EU, in December 2023, and which will come into force 10 days before the end of this year. It is worth learning from previous experience, especially as the media are again raising the alarm that we are facing a fuel crisis⁴. Poland can do without Russian LPG. The time should be well used to prepare the market for sanctions, with particular emphasis on plans to optimise rail logistics, the urgent construction of petrol storage facilities and the expansion of marine terminals to handle petrol deliveries.

The Polish intervention stock system has worked well so far, but it needs improving. First of all, it is necessary to return to the process of changing the structure of stocks, which was interrupted in 2017. Ultimately, the division of the obligation to maintain physical fuel stocks between the Government Strategic Reserves Agency (RARS) and fuel companies should be in the proportion of 2:1. In other words, the state side should be responsible for 60 days of stocks

THE POLISH INTERVENTION STOCK SYSTEM HAS WORKED WELL SO FAR, BUT IT NEEDS IMPROVING.

and fuel companies for 30 days. Such a division was mentioned when the stock system was set up, but the timetable for change was only written into the legislation until 2017. For the past seven years, traders have been responsible for 53 days, which means that in the absence of adequate storage capacity and a rapidly growing market, traders are trying to over-secure volumes for future stocks. As a result, the optimal potential of Polish storage tanks is not being used.

⁴ M. Kubicki, 'Poland's fight for LPG. Petrol may run out due to sanctions', <https://www.bankier.pl/wiadomosc/Polska-walka-o-LPG-Przez-sankcje-moze-zabraknac-benzyny-8693648.html> (access: 24.02.2024).

ENERGY MARKETS ARE STRONGLY INTERCONNECTED, SO IT IS WORTH NOTING THE BROADER OPTICS OF THE ISSUE OF 'ENERGY SECURITY'.

Although significant investments in petroleum infrastructure have been made in the country during the past few years, as discussed in the last chapter of the Report, they are far from sufficient for the needs of the Polish economy. The high pace of economic development and the reduction of crime in fuel trading have led to unexpected increases in petrol and diesel supplies. In addition, in connection with preparations for Ukraine's membership in the International Energy Agency, the parliament in Kiev has established a stock system for oil and petroleum fuels. It allows 50% of liquid fuel stocks to be maintained on the territory of neighbouring EU member states during the war with Russia. There are many indications that this conflict will continue for years, and this means the need to maintain large stocks in neighbouring countries for the needs of the Ukrainian market. Poland, as one of the most important suppliers of fuel to Ukraine, is a natural place where such stocks could be stored. Such a situation may significantly exacerbate the storage capacity deficit in our country.

It is worth adding that Ukrainian regulations allow the share of stocks held in neighbouring EU Member States to decrease to 25% after the end of military operations. Business operators from Ukraine's fuel sector are already seeking access to storage capacities close to their territory, including in Poland. In practice, this raises the need to constantly balance between stabilising liquid fuel supplies to the domestic market and the need to ensure Ukraine's fuel security. Bearing in mind the need to secure fuel supplies for Ukraine and the energy security of the entire Central and Eastern European region, POPiHN members consider it acceptable for part of the fuel stocks destined for the Ukrainian market to be stored in Poland. At the same time, however, it is necessary to reform the system by gradually increasing the role of RARS in maintaining intervention stocks to the 60-day level.

ENVIRONMENTAL PROTECTION

The aftermath of the Russian aggression has shown that energy markets are strongly interconnected, so it is worth noting the broader optics of the issue of 'energy security'. This term denotes the state of the economy that makes it possible to meet the current and prospective demand of consumers for fuels and energy in a technically and economically viable manner, **while respecting the requirements of environmental protection**⁵. The point is that it is necessary to take a dynamic approach to the changes taking place in our environment. Securing the supply of fuels and energy must not be at the expense of the well-being of future generations or the surrounding nature. This last element is worth paying particular attention. Reducing the negative effects of global warming and environmental pollution are currently among the greatest challenges facing the Earth's inhabitants. At the same time, it is important to remember that almost every human activity has an impact on our environment.

Last year, the Intergovernmental Panel on Climate Change (IPCC) published the *Synthesis Report Climate Change 2023 (AR6)*. It presented the latest research findings, which clearly show that human activity, primarily through the emission of greenhouse gases, has indisputably caused global warming⁶. Scientists have described in detail the many negative effects of global warming, such as more frequent and more intense extreme weather events. Recent research presented by the IPCC has indicated that the impacts of climate change on human life and the environment are greater, more widespread and more severe than anticipated. People in all regions of the world are affected. In addition, the updated projections show that future risks will increase rapidly with every fraction of a degree of warming. POPiHN fully shares the conclusions expressed in the IPCC's study. Reducing greenhouse gas emissions, decarbonising industry and green investment are strategic priorities for POPiHN members, who are working towards the goals of the Paris Agreement.

The effects of climate change are not easily seen or felt by individuals, and certainly not in all regions of the world. One may encounter opinions that the negative effects of global warming do not affect Poland. Nothing could be further from the truth. The socio-economic losses we are already experiencing in the country are high⁷. One such example is droughts in our region of Central Europe, which has been explicitly mentioned for several years by representatives of the Institute of Meteorology

⁵ The legal definition of 'energy security' is contained in Article 3(16) of the Energy Law of 10 April 1997 (Journal of Laws 2022, item 1385, as amended).

⁶ AR6 Synthesis Report Climate Change 2023 <https://www.ipcc.ch/report/ar6/syr/> (access: 28.07.2023).

⁷ The economic aspects of warming are presented in a more comprehensive manner in a report by the Polish Chamber of Insurance and the consultancy firm EY entitled 'A climate of increasing losses. The role of insurance in climate protection and energy transition', which shows that over the past 40 years, Poland has lost around EUR 16 billion due to global warming, and the value of these losses is increasing rapidly!

Fot.: UNIMOT S.A.



and Water Management⁸. This problem can also have a negative impact on the decarbonisation of industry – access to large amounts of water is one of the key elements in the development of hydrogen technologies for energy.

It is worth remembering that the world's population is growing steadily and, in parallel, consumers' energy aspirations are also increasing. The demand for energy is so high that even in rich countries, investments in the extraction of fossil energy resources have returned to favour as a result of the Russian-Ukrainian war. This makes it clear that no country can counter the climate threats on its own. They must be treated as a challenge facing all of humanity, which can only be met by a collective effort of politicians, businesses and consumers. This was emphasised by Dr Fatih Birol in his speech at the G20 Working Group meeting

in Goa in July 2023⁹. The executive director of IEA advocated the urgent need to accelerate investment in low-carbon energy sources worldwide. This is to ensure the sustainability of the global economy to meet climate targets, **improve energy security** and begin to build a new global energy economy.

In his speech in Goa, Dr Birol stressed that the richest countries should commit to achieving a doubling of energy efficiency and a tripling of global renewable energy capacity by 2030. According to the IEA's director, these are necessary conditions to limit the process of global average temperature increase to 1.5°C. To fulfil Dr Birol's appeal, gigantic financial investments are required. Unfortunately, world leaders cannot agree on the actions needed to stop the war against Ukraine or to freeze the conflict in the Middle East. The world is full of geopolitical tensions, which is most evident

⁸ According to IMGW experts, the long-term drought has continued in Poland since 2014. <https://www.farmer.pl/produkcja-roslinna/susza-2023-jest-bardzo-sucho-a-bedzie-jeszcze-gorzej,133675.html> (access: 20.02.2024); similarly, „Sytuacja hydrologiczna w Polsce - SUSZA”, Communication from IMGW-PIB 15.05.2020, <https://imgw.pl/wydarzenia/imgw-pib-sytuacja-hydrologiczna-w-polsce-susza> (access: 20.02.2024).

„Droughts in the 21st century are different from those in previous centuries. They tend to last longer, cover larger areas and are accompanied by higher temperatures. The natural course of droughts has been greatly exacerbated by increasing demand for water, increasing anthropopression and climate change. Projections by the European Environment Agency indicate that in 2041-2070 the frequency of meteorological droughts will increase in almost all of Europe - also in Poland”, magazine Obserwator IMGW, Special Edition 2020, p. 7.

⁹ <https://www.g20.org/en/media-resources/press-releases/july-2023/etwgm-concludes/> (accessed 29.02.2024)



Fot.: SHELL POLSKA SP. Z O.O.

in the strained China-US relations. In addition, Huti attacks in the Red Sea are disrupting most of the international maritime transport that until recently used the Suez Canal. This also largely applies to the transport of oil and finished fuels from the Gulf states. Instead of fighting for a common future and the development of clean technologies, the rich countries of the so-called West are forced to spend more and more on armaments. In spite of this, the international dialogue on accelerating the energy transition continues, although it also raises many social controversies. The best example of this is the protests by EU farmers against some elements of the 'European Green Deal'.

EMISSION STANDARDS FOR PASSENGER CARS

The transport sector is responsible for almost 25% of the greenhouse gas emissions produced in the European Union, the majority of which are accounted for by passenger cars. In view of this, it should come as no surprise that one of the most important changes adopted as part of the 'Fit for 55' package was the Regulation of the European Parliament and of the Council Regulation (EU) 2023/851 of 19 April 2023

amending Regulation (EU) 2019/631 with regard to strengthening the CO₂ emission standards for new passenger cars and for new light commercial vehicles in line with the EU's more ambitious climate targets. According to this regulation, new cars placed on the EU market will have to meet a 100% reduction requirement, starting from 2035. This means that in less than 11 years, manufacturers will only be able to introduce zero-emission vehicles into the Common Market. This requirement will primarily be met by electric (including hydrogen) cars.

By the end of 2025 (and every two years thereafter), the Commission is to submit a report to the European Parliament and the Council on progress towards zero-emission road mobility. The report is to monitor and assess the need for possible additional measures to facilitate a fair transition (Article 14a(1)). In this document, the Commission is to take into account all factors that reasonably contribute to achieving climate neutrality by 2050. This includes: the possibility of using innovative technologies and sustainable alternative fuels (including synthetic fuels) to achieve climate-neutral mobility (Article 14a(1)(j)).

It is worth noting the difficulty of implementing these regulations in practice. Internal combustion engine passenger cars are already often adapted

¹⁰ <https://www.consilium.europa.eu/pl/policies/green-deal/fit-for-55-the-eu-plan-for-a-green-transition/> (access: 28.02.2024).

¹¹ Official Journal of the European Union L 110/5, 25.04.2023.



to use synthetic petrol or advanced biofuels. Allowing internal combustion cars to run on fuels that meet the 100% emission reduction requirement entails the introduction of equipment in the vehicles to differentiate between the type of fuel. This technical problem can be illustrated by the example of bio-LNG. This fuel is produced from the methane fermentation of waste from agricultural or food production, or from municipal waste. After the biogas has been purified several times, it is liquefied. The result is liquid methane, whose chemical parameters do not differ from those of LNG obtained from natural gas. However, there is a fundamental difference between LNG and bio-LNG. The latter can even have a negative CO₂ reduction rate over the entire fuel life cycle. Admittedly, bio-LNG is mainly used to fuel tractor engines, but the technical challenge for producers is the same. On the basis of chemical analysis, it is not possible at the current stage of scientific development to distinguish whether the hydrocarbons are of organic origin or derived from the processing of oil or natural gas.

The move away from internal combustion engines in fossil-fuel-powered cars is supported by their low energy efficiency. Despite major technological advances in this area, modern internal combustion engines achieve up to 45% efficiency. In other words, most of the energy is lost as heat. In contrast, the efficiency of electric motors is more than twice as high, reaching up to 95%. Electromobility, especially in the passenger car sector, makes sense in the long term. In addition to reducing greenhouse gas emissions and eliminating pollutants contained in exhaust fumes, its development will also mean increased energy security. Low-carbon power generation can be significantly expanded, while we should not count on the discovery of new oil deposits in Poland. For this, it is necessary to expand the existing electricity transmission network according to a new architecture of bilateral flows. If the number of electric cars increases significantly, they can be used as one of the elements stabilising the electricity system in the form of energy storage. Although their number is increasing year on year, they are still few in number as electric vehicles account for less than half a percent of all cars in Poland.

A major obstacle to the development of e-mobility, especially in achieving economies of scale, is that electric cars still have high prices. At the same time, it is important to remember that any production of electricity generates greenhouse gas emissions, as does the manufacture of electric vehicles themselves. Nevertheless, what seems to be important is the fact that much more copper and rare earth elements are required to produce an electric car than to manufacture an internal combustion car. Research projects are underway around the world to invent new electricity storage technologies that will be more efficient than lithium-ion batteries and will also make humanity less dependent on rare earth elements.

RESEARCH PROJECTS ARE UNDERWAY AROUND THE WORLD TO INVENT NEW ELECTRICITY STORAGE TECHNOLOGIES.

It is also worth remembering that the mere abandonment of the registration of new petrol or diesel-powered cars will not cause a leap in demand for liquid fuels, especially in the less wealthy countries of the Community. The process of popularising electric cars in Poland will still take many years, with a clear delay compared to Western countries. This is also due to differences in the affluence of societies. Internal combustion engine vehicles will continue to be used in Poland long after 2035. Current operating costs will also have a significant impact on the transition away from internal combustion engine cars, and they will largely depend on the way in which obligations stemming from other regulations, which are part of the 'Fit for 55', are implemented in national legislation. In parallel, there will be tools increasing the cost of owning one's own vehicle, resulting from the implementation of obligations included in the National Recovery Plan: the registration fee is to be introduced by the end of 2024, and the vehicle ownership tax by the end of the second quarter of 2026.

ETS 2, OR TRANSPORT IN THE EMISSIONS TRADING SCHEME

One of the regulatory pillars of the energy transition that will have an impact on consumer costs is the revision of the European Emissions Trading Scheme. It was introduced by Directive (EU) 2023/959 of the European Parliament and of the Council of 10 May 2023 amending Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the Union and Decision (EU) 2015/1814 on the establishment and operation of a market stability reserve for the EU's greenhouse gas emission trading scheme¹². The Directive introduced a new, separate emissions trading scheme for buildings, road transport and additional sectors (so-called ETS 2). This scheme is separate from the existing ETS 1, with a separate allowance cap and emission reduction target (42% by 2030 vs. 2005). The rate of decline of the allowance pool is 5.10% per year from 2024 and 5.38% from 2028.

¹² Official Journal of the European Union L. 130/134 of 16.05.2023.

Auctioning of emission allowances under ETS 2 is scheduled to start on 1 January 2027. However, the legislation includes the possibility of a one-off emergency brake. If oil and gas prices are too high, ETS 2 allowance surrenders will be introduced with a one-year postponement (2028). An additional safeguard in the form of a price stabilisation mechanism provides for the transfer of a limited volume of allowances from the Market Stability Reserve¹³ if allowance prices exceed €45/t CO₂e.

The system places obligations on fuel suppliers, not consumers, who will nevertheless ultimately bear the costs of the reform. From 2025 onwards, emissions corresponding to the quantities of fuels 'released for consumption' by 'regulated entities' (responsible for excise duties, e.g. tax warehouses or fuel suppliers) used for combustion in the sectors will be monitored and reported:

- construction (space or water heating, cooking, powering vehicles and off-road machinery used in construction),
- road transport (with the exception of the use of agricultural vehicles on paved roads), including fuel for the transport of CO₂ for their geological storage,
- additional – energy (combined heat and power plants, district heating) and industrial (including installations so far excluded from ETS 1).

Excluded from ETS 2 are emissions from the combustion of fuels used in activities covered by

ETS 1, fuels with a zero-emission factor and meeting sustainability requirements (as defined in RED II), hazardous or municipal waste used as fuel, and fuels that are not combusted but used as raw material in industrial processes.

Directive 2023/959 has been supplemented by several implementing acts¹⁴, which clarify reporting rules, technical requirements for selling, clearing and surrendering allowances and various other financial issues. In addition, Commission officials are working on a number of complementary regulations¹⁵.

The above-mentioned directive provides for different ways of implementing ETS reform. It is therefore necessary to make a choice at the level of Member States and to adopt the relevant statutory regulations in national legislations. Importantly, the deadline for implementation of ETS 2 is 30 June 2024. It is worth bearing in mind that the development of the reform concept and the legislative process can take up to several years.

Sooner or later, however, the provisions of Directive 2023/959 will have to be implemented in the national legal order. The primary effect of their entry into force will be an increase in the price of diesel and petrol. According to the Commission's assumptions, the increase in the price of fossil fuels is expected to increase interest in lower-emission propulsion systems (with electric vehicles being considered zero-emission by definition). The problem is that such changes take time. The average passenger car user cannot afford to switch from a traditional car to an electric vehicle,

¹³ The EU ETS Market Stability Reserve was established by Decision (EU) 2015/1814 of the European Parliament and of the Council of 6 October 2015 on the establishment and operation of the Market Stability Reserve for the EU Emissions Trading Scheme and amending Directive 2003/87/EC (OJ EU L 264, 9.10.2015). It aims to adjust the annual volumes of auctioned emission allowances.

¹⁴ Commission Regulation (EU) 2023/2122 of 12 October 2023 amending Regulation 2018/2066 as regards updating the monitoring and reporting of greenhouse gas emissions. It introduced new requirements for the reporting of emissions by regulated entities. Emissions will be determined indirectly through the marketed volumes of fuel streams, which are defined by the type of fuel and the means of transport through which regulated entities release it for consumption, as well as the category of final consumers in the ETS 2 sectors. An appropriate breakdown of fuel streams is required for verification and reporting by Member States' administrations.

Commission Delegated Regulation (EU) 2023/2830 of 17 October 2023 supplementing Directive 2003/87/EC of the European Parliament and of the Council by laying down provisions on the timing, administration and other aspects of the auctioning of greenhouse gas emission allowances. The regulation relates to the timing, administration and other aspects of the auctioning of emission allowances. The amendments to the legislation relate to specific provisions related to the introduction of ETS 2 and the auctioning of ETS 2 allowances for the Social Climate Fund (SCF).

Commission Delegated Regulation (EU) 2023/2904 of 25 October 2023 amending Delegated Regulation (EU) 2019/1122 supplementing Directive 2003/87/EC of the European Parliament and of the Council as regards the operation of the EU Registry. The Regulation reflects the amendments to the ETS Directive in terms of updating the registry and establishing detailed rules on holding accounts, allowance surrenders for regulated entities with activities covered by ETS 2. Introduced compliance date for allowance surrenders for regulated entities under ETS 2 - 31 May each year.

¹⁵ Acts yet to be issued under Directives 2023/959:

- Rules on specific provisions to avoid double counting and surrendering of non-ETS2 allowances and to provide financial compensation to final consumers of fuel in cases where such double counting or surrendering cannot be avoided
- Reporting the level of ETS2 costs passed through to customers (cost pass-through). From 1 January 2028 onwards, by 30 April of each year, the regulated entity shall report the average share of costs associated with the surrender of ETS 2 allowances that were passed on to consumers in the previous year.



but at least some drivers have the option. Transport companies face bigger challenges as the prices of hydrogen and electric tractors are very high. In addition, the hydrogen refuelling infrastructure is at an early stage of development, while fast chargers adapted to electric trucks are not available at all¹⁶.

In terms of pricing of low-emission vehicles, the offer of LNG trucks, adapted to run on bio-LNG, looks much better, the problem being that such frozen pure methane from waste will not be available at filling stations in Poland for a long time to come. Investment in the production and distribution of bio-LNG or hydrogen, or even the construction of a network of high-powered ultra-fast chargers, takes time and a lot of money. Given the lengthiness of administrative procedures for issuing environmental decisions or building permits, it seems that little will change in three years. In view of this, the entry into force of ETS 2 may be painful for oil companies and their customers. One positive aspect is that the money collected from the purchase of transport emissions allowances will feed the Social Climate Fund, which is to be used to finance projects to reduce emissions. Such a mechanism may take a decade to achieve its intended effects (expansion of infrastructure and reduction of costs of low-carbon technology due to the massive scale of its deployment), with costs already incurred from the beginning of 2027.

RED III

For the entire energy sector, including the fuel market, one of the fundamental changes to the regulatory framework was Directive (EU) 2023/2413 of the European Parliament and of the Council of 18 October 2023 amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources and repealing Council Directive (EU) 2015/652 (so-called RED III)¹⁷. This piece of legislation revises and updates the solutions adopted under RED II. It assumes, among other things:

- raising the required minimum share of renewable energy in transport in 2030 from the RED II share of 14% to:

(1) a 29% share of energy from renewable sources in the final consumption of energy in the transport sector, or
(2) ensuring a reduction in greenhouse gas emission intensity of at least 14.5% by 2030 compared to the baseline established in accordance with the

Directive; the choice of one of these options was left to Member States.

- a combined share of advanced biofuels/biogas and non-biological renewable fuels in energy supplied to the transport sector of at least 1% in 2025 and 5.5% in 2030, including a share of non-biological renewable fuels of at least 1 percentage point in 2030;
- a requirement for Member States with seaports to aim for a share of at least 1.2% of non-biological renewable fuels in the total energy supplied to the maritime transport sector from 2030;
- the introduction of a required share of non-biological renewable fuels within the hydrogen used by industry of 42% in 2030 and 60% in 2035;
- rules to optimise procedures for the generation of energy from renewable sources;
- repealing EU legislative acts underpinning the Polish regulation of the National Reduction Target.

The RED III Directive is an expression of increasing demands and aspirations regarding the pace and manner of decarbonisation of economies, including the transport sector of EU Member States. The directive more than doubles the overall required share of alternative fuels in the transport sector for 2030 in relation to the requirements of RED II, as well as it additionally introduces a share of non-biological renewable fuels based on so-called green hydrogen from RES-powered electrolysis.

Member States should implement the provisions of RED III into their national legal orders by 21 May 2025 (exceptionally, with regard to selected provisions, by 1 July 2024), which is not likely to happen in Polish conditions. Such a conclusion can be reached when we consider that although the deadline for the implementation of RED II expired on 1 July 2022, the implementation in the field of liquid fuels has not taken place so far¹⁸. As a result, the European Commission has initiated infringement proceedings against Poland. If the relevant legislation is not adopted within the next few months, the Commission will sue Poland at the European Court of Justice for infringement. At the same time, the representatives of the Commission are of the opinion that the implementation of RED III cannot take place without the earlier implementation of RED II, as both regulations are complementary to each other.

¹⁶ The situation is set to change as a result of the targets included in Regulation (EU) 2023/1804 of the European Parliament and of the Council of 13 September 2023 on the development of alternative fuels infrastructure and repealing Directive 2014/94/EU (AFIR Regulation), which already comes into force on 13 April 2024. In the case of charging infrastructure for heavy-duty vehicles, drivers are expected to be able to use charging stations at 29 locations (HDV zone capacity 1,400 kW) in 2025, already at 77 locations (HDV zone capacity 2,800 kW) in 2027 and in 2030 at as many as 166 locations (HDV zone capacity of 3 600 kW).

¹⁷ Official Journal of the European Union L. of 31.10.2023.

¹⁸ In the previous parliamentary term, the Ministry of the Environment and Ecology carried out legislative work on the draft UC 110 project to implement the RED II Directive in Poland in the liquid fuels sector. In mid-2023, the Ministry submitted the project to the Council of Ministers several times with a suggestion to undertake rapid parliamentary work, but this request was not taken into account.



Fot.: ORLEN S.A.

Meeting the requirements of the RED III directive in our national conditions will be very difficult. The challenges facing Poland are of a diverse nature. In the first place, they result from limited use of advanced raw materials for biofuel production. The mere availability of a large amount of agri-food or municipal waste is not sufficient to achieve success. A lot of expensive investment, a great deal of local work and a considerable amount of renewable energy are needed to use these substrates and turn them into sustainable fuels. It is also necessary to build a new electricity grid with much more transmission capacity and flexibility. There also needs to be a systemic solution to the storage of surplus electricity from RES, necessary for the economic production of green hydrogen and its derivatives. Finally, it is worth emphasising that investments in sustainable advanced biofuels (including bio-LNG, or HVO), green hydrogen production or the expansion of RES, storage and transmission networks, require a stable regulatory framework. This is a necessary element to obtain sources of financing for these projects. Unfortunately, in Poland we have experienced regulatory instability and delays in the implementation of EU law, which has

been quite effective in discouraging investors. On top of that there are general problems with the functioning of the administration, in particular the processes concerning environmental decisions and building permits. It is easy to declare a willingness to improve standards in these areas, but real change requires legal, and perhaps socio-cultural changes.

REFORM OF ENERGY TAXATION

The last major regulatory element included in the 'Fit for 55' package, which has not yet been adopted, is the revision of the European Tax Directive (ETD). Works on it are progressing slowly. As with any amendment directly affecting fiscal policy issues, it requires unanimity at EU Council level. This condition makes it unlikely that the reform will be adopted soon.

The Commission's draft assumes that all energy carriers will be taxed according to their energy content and environmental impact. At present, under the rules adopted before Poland's accession to the EU, excise duty is levied on the quantity of energy products (for which the terminology of the Combined Nomenclature



is used – CN codes). In addition, there are a number of exemptions from excise duty, for example for the purposes of shipping, aviation or agriculture. The European Commission has come to the conclusion that the existing concessions are in fact fossil fuel subsidies. With this in mind, the Commission proposed to abolish all these exemptions.

Commissioner Wopke Hoekstra (Timmermans' successor, in charge of DG CLIMA) has declared that his priority is to have energy taxation reform enacted by the end of the Commission's mandate (May 2024). In this, he has strong support from the Belgian Presidency, which has proposed mechanisms to mitigate price increases (e.g. allowing temporary exemptions from excise duty for specific categories of energy products if their annual price increases too sharply). In addition, a number of proposals were made in search of political compromises that mitigate the effects of regulation. The Belgians have raised security issues, pointing to the need for more favourable tax treatment for energy used for military purposes, firefighting, air rescue, etc. Transitional deadlines for individual Member States are also being negotiated separately.

Given that the ETD revision envisaged the removal of preferential taxation on energy used in agriculture, in the context of the waves of agricultural protests sweeping across the EU, it is difficult to imagine that a compromise will be reached before the European Parliament elections. This does not change the fact that work on the revision is expected to return in the next European Commission term. The entry into force of the ideas contained in the Commission's proposal will mean large budget revenues resulting from the removal of exemptions and increases in the minimum tax rates on fossil fuels. The new burdens imply large social costs that will affect not only drivers, but all energy users (including heating and electricity), which may increase the scale of fuel poverty. According to the Commission's assumptions, increases in fuel and energy prices for end users should be mitigated by support for vulnerable consumers. Today it is difficult to imagine significant increases in energy taxation, but there will come a time when the proposals are agreed and they will have to be implemented.

CONCLUSIONS

Many countries are investing in the development of low-carbon alternative fuels and efficient ways of storing and transmitting energy. These projects require large financial outlays, and with the destabilisation of the global energy commodity market and the changing EU regulatory framework, it is difficult to realistically determine the payback period for such investments. This is a major barrier to the development of a low-carbon economy. Modern biofuels or synthetic fuels with high emission reduction rates have been recommended by Brussels for years, and now EU officials are betting on electrification to become the most important instrument for reducing emissions by the transport sector.

Decarbonising the economy is a necessity, but it is a difficult, lengthy and costly process, especially when it comes to transport. Vehicle users today rely heavily on products derived from oil. All oil companies are aware of the need to move away from fossil fuels. The war against Ukraine has provided additional arguments in the area of energy security, confirming the validity of this direction. Coal, oil and even natural gas, although they will dominate the world's mix of primary energy sources for decades to come, will be losing ground year by year.

At the current stage of technological development, we do not have sufficient alternatives to traditional fuels. Large-scale research and development projects

are underway and they can actually accelerate shifting away from oil and gas in the next decade. Technological developments cannot be predicted, let alone decreed even with the best regulations. In all likelihood, the peak in fossil fuel consumption is still ahead of us. In an ambitious scenario, it should occur within the next decade. Transitioning away from coal, oil and gas will be a process lasting over several decades.

The traditional fuels (oil and gas) sector is facing the greatest challenge in its history. The emerging new European legal framework for doing business will be the foundation of a business environment in which only socially responsible companies that demonstrate support for the direction of change based on available scientific knowledge of the impact of human activity on the climate will find a place for themselves. Given the starting point in which Poland finds itself, much more work and commitment will be required to bring about change compared to Europe. Understanding the responsibility that rests with them, POPIHN members will remain active participants of the energy transition, while ensuring fuel security for consumers in accordance with the definition quoted at the beginning: *covering demand in a specified volume and time, to the extent enabling the proper functioning of the economy.*

THE RETAIL MARKET OF LIQUID FUELS IN 2023 FROM POLISH ORGANISATION OF OIL INDUSTRY AND TRADE (POPiHN) MEMBERS' POINT OF VIEW

Retail sales activity of companies within the Polish Organisation of Oil Industry and Trade (POPiHN) is the basis for systematic analysis of the fuel market in Poland. In its studies the Organisation uses data obtained from member companies and information from other sources, including the Ministry of Finance and the National Tax Administration to determine the rest of the market as regards sales to end users. This allows trends in the wholesale and retail segments of liquid fuel sales to be identified on an annual basis. The representativeness of the sample, on the basis of which changes in the market are assessed, increases as new companies join the Organisation and as the network of filling stations administered by these companies expands. In 2023, the number of such sites increases to 4,568 – an increase of 80 sites compared to the previous year. The current study takes into account sales data from Slovnaft partner stations made available thanks to MOL. Overall, at the end of the discussed year, 58% of all filling stations operating in Poland – open to the public and selling at least 2 types of fuel (motor petrol and diesel) were classified as stations of POPiHN member companies. These companies thereby gained 1 percentage point in the total filling station market structure in the country.

Unlike in 2022, when information provided by POPiHN member companies and the continuously updated liquid fuel infrastructure database maintained by the Energy Regulatory Office (ERO) were used to estimate the approximate actual number of points of sale, in 2024 data from POPiHN member companies

were also used, and the remainder of the market – due to the unavailability of complete data from the ERO – was estimated from available data obtained by the Organisation. Historical experience shows that trends observed at the largest filling station operators are transferred to the facilities of other market operators and, on this basis, changes can be traced for the entire sector as regards retail market. Smaller filling station networks, or even individual operators, in order to stay in the market and compete with the largest must follow the changes imposed by the latter. In the formula adopted for the analysis (stations open to the public and selling at least motor fuels and diesel), at the end of 2023 in Poland there were around 7.9 thousand petroleum fuel supply points. In addition to this segment, there are also stations that sell, for example, either autogas or diesel only, but these were not considered in the analysis, although locally they may have an impact on the market.

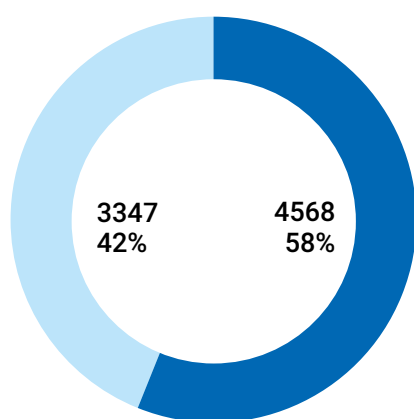
The detailed analysis covers 58% of the domestic station market, i.e. the vast majority allowing conclusions to be drawn that are relevant to all filling stations. The remaining facilities operating on the Polish market belong to operators not affiliated to POPiHN. Obtaining information on market performance from them is quite difficult, and often impossible. Therefore, the assessment of the entire market is an estimation made by transferring the results and experience of the largest operators to the rest of the market and reflects trends in the activity of smaller operators as well, especially those not affiliated in alliances or purchasing groups.

In 2023 in Poland POPiHN members through their filling station networks sold approximately 70% of total retail sales of petrol, around 54% of diesel and 45% of autogas. This is 4 percentage points less than in 2022 for petrol, similar amount for diesel and 3 percentage points more for autogas. Such share levels allow us to show the fundamental trends and changes taking place in the overall market for retail fuel sales and non-fuel activities, carried out at facilities serving drivers and travellers. The latter activity, increasingly important for operators due to the low margins on fuel sales alone, is sales in shops located at filling stations, as well as various additional services, such as small and large catering, leisure during the journey, charging of electric vehicles, financial services or basic maintenance and servicing of motor vehicles. 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 in the sector.

Changes observed in 2023 in the retail fuel sales market and in the operations of stations in POPiHN members' networks are shown in Figure 2. Compared to the previous year, there was an increase in sales of petrol and diesel and a decrease in sales of autogas. What is noteworthy is the clearly improved performance of the standard grade of petrol and the premium grade of diesel, which, in percentage terms, achieved the best sales compared to other grades of fuel. For non-POPiHN companies, sales of autogas increased, which can be

FIG. 1 FILLING STATIONS MARKET IN POLAND [NUMBER AND % SHARE]

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



- POPiHN member companies
- Other operators



linked to those operators taking advantage of lower prices and lower margins on its sale. The reconstruction of the market in terms of station ownership continued, and to a much greater extent than in the previous year. There was an increase in the number of stations under the brand names of POPiHN member companies. Those companies expanded the franchise formula (DOFO), but also there was an increase in the number of their own stations, often built from the scratch in new locations. There was also a very significant increase in the number of stations in the DODO formula, but this is solely due to the inclusion of SLOVNAFT PARTNER stations in POPiHN reporting. The graph shows that there was continued consolidation of the market around the largest operators – the oil companies, but also the largest independent operators, such as the MOYA brand, AVIA, or Moc Jakość i Zysk.

The segment of shops at filling stations increased in volume and, at the same time, there was an increase in the value of checkout operations at these facilities. The growth in turnover was due to an increasing range of FMCG goods and those most needed by drivers and other customers in their daily shopping. It was also due to rising prices of goods and services keeping pace with inflation. The catering segment was expanded, but so were other services aimed at an increasingly wide range of customers, such as the installation of chargers for electric cars. The new investments are aimed at ensuring the maintenance of the filling station and decent wages for employees in the future, when fuel sales will be increasingly restricted as a result of the ongoing energy transition and the replacement of traditional fuels with alternative ones.

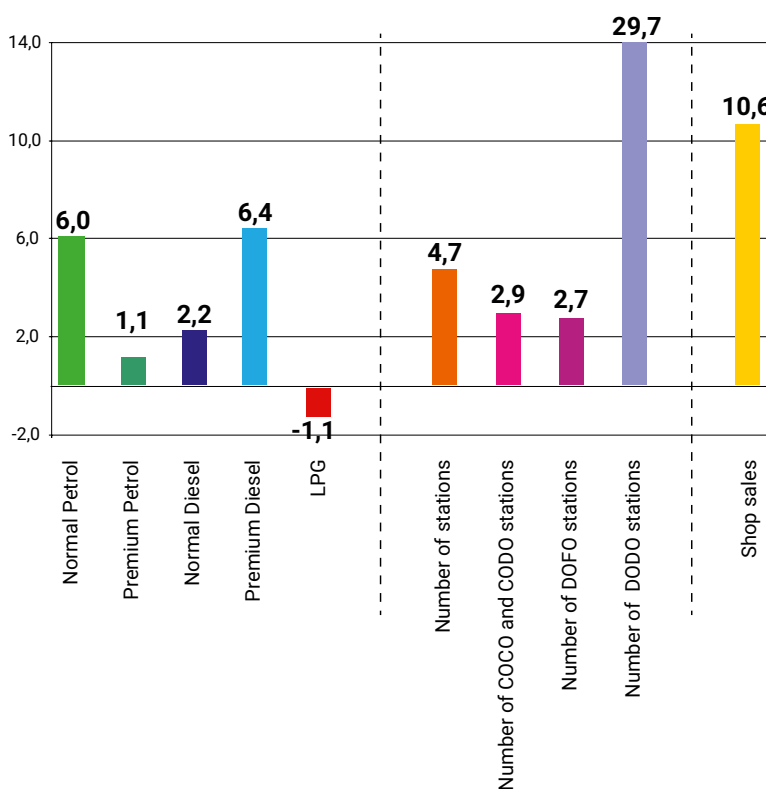
In 2023 premium fuels again sold well. The sales leaders of this type of fuel were the major oil companies. They held both the right to their name as well as their chemical composition. This was also the business of some independent operators, selling high-octane petrol and preparing their own grades of diesel with higher performance characteristics. It is significant that in 2023, the sales dynamics of premium diesel were the highest of all motor fuel grades. This was somewhat helped by the winter weather prompting purchases of such fuels at low temperatures. Sales of refined fuels are not favoured by large price differences between standard and premium types, but in the year under review, price levels in the vast majority of the year were so acceptable to drivers (especially in the case of diesel) that purchases of this type of fuel increased. As already mentioned, in the case of diesel, the effect of winter-type fuels with a special chemical formula to facilitate cold weather starting was the impetus for purchases.

On average, prices of these fuels were PLN 0.25-0.50/l higher than standard grades.

The share of the premium grade in total sales of petrol from POPiHN member companies amounted to around 7%, and in the total domestic petrol market it was 5%. For diesel, these results amounted to around 11% in the POPiHN companies' sales and 6% in the total domestic market. Compared to the previous year, for POPiHN member companies these results are very similar. Despite rising prices, there is a group of drivers who appreciate the performance aspects of refined fuels and thus are willing to buy them even at the expense of spending more than they would on the same amount of standard fuel.

FIG. 2 CHANGES IN RETAIL SALES OF FUELS, NUMBER OF FILLING STATIONS AND SALES AT POPiHN MEMBERS' STATION SHOPS IN 2023 COMPARED TO 2022 [%]

Source: POPiHN's own data



POPiHN forecasts for 2023 assumed an increase in sales of standard 95 octane petrol and basic diesel. For the year as a whole, results proved in line with plans. More standard fuels were sold at the stations of the Organisation's member companies than in the previous year. A similar trend was also recorded at other stations in the country. For POPiHN members, there was an increase of around 6 per cent in the volume of sales of basic motor petrol and an increase of over 2 per cent in sales of standard diesel. For premium fuels, volume increases were the following: for motor petrol, over 1 per cent and for diesel, over 6 per cent. Sales of autogas by POPiHN companies fell by around 1 per cent.

In 2023, POPiHN member companies expanded their filling station networks mainly through the COCO + CODO segment and through DODO umbrella stations (which are also treated as franchised stations by some companies). Franchising was also important in the transformation of the overall filling station market. Greenfield facilities increased the number of COCO and CODO stations in corporate and independent operator networks.

The increased number of filling stations operated by POPiHN members resulted in a 4.9% increase in the number of shops operating within these stations. The growth in the number of outlets was also accompanied by higher sales at these facilities. The increase in the scale of turnover was observed in the total number of shops as well as the statistical single shop.

FIG. 3 SALES OF MOTOR FUELS AT POPIHN MEMBERS' STATIONS IN 2023 [M³]

Source: POPIHN's own data

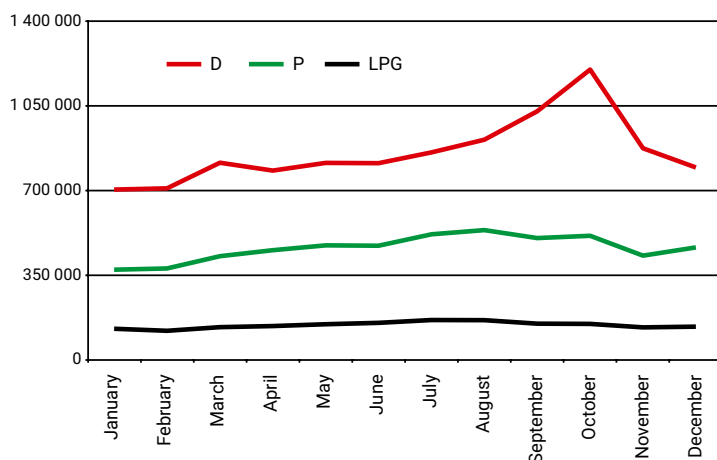
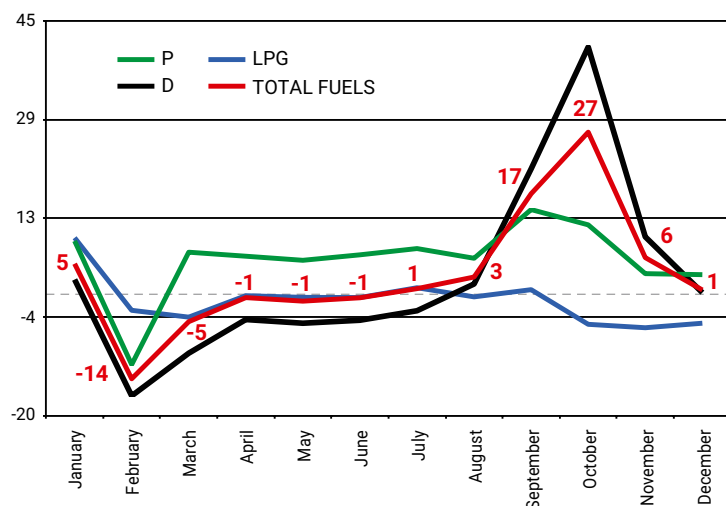


FIG. 4 CHANGES IN RETAIL SALES AT FILLING STATIONS IN 2023 [MONTH/MONTH AS %]

Source: POPIHN's own data



Total sales in the turnover segment of POPIHN companies' station shops increased by almost 11%, with a single shop increasing turnover by 6.5% on average. The higher revenues were mainly due to an increase in the prices of the items offered, but also to an expansion of the assortment and greater interest in catering services.

Figure 3 presents monthly retail sales at POPIHN members' filling stations. What is immediately striking is the very clear increase in diesel sales between the end of Q3 and the beginning of Q4, i.e. during the pre-election period in Poland with all the market turbulence observed at that time. In addition, while the sales dynamics of diesel up to August 2023 were negative, in the following months sales increases were in double digits and at the end of the year they slightly exceeded the previous year's sales. This was, of course, influenced by diesel sales levels in the final months of 2022 when the price of this fuel grade

was rising strongly. For petrol, sales dynamics were already positive from March 2023 and remained at a similar level until the end of the year. Autogas sales per month were similar to the previous year's levels throughout the year.

In 2023, the highest growth rate in sales, compared to the previous year, was recorded by POPIHN member companies' stations operating under the DODO formula, which, as explained at the beginning of this text, was somewhat distorted by the inclusion of volumes sold by SLOVNAFT PARTNER stations that were not monitored in the previous year. For the three fuel grades (petrol, diesel and autogas) for DODO stations this increase was 24% and for DOFO it was 8%. For COCO and CODO stations, the increase was set at 1%, although by volume it was these stations that sold the most fuel. Similar growth relationships as for all fuel types combined were observed for individual fuel types.

Average annual margins generated on retail fuel sales alone were at a lower level than in the previous year. The increase in fuel turnover had only a limited effect in compensating for these declines. Such a situation had an impact on the amount of revenue generated by station operators. This forced facilities to intensify their non-fuel activities. The offer was aimed at drivers and travellers and, increasingly, at non-car people (particularly in urban areas). The station's shop and food and beverage services have been the main profit-making elements of the overall facility for many years.

Changes in fuel sales at the stations owned by POPIHN member companies between individual months of 2023 are presented in the diagram in Figure 4.

The highest dynamics of fuel sales of POPIHN member companies was recorded in October, for the reasons described earlier, and the lowest in February, when sales were compared to the period of the outbreak of war in Ukraine and the associated mass buying of fuels in the country. The end of the year was again a period of higher sales than last year.

For the year as a whole, the average increase in the growth rate of fuel sales at all POPIHN member companies' stations was 3.2%, some 5 percentage points lower than the comparison in the previous year to 2021. In comparison to the previous year, total petrol sales were 6% more, for diesel it was 3% more, and for autogas it was 1% less.

An analysis of data on the dynamics of retail trade in motor fuels carried out by the Organisation's member companies and the dynamics of total official consumption of these fuels, carried out by all operators in the country, shows that the increases are higher for the group of independent operators.

As mentioned earlier, premium fuel sales in 2023 performed better than the year before. Drivers' purchase of these fuels is strongly determined by their price levels, and these were at lower levels last year than the year before. Purchase growth was 1% in the petrol segment and 6% in the diesel one. Interestingly, in October increases in % amounted to several tens.

Purchasing trends observed even before the pandemic at the prices of the time indicated that the level of new and used car registrations should favour the growth of the enhanced fuels market. Confirmation of this assumption was not recorded until 2023. This was influenced by the price trends observed in particular for diesel, whose prices fell significantly more than for

Fot.: AMIC POLSKA SP. Z O.O.



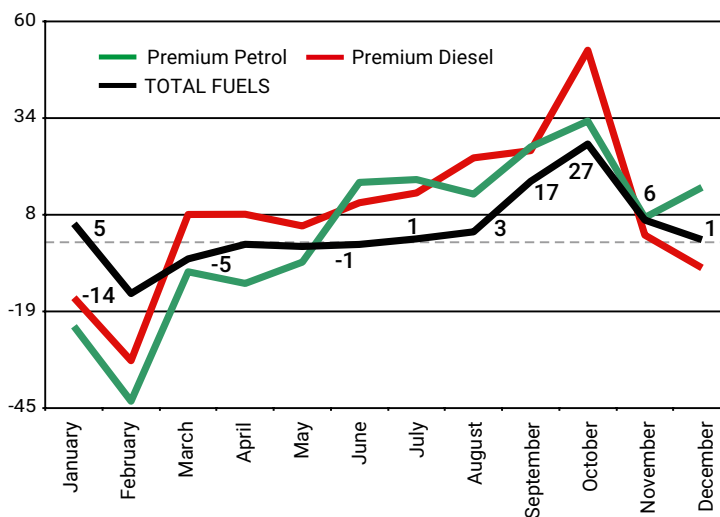
petrol. The hope for further growth in this fuel segment can be seen when harsh winters return to Poland or in the fact of the introduction of E10 standard fuel with increased alcohol content in standard fuel.

In Poland, at the end of 2023, according to information gathered by POPiHN, there were about 7.9 thousand filling stations open to the public and selling at least 2 types of fuel (P,D). The logos of the Organisation's members included in this analysis were displayed on 4,571 sites, of which 4,521 were selling fuel at the end of the year. The remainder were undergoing refurbishment or modernisation. Compared to December 2022, the number of active stations therefore increased by 4.7%. The increase resulted from new investment projects, opening some of the stations after their modernisation, but also taking over a certain number of stations from the independent sector. In the group represented by POPiHN, work was underway to optimise the location of stations and a new sales policy already taking into account the arrival on the market of a new operator such as the Hungarian MOL. In these companies, there was an increase in the number of own stations operating in the COCO+CODO formula by 2.9%, amounting to 3,045 outlets and stations operating under the DOFO franchise by 2.8%, amounting to 1,087. The DODO format, due to including SLOVNAFT PARTNER stations in monitoring activities, increased by 30% to 389 sites (by 89).

In parallel, the development of shops operating at POPiHN members' facilities continued. At the end of 2023, there were 3,395 shops associated with the stations of the Organisation's member companies (120 more than in 2022). Of this number, 3,362 (156 more than in 2022) were trading at the end of the

FIG. 5 CHANGES IN PREMIUM FUEL SALES AT FILLING STATIONS IN 2023 [MONTH/MONTH AS %]

Source: POPiHN's own data



year. As the number of shops increased, so did their turnover. As mentioned above, POPiHN does not have information from all the shops that operate at stations with the logo of the Organisation's members as the DOFO and DODO formula allow for a certain degree of freedom in the purchase of fuels and items for the shops. Strict and uniform sales rules apply to COCO+COCO stations and only a certain proportion

FIG. 6 MARKET OF SHOPS AT FILLING STATIONS OF POPIHN MEMBERS IN 2023 [%]

Source: POPIHN's own data

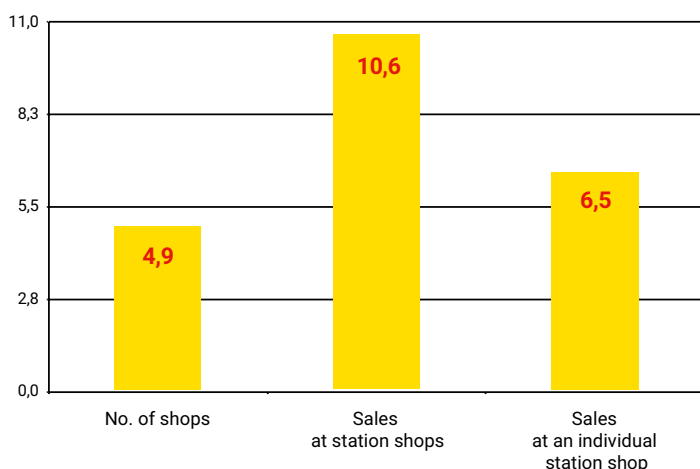
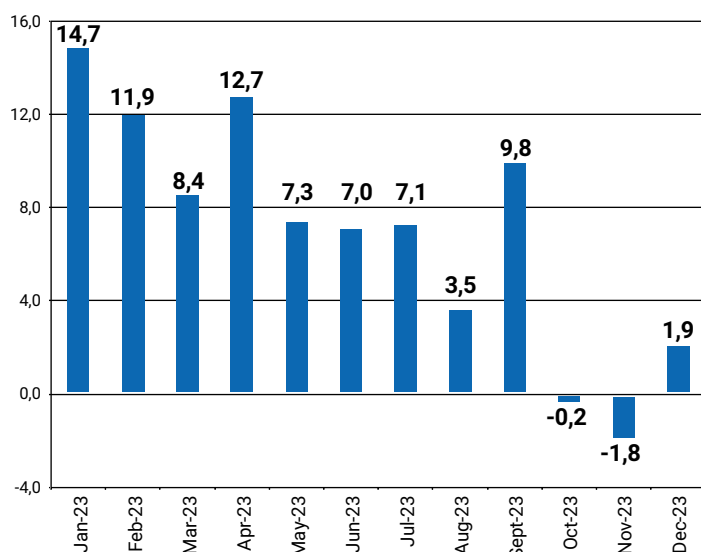


FIG. 7 CHANGE IN VALUE OF SALES IN THE SHOPS AT FILLING STATIONS OF POPIHN MEMBERS IN INDIVIDUAL MONTHS OF 2023 COMPARED TO 2022 [%]

Source: POPIHN's own data



IN POLAND, AT THE END OF 2023 THERE WERE ABOUT 7.9 THOUSAND FILLING STATIONS OPEN TO THE PUBLIC AND SELLING AT LEAST 2 TYPES OF FUEL (P, D).



Fot.: MOL GROUP

of franchised stations. In view of the above, franchisors, followed by POPIHN's reporting, do not have complete data on sales volumes from shops at outlets other than their own stations. Therefore, only information received from those shops whose turnover the companies have access to and which were active at the end of 2023 was used for the sales analyses. Sales of this group of retail outlets increased by a total of 10.6% and amounted to approximately PLN 8.6 billion. In relation to the 12 months of 2022, this was an increase of around PLN 0.8 billion. The turnover of a single statistical shop grew by 6.5% and averaged around PLN 2.6 m. (i.e. approximately PLN 0.1 million more than in 2022).

The increments were the result of increased turnover, higher prices and more frequent visits to filling stations by customers, including those who did not fill up their vehicles. An important element in the increase in traffic at the stations, and thus in the shops located on them, was the fact that in the country there were permanently around 1 million cars with Ukrainian registration plates, as well as a large proportion of vehicles that appeared in the country periodically with the same plates. Cash was also left by customers from neighbouring EU countries who, as part of fuel tourism, came to Poland to fill up their vehicles due to lower prices than in their countries. They also took the opportunity to do the shopping at petrol station shops and often used small catering services. The vast majority of fuel stations and the shops located at them operated on a 24-hour basis, allowing to do the most necessary shopping, even when other retail outlets were closed.

Figure 7 shows the total shop sales at petrol stations by months of the year compared to the corresponding months in 2022. An increase in sales is evident in all months except October and November, but in these months in the previous year's shop turnover was at

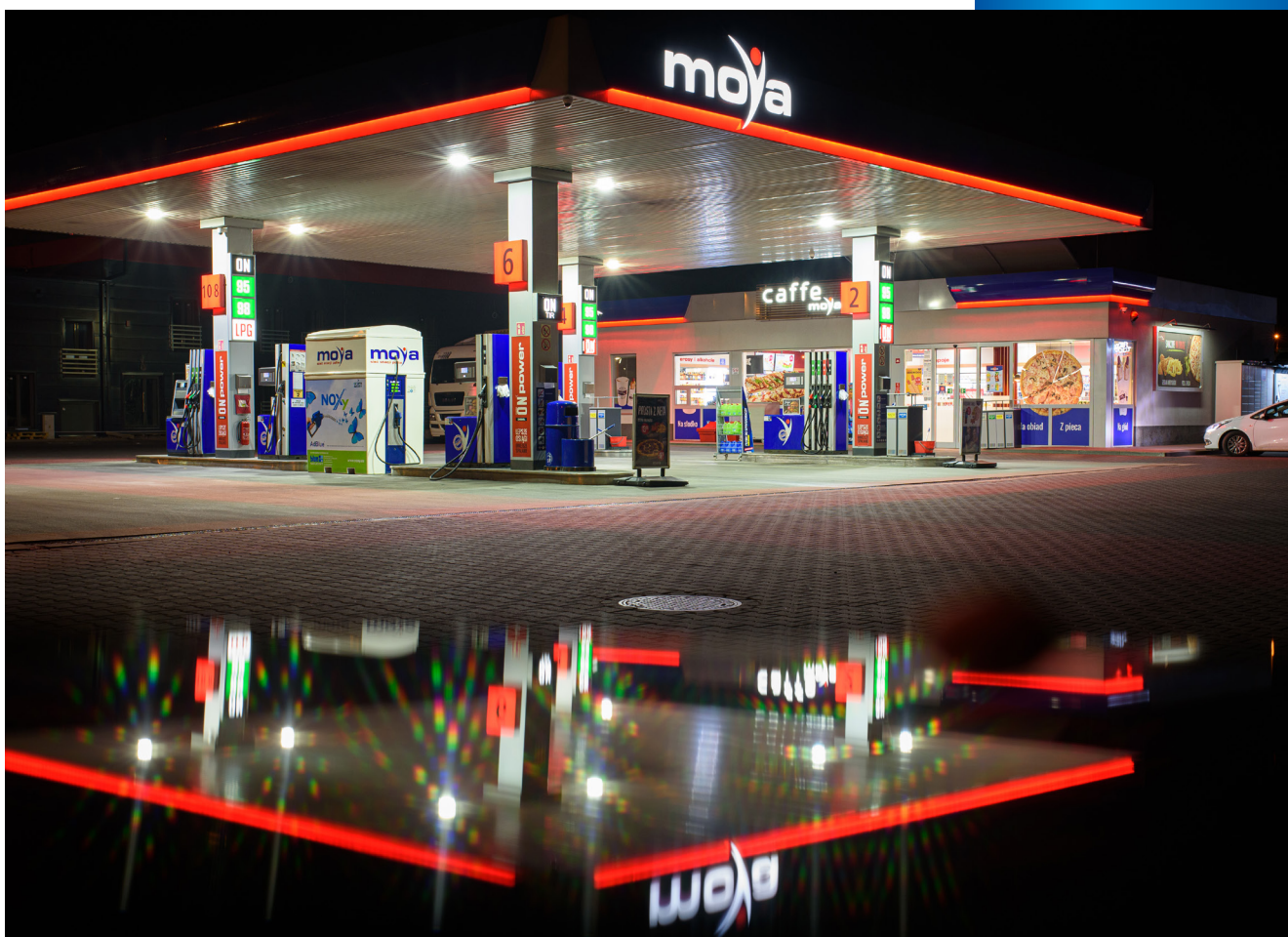
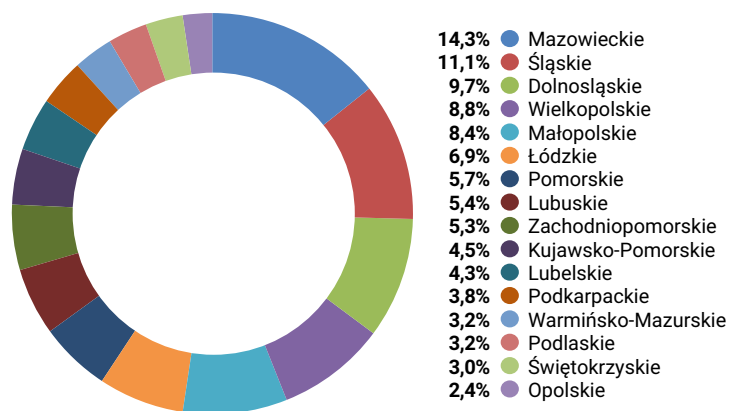
a record high. The comparison of these two months in terms of fuel sales and shop turnover is somewhat surprising. This is because it indicates that low-priced fuel purchases were more important than higher-priced shop purchases due to inflation.

Due to the need to handle increased traffic at the eastern border, as well as the occurrence of periodically significant fuel tourism at the country's western and southern borders, the geographical map of motor fuel sales in Poland somewhat changed. Provinces such as Małopolskie, Lubelskie, Zachodniopomorskie or Lubuskie gained even more. The information for this summary was provided by POPiHN member companies, yet it can most probably be applied to overall retail sales volumes of all filling station operators across Poland. Traditionally, the highest volume of automotive fuels was sold in Mazowieckie province, while the lowest demand was recorded in Opolskie. Sales in 5 provinces continued to exceed the overall sales volumes in the remaining 11. In Mazowieckie drivers bought 2.5 m. m³ of fuels at stations of the Organisation's companies, while in Opolskie this was only 0.4 m. m³. In the provinces where total sales were the highest, premium fuels were also sold the most.

The graph shows total sales of petrol, diesel and autogas. For each of these fuel types separately, small deviations from the provincial distribution are noted. However, they are small enough to assume that the generalisation fully shows the distribution of retail sales of motor fuels in the country.

FIG. 8 DISTRIBUTION OF RETAIL SALES OF FUELS BY POPiHN MEMBERS IN POLAND IN 2023 [%]

Source: POPiHN's own data



Fot.: ANWIM S.A.

DOMESTIC LIQUID FUEL MARKET IN 2023 – SUMMARY

PROCESSING OF CRUDE OIL

Domestic refineries processed a similar amount of crude oil in 2023 as in 2022, amounting to almost 27 m. tonnes.

Almost all refinery production was directed to the domestic market, which, however, was not sufficient to cover domestic demand. Supplementary imports of finished major transport fuels were required, more than in previous years. As a result of the embargo on the supply of crude oil by sea introduced by the European Union in December 2022, followed by further sanctions introduced on 5 February 2023 on fuel supplies from the Russian Federation, and due to the fact that at the end of February 2023 Russia stopped pipeline deliveries of crude oil to Poland, the share of REBCO crude oil in the total refining throughput of Polish refineries decreased to 2% for the year as a whole. Oil from the eastern direction was replaced by supplies from Saudi Arabia, Norway, the USA and Nigeria. Supplementary crude was also purchased from countries such as Azerbaijan, the UK and Guyana. High demand for finished fuels contributed to refining margins exceeding last year's figures. The lack of supply from Russia made sea supplies by Naftoport

the main source of supply for domestic refining units. Throughput volumes in the first half of 2023 were at similar levels as in the second half of the year.

Saudi Arabia became the main supplier of crude oil to Polish refineries with a volume of over 11 m. tonnes. The runner-up position was achieved by Norway with a volume of almost 9 m. tonnes. Nigeria and the USA were the directions from which deliveries exceeded 1 m. tonnes. The role of the Friendship Pipeline in the oil supply balance was marginalised. On the other hand, deliveries by sea and the use of PERN's storage tanks on the coast, as well as the Pomeranian Pipeline from Gdańsk to Płock, increased considerably. Crude oil from domestic supplies (Petrobaltic, PGNiG) was used to supplement the imports. Its volume, however, still remained low. The change in the grades of crude oil that was processed forced the refineries to make technological adjustments to grades other than REBCO. The yields of individual fuel grades from processed crude also changed.

Throughout 2023, non-REBCO crude accounted for 99% of the refining mix. The share of individual crude oil supplies to domestic refineries is presented in Figure 10.

FIG. 9 PROCESSING OF CRUDE OIL – DATA FOR 2022 AND 2023

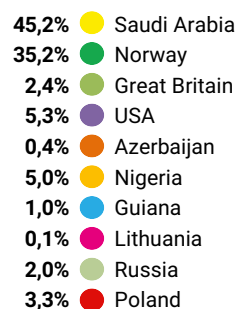
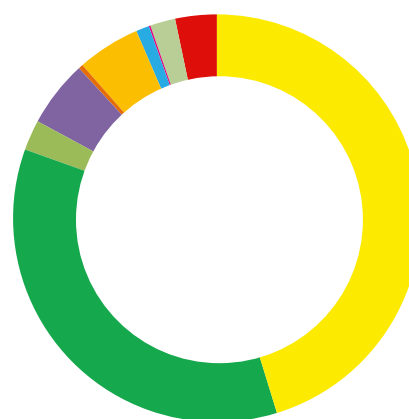
Source: POPiHN's own data

	YEAR 2022	YEAR 2023	Reference 2022=100
OVERALL	26,9	26,7	99

THE ROLE OF THE FRIENDSHIP PIPELINE IN THE OIL SUPPLY BALANCE WAS MARGINALISED. ON THE OTHER HAND, DELIVERIES BY SEA AND THE USE OF PERN'S STORAGE TANKS ON THE COAST, AS WELL AS THE POMERANIAN PIPELINE FROM GDAŃSK TO PŁOCK, INCREASED CONSIDERABLY.

FIG. 10 SHARE OF CRUDE OIL SUPPLIES TO DOMESTIC REFINERIES IN 2023 [%]

Source: POPiHN's own data



Fot.: ORLEN S.A.



PRODUCTION OF LIQUID FUELS

Liquid fuel production carried out at domestic refineries is the main source of market supply. In 2023, a total of 28.1 m. m³ (Fig. 11) of petrol (P), diesel (D), LPG, JET aviation fuel and light (LFO) and heavy fuel oil (HFO) were produced through crude oil refining and blending (which in Polish conditions is also treated as production). The decrease over the previous year was 1%, which translated into a volume of 0.4 m. m³. A surplus compared to the previous year was recorded for light and heavy distillates, and decreases in production for middle distillates such as diesel and light fuel oil.

The vast majority of production was intended to satisfy the domestic market, but it should also be noted that significant quantities of products – mainly diesel and petrol – were exported, primarily to Ukraine. To satisfy domestic demand, the production of Polish refineries alone was not sufficient and significant volumes of fuels purchased abroad were necessary.

The logistical needs of the economy, the increasing mobility of Poles and the need to supply larger volumes of fuels directed to service the traffic associated with the military operations in Ukraine shaped the structure of domestic production. Domestic processing plants carried out their activities, aiming at obtaining the most needed fuel grades. In addition, the need to change the directions of oil supply influenced the obtaining of individual fuel grades from different types of oil. There was an increase in the production of motor petrol, JET aviation fuel and LPG. More heavy fuel oil was also produced than in the previous year, whereas diesel and light fuel oil were produced in smaller quantities.

Domestic production in the second half of 2023 exceeded the level of the first half of the year by approximately 0.6 million m³. Thus, the production dynamics for the second half of the year were higher

FIG. 11 COMPARISON OF LIQUID FUELS PRODUCTION IN 2022 AND 2023 IN THOUSAND M³

Source: POPIHN's own data

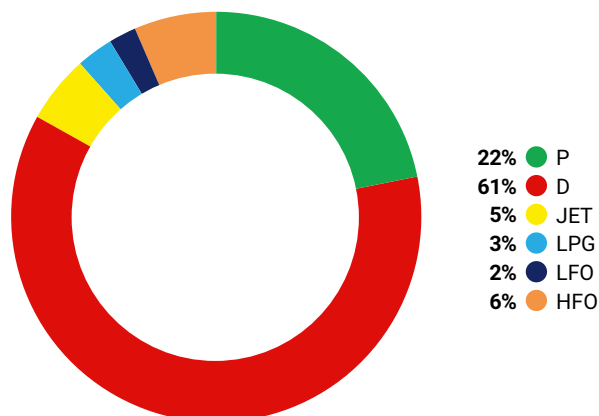
Description	YEAR 2022	YEAR 2023	Reference 2022=100
Petrols	5,856	6,141	105
Diesel	18,517	17,223	93
LPG	780	816	105
JET aviation fuel	1,426	1,499	105
Light fuel oil	639	609	95
Heavy fuel oil	1,253	1,825	146
OVERALL	28,471	28,113	99

than in the first half of the year, when a decrease of 2% was recorded in comparison to the same months in the previous year.

Fuel blending, which, let us reiterate, in Poland is treated as production, had its share in the final output. In 2023 significant amounts of domestic refinery production of petrol and diesel, and also of their imports, aimed at the Polish market, were blended with biofuels in order to reach the National Biofuels Target (NBT). Blending increases the production pool in relation to fuels produced only from crude oil processing in refineries, especially in a situation of significant imports, and such was the case in the year under review. The use of biofuels improves the environmental effect of fuel combustion, yet, unfortunately, it negatively influences the economic outcome for fuel producers since biofuels are significantly more expensive than traditional fuels produced from crude oil. Besides, the costs of the fulfilment of the NBT grew as the biofuels

FIG. 12 BREAKDOWN OF LIQUID FUELS PRODUCTION IN 2023 [%]

Source: POPiHN's own data



target was raised from 8.8 to 8.9% by energy value of fuels sold. This is a limit impossible to meet with the use of biofuels in standard fuels alone and thus it was still necessary to produce and sell B100 fuel, which is hard to sell in the country and most of it goes abroad.

In 2023 there was a decline in the production of middle distillates: diesel decreased by 1.3 m. m³ (7% down) and light fuel oil by 30,000 m³ (5% down). Instead, demand for the high-margin product, i.e. JET aviation fuel increased for another year after the pandemic. In 2023, its production grew by a further 5% and easily found buyers in the recovering passenger and cargo flight

market. Compared to the previous year, the additional volume sold was 73,000 m³. Motor petrol production increased by 5%. An increase in production was also reported for LPG and heavy fuel oil. For motor petrol, the increase translated into 285,000 m³, and as regards LPG production, it was 36,000 m³ more. The structure of fuel production in 2023 is presented in Figure 12.

In the final analysis, although with different volumes, the production balance was only slightly different from last year's. Practically, motor petrol, LPG, JET and light fuel oil maintained their shares, while diesel decreased by 4 percentage points in favour of heavy fuel oil. As in previous years, diesel continued to be dominant in the balance of domestic fuel production. Its share in the total production was 61%, i.e. 4 percentage points less than a year ago.

As mentioned above, the production of liquid fuels also includes the process of mixing (blending) standard fuels with biofuels and additives. Preliminary data indicate that POPiHN member companies, and practically the vast majority of other entities operating on the Polish market, fulfilled the obligations imposed on them. It is estimated that in 2023, around 368,000 m³ of ethanol (calculated together with ethers) and around 1.3 m. m³ of methyl esters were added to motor fuels by the largest market operators, i.e. slightly more alcohol and slightly less esters when compared to the previous year. The necessary additional direct sales of B100 fuel were estimated at around 166,000 m³. The companies shipped around 61,000 m³ directly abroad. This type of fuel was practically unavailable in retail trade, and in wholesale trade it was quite unpopular. Its vast majority was exported from Poland, often through intermediary operators.



Fot.: BP EUROPA SE



IMPORTS OF LIQUID FUELS

(sum of actual imports and intra-Community acquisitions) (Fig. 13 and 14).

In 2023 the vast majority of petroleum fuel production from domestic refineries went to the domestic market. The exception was heavy diesel, which was directed mostly to exports. This was, however, not enough to balance the market and fuel operators had to resort to imports and intra-Community acquisitions. The still ongoing war against Ukraine and related energy needs, as well as strong domestic demand supported by fuel tourism, contributed significantly to this increase. The EU's embargo on fuel imports from Russia changed the directions of the Polish oil sector's fuel supply. Completely new, often distant, sources of supply emerged, which, in turn, entailed an increase in logistics costs. The increase in imports and intra-Community acquisitions was observed in all fuel types. Diesel dominated in terms of volume. Increased imports were carried out by the leading players on the domestic market (refineries and international oil companies operating in Poland) as well as by the so-called independent importers. It is noteworthy that the so-called re-exports, i.e. shipments of products purchased outside Poland and directed also outside our country – mainly to Ukraine – increased significantly. According to the data available at the time of preparing this report, in 2023 foreign purchases of fuels amounted to almost 17 m. m³, i.e. some 3 m. m³ above last year's level. This is a 22% increase and another third consecutive year of increases in this way of balancing the market. As mentioned earlier, a large amount of imported fuel went to the Ukrainian market. A significant factor in the growing domestic demand, however, was the price of motor fuels in Poland, which was lower than that of its EU neighbours, which, in turn, was prompting fuel tourism. In contrast to the three main transport fuels, imports of fuel oil and JET fuel were at low levels. Since 2016, diesel has remained the largest import item and this was also the case in 2023. As in the previous year, total imports of motor petrol, diesel, LPG and light fuel oil, carried out by so-called independent operators (companies other than POPiHN members) in volume terms were lower than those of the largest market operators, despite the fact that these players made up for the result very strongly with LPG imports. Instead, the major players made large purchases of motor petrol and diesel. For the 4 main fuel types (P, D, LPG, LFO) as a whole in 2023, the dynamics of foreign purchases by the largest Polish market operators was 31% higher than in the previous year, while for independent operators the result increased by 11%. This is 2 percentage points less than the year before.

Diesel imports in 2023 increased by 2.4 m. m³. In the case of motor petrol, this was almost 300,000 m³, almost the same as for LPG. Foreign purchases of light fuel oil increased by 8,000 m³, whereas the heavy type grew by 49,000 m³.

The increase in the officially registered imports of liquid fuels in relation to 2022 increased by 22% and altogether for 6 main fuel types it satisfied 40% of overall market demand (i.e. 3 percentage points more compared to 2022).

As regards foreign acquisitions in 2023, the share of motor petrol remained virtually unchanged, but the

FIG. 13 BREAKDOWN OF LIQUID FUELS IMPORTS IN 2023 [%]

Source: POPiHN's own data

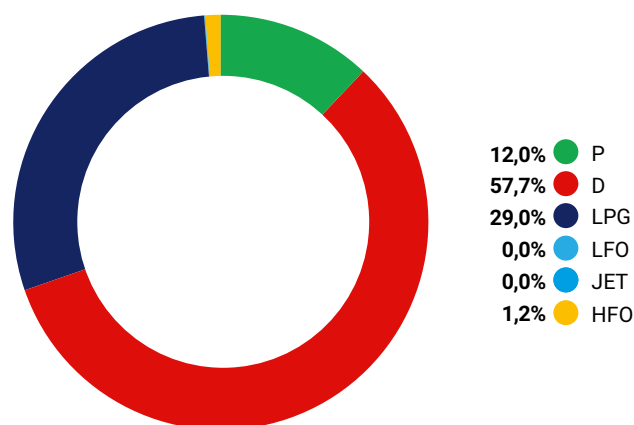


FIG. 14 COMPARISON OF IMPORTS AND ACQUISITIONS OF LIQUID FUELS IN 2022 AND 2023 [IN THOUSAND M³]

Source: Ministry of Finance and POPiHN's own data

Description	YEAR 2022	YEAR 2023	Reference 2022=100
Petrols	1,732	2,030	117
Diesel	7,324	9,722	133
LPG	4,571	4,894	107
Light fuel oil	1	7	700
JET aviation fuel	-	9	-
Heavy fuel oil	152	201	132
OVERALL LIQUID FUELS	13 780	16 863	122

share of diesel increased by 5 percentage points at the expense of the share of LPG.

Within the group of the four main fuel types described (P, D, LPG, LFO), POPiHN member companies imported around 10 m. m³ of fuels. Compared to the whole 2022, it was about 2.4 m. m³ of fuel more than in the previous year. Independent operators increased their imports as well by around 0.7 m. m³, bringing into the country approximately 6.6 m. m³ of fuel from the described product group.

Source countries of petrol imports are shown in Figure 15. This product was mainly brought from Germany and Lithuania. Significant quantities were also imported from the Czech Republic and the Netherlands. This was supplemented by purchases from Slovakia and Hungary. Imports from other countries covered around 2% of supplies. Purchases from Germany, Lithuania and the Czech Republic gained in importance – mainly at the expense of the Netherlands and Slovakia.

FIG. 15 SOURCES OF PETROL IMPORTS [%]

Source: Ministry of Finance and POPiHN's own data

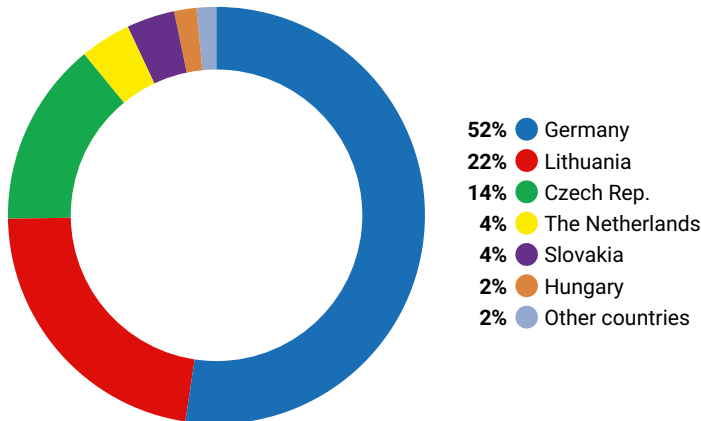
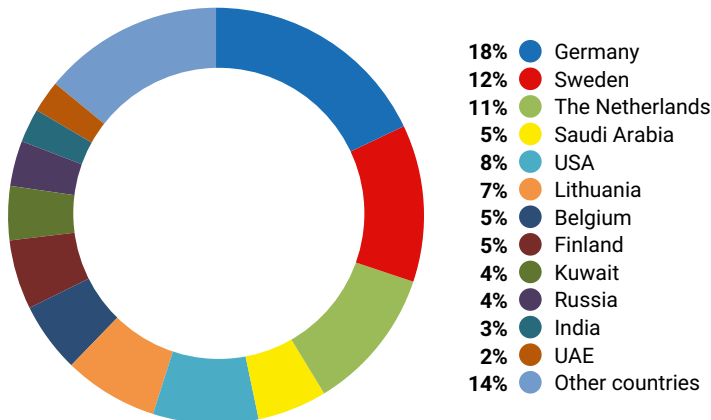


FIG. 16 SOURCES OF DIESEL IMPORTS [%]

Source: Ministry of Finance and POPiHN's own data



THE NEED TO ABANDON THE EASTERN DIRECTION POSES A MAJOR CHALLENGE FOR DOMESTIC OPERATORS IN TERMS OF SUPPLYING THE MARKET WITH DIESEL.

Restrictions on the purchase of diesel in Russia resulted in this destination being eliminated from purchases after 5 February 2023. It was replaced by purchases in Germany, Sweden, the Netherlands, or such far-flung countries as Saudi Arabia, India and Kuwait. Diesel was traditionally purchased in a much bigger number of countries than petrol. Only around 11% of the product was imported from beyond our eastern border. The need to abandon the eastern direction poses a major challenge for domestic operators in terms of supplying the market with diesel. The necessary imports to replace those from Russia will – probably for good – have to be carried out mainly by sea, and the logistical reserves there are still in short supply. However, as we witnessed in 2023, the oil companies did their job and, with the use of rail transport, the demand was satisfied.



Fot.: TanQuid Polska Sp. z o.o.

EXPORTS

Exports, understood as proper exports and intra-Community deliveries, also taking re-exports into account (such a principle was introduced by POPiHN into its calculations in 2023, at the same time verifying the data for the previous year) – Figure 17 – in 2023 amounted to 5.2 m. m³ and thus increased by 1.2 m. m³ compared to 2022. In percentage terms, the increase was 30%. The increase is mainly the result of large exports and re-exports (direct diversion abroad of products supplied to the country from outside Poland) to the Ukrainian market to meet war needs.

During the period in question, domestic production was primarily directed towards meeting demand from the Polish economy. Nonetheless, the war situation in Ukraine intensified the deliveries carried out by Polish traders to that market, including significant re-exports, mainly of diesel, motor petrol and LPG.

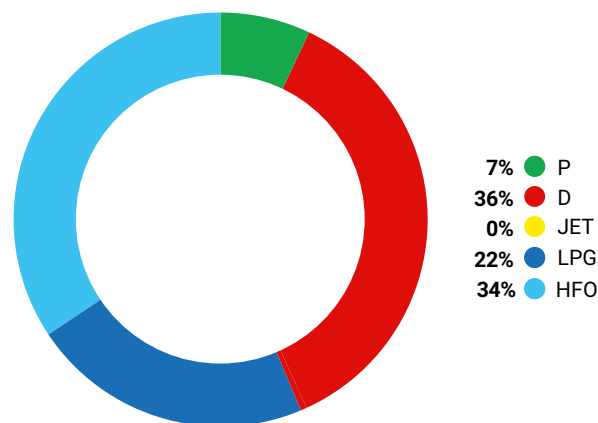
Under war conditions, such operations are usually very profitable, as evidenced by their high volume dimension, increasing practically since June 2022. More individual products were shipped abroad than in the previous year. The exception was JET fuel, mainly directed to the domestic market for the supply of domestic and international flights. Export shipments increased the most in percentage terms for motor petrol and in volume terms for heavy fuel oil.

As in previous years, no exports of light fuel oil were recorded. All of its production (with a slightly lower volume compared to the previous year's result) was directed to customers on the domestic market. The volume of foreign shipments of diesel exceeded the size for broadly understood exports of heavy fuel oil. The global recovery of the aviation market from epidemic-induced collapse also led to a decrease in shipments of this product outside Poland, directing it mainly to domestic airports. Besides, the situation beyond our eastern borders impacted the product structure of fuels shipped out of Poland.

The export deliveries of JET fuel shown in Figure 17 are those made directly by domestic producers to customers 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 2023 amounted to over 1.3 m. m³,

FIG. 18 BREAKDOWN OF LIQUID FUEL EXPORTS (INCLUDING RE-EXPORT) IN 2023 [%]

Source: POPiHN's own data



i.e. some 88,000 m³ more than in the previous year (7% more), and practically equalled the pre-pandemic 2019 volume (1.35 m. m³).

When calculating the LPG market, it should be emphasised that the so-called re-export of this grade of fuel (purchase abroad of Poland and supply also outside our borders) in 2023 exceed 1 m. m³. This means that the volume of this activity increased by a further 30% compared to the already very high previous year's level.

In 2023 Ukraine was the main export destination for motor petrol (approximately 90%). This fuel was also shipped to Estonia and Lithuania, yet in much smaller quantities. Diesel in about 70% of foreign shipments from Poland went to Ukraine. It was also shipped in significant quantities to Switzerland and the Czech Republic. B100 fuel, also treated as diesel in POPiHN statistics, found buyers in the Netherlands, Belgium and Lithuania. The largest volumes of heavy fuel oil were supplied to the Netherlands (79%), as well as to Belgium and Denmark. JET fuel, though in small volumes, was shipped to Estonia and Sweden.

FIG. 17 STRUCTURE OF EXPORTS (INCLUDING RE-EXPORT) AND SUPPLIES IN 2022 AND 2023 [IN THOUSANDS OF M³]

Source: Ministry of Finance and POPiHN's own data

Description	YEAR 2022	YEAR 2023	Reference 2022=100
Petrols	202	366	181
Diesel	1,626	1,880	116
LPG	872	1,143	131
JET aviation fuel	178	25	14
Light fuel oil	0	0	-
Heavy fuel oil	1,112	1,788	161
OVERALL	3,990	5,202	130

■ DOMESTIC CONSUMPTION OF LIQUID FUELS IN 2023

Figure 19 presents a preliminary comparison of the officially registered domestic consumption of liquid fuels in 2023 when compared to the official domestic consumption of liquid fuels in 2022. Final data, taking into account final calculations elaborated by the tax services of the Ministry of Finance on imports, exports and intra-Community purchases and supplies will be available in the second half of 2024. For this reason, the results presented for 2023 should still be treated as estimates, yet very close to final figures.

The dynamics of the Polish economy, the war against Ukraine, the need to change the direction of oil and finished fuel supplies following the introduction of sanctions on oil and fuel purchases in Russia and high fuel prices in the first quarter of 2023 (especially of diesel) were the main elements that shaped last year's liquid fuel market in Poland. In addition, in the third quarter the volume of fuel purchases was affected by the pricing policies of the largest market operators. An objective comparison of the 2023 results to the previous year has been made difficult by the disruption caused by Russia's aggression against Ukraine in 2022. In late February and early March of this year, we observed mass purchases of fuel in wholesale and at

filling stations, which strongly affected the full-year result. In 2023, the situation stabilised, but fuel prices in the first half of the year remained at high levels – although significantly lower than in the second half of 2022 – thus affecting Poles' purchases at filling stations. Military operations in Ukraine require large quantities of fuel, mainly diesel, and Poland is a major transit hub for such supplies. The above resulted in exports and re-exports of liquid fuels carried out by Polish traders being at record levels during the period in question. Fuel consumption in the country, at significant periods, was supported by fuel tourism on the western and southern borders. Lower prices in Poland than in neighbouring European countries encouraged people to come to fill up their tanks and canisters. In the final analysis, the 2023 result for liquid fuel consumption was significantly above the 2022 result. The production of domestic refineries was slightly lower than the year before and domestic fuel demand had to be met with more imports than in the previous year. The demand for liquid fuels in Poland grew mainly due to purchases of motor petrol and LPG. Holiday trips (mainly domestic) of the Poles stabilised the high level of sales. The result was also

■ FIG. 19 ESTIMATED DOMESTIC LIQUID FUEL CONSUMPTION IN 2023 IN COMPARISON TO THAT OF 2022. [IN THOUSANDS OF M³]

Source: Ministry of Finance and POPiHN's own data

Description		YEAR 2022		YEAR 2023		Reference 2022=100
		in thousand m ³	share in consumption %	in thousand m ³	share in consumption %	
Petrols	Consumption	7,107		8,025		113
	of which imports (excluding re-exports)	1,646	23	1,924	24	117
Diesel	Consumption	22,206		23,303		105
	of which imports (excluding re-exports)	6,874	31	9,200	39	134
LPG	Consumption	4,315		4,621		107
	of which imports (excluding re-exports)	3,750	87	3,846	83	103
Total for 3 fuel types	Consumption	33,628		35,949		107
	of which imports (excluding re-exports)	12,270	36	14,970	42	122
JET aviation fuel	Consumption	1,235		1,326		107
	of which imports (excluding re-exports)	–	–	9	1	–
Light fuel oil	Consumption	655		610		93
	of which imports (excluding re-exports)	1	–	7	1	700
Heavy fuel oil	Konsumpcja	249		204		82
	of which imports (excluding re-exports)	152	61	201	99	132
OVERALL	Consumption	35,767		38,089		106
	of which imports (excluding re-exports)	12,423	35	15,187	40	122



strengthened, especially in the second half of the year, by growing sales of diesel – and aviation fuel for resurgent air tourism.

The result of all types of liquid fuel consumption after 12 months of 2023 exceeded the results of the same period from the previous year by 6%. Sales of motor fuels in the second half of the year were noticeably higher than in these periods the year before. An important element contributing to the increased demand for fuels in the country was the significant number of cars circulating on Polish roads with Ukrainian registration plates. In this difficult time for market operators, the control of the illegal fuel trade worked effectively, which in periods of market uncertainty usually resulted in the growth of the grey market in the past. Fuel buyers benefited from steadily declining wholesale and retail fuel prices and from demand-supporting margin limitations by fuel station operators. Compared to 2022, total demand for liquid fuels in Poland increased by the aforementioned 6%, with demand for the main transport fuels (P, D, LPG) increasing by 7%.

In 2023, the Polish market was supplied primarily by POPiHN member companies. Other operators traditionally placed less fuel on the market than the main suppliers, but at the same time by around 11% more than in the previous year. Their share was still significant in the LPG market, but also continued to increase in the petrol and diesel market.

Similarly to what was observed in 2022, also in 2023 of all fuels only the sales performance of light and heavy fuel oil was lower than a year ago. There was an increase in demand for motor petrol and diesel, as well as LPG and JET aviation fuel. Similarly to previous years, the Polish market sold the most diesel. Motor petrol placed on the market was about 3 times less, but its sales dynamics were higher. Good results were recorded by the LPG market, sales of which accounted for almost half of the volume of motor petrol sales.

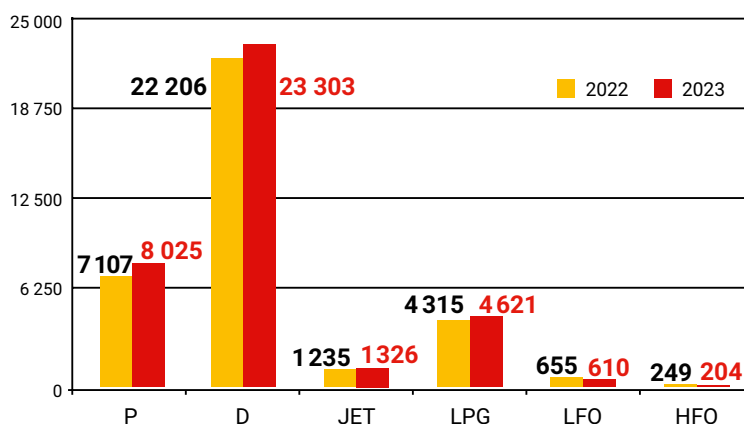
In 2023, domestic needs for liquid fuels were fully met and, apart from short emergencies caused by the unprofitability of fuel imports from abroad – no cases of turbulence were recorded. Emergency situations were quickly resolved, confirming the readiness of the fuel sector to quickly counteract such crisis events. Refineries, wholesalers and filling stations continued working to effectively supply the market, using domestically produced fuels, supplemented with purchases from abroad to meet the demand.

Official diesel consumption grew by 5% compared to 2022 and exceeded 23 m. m³. The share of imports in the market supply of this fuel was 39%, i.e. 8 percentage points more than in the previous year. The dynamics of market supplies carried out by POPiHN companies increased by 2%. Imports by the Organisation's member companies showed a level of 7.5 m. m³ and thus grew by 38% compared to 2022. Supplementary imports by independent importers improved by 18% and reached 2.3 m. m³. A part of this fuel went to customers outside Poland. A total of around 9.2 m. m³ of product imported from abroad was used for domestic purposes.

In percentage terms, demand for motor petrol increased more than for diesel. Purchases of this fuel type showed a result 13% better than last year. It is worth emphasising once again that the important factors influencing the market were: an increase in the number of cars on Polish roads of about 1 million,

■ FIG. 20 DOMESTIC CONSUMPTION OF LIQUID FUELS IN 2022 AND 2023 [THOUSAND M³]

Source: POPiHN's own data



permanently increased by vehicles with Ukrainian registration plates (and periodically it was even more, because such vehicles crossed the Polish-Ukrainian border in large numbers and each time they were refuelled), new registrations on the domestic market to a much greater extent than in the previous year, dominated by vehicles other than those with diesel engines, and, last but not least, fuel tourism. In 2023, drivers purchased around 8 m. m³ of petrol in Poland, of which around 1.9 m. m³ were imported. Imports supplied 24% of the petrol market – 1 percentage point more than the year before.

There was an increased interest in LPG. The result showed an increase of 7% compared to the previous year. It is currently estimated that for the whole year the consumption of LPG amounted to approximately 4.6 m. m³. Re-exports of this type of fuel exceeded 1 m. m³ and were almost 240,000 m³ higher than in 2022. Imports for domestic supply accounted for 83% of the market supply and increased by 3% compared to the previous year. Approximately 3.8 m. m³ were imported for this purpose. POPiHN's calculations do not take into account the domestic market use of imported fuel with CN code 29 01 in an amount of more than 200,000 tonnes, about half of which remained in the country, thus increasing consumption.

Demand for light fuel oil is already fairly stable in the country, and last year it was further reduced by 7% due to high supply prices and a mild winter. The market required 610,000 m³, i.e. 45,000 m³ less than in the previous year. It is assumed that in the coming year the results for this type of fuel will continue to decrease. Virtually the entire supply of this fuel type to recipients in Poland was satisfied by domestic production. Official supplementary imports amounted to only 7,000 m³.

Domestic JET fuel market recorded another increase in sales. This time it amounted to 7% with a volume of just over 1.3 m. m³. This is an increase of 91,000 m³ compared to the previous year.

FIG. 21 BREAKDOWN OF LIQUID FUELS EXPORTS IN 2023 [%]

Source: POPiHN's own data

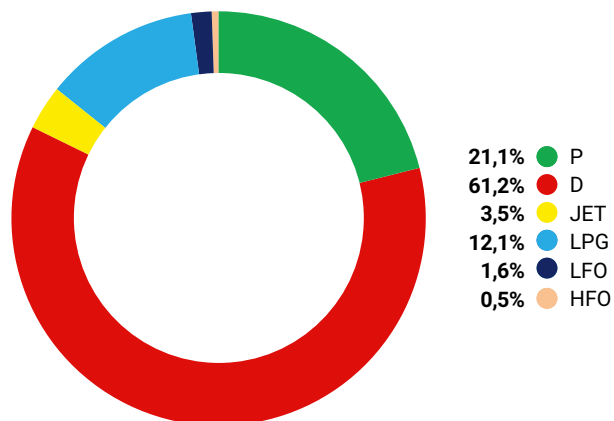


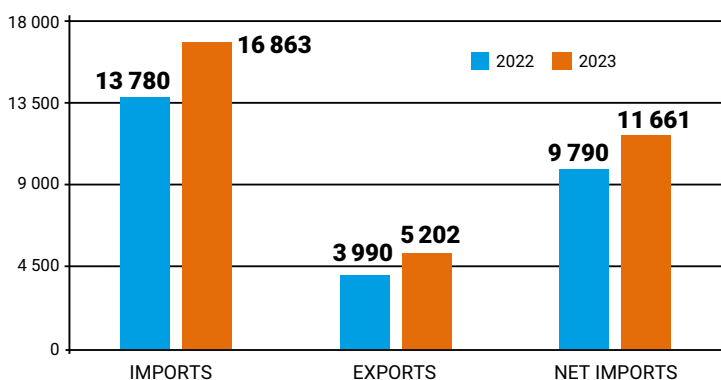
FIG. 22 BALANCE OF INTERNATIONAL TRADE IN LIQUID FUELS IN 2023 [IN THOUSAND M³]

Source: Ministry of Finance and POPiHN's own data

Description	Imports + Purchases	Exports + Supplies	Difference (2-3)
1	2	3	4
Petrols	2,030	366	1,664
Diesel	9,722	1,880	7,842
JET aviation fuel	9	25	(-16)
LPG	4,894	1,143	3,751
Light fuel oil	7	0	7
Heavy fuel oil	201	1,788	(-1,587)
OVERALL	16,863	5,202	11,661

FIG. 23 BALANCE OF INTERNATIONAL TRADE IN LIQUID FUELS IN 2023 [IN THOUSAND M³]

Source: POPiHN's own data



A higher demand was largely satisfied by domestic production as imports were practically non-existent.

Domestic demand for heavy fuel oil also declined and in 2023 it was 18% below the previous year's level.

The market required 204,000 m³ of this grade of heating fuel. This fuel is produced in Polish refineries

in amounts significantly exceeding the domestic demand and therefore for years surpluses have been sent outside Poland in large quantities.

Total official domestic consumption of the 6 liquid fuel types slightly exceeded 38 m. m³ and was higher by about 2.3 m. m³ than consumption in 2022. Imports needed to balance the domestic market were set at a 40% share of the total market with an increase of 22%. The volume of non-Polish fuel used domestically was over 15 m. m³, i.e. some 2.8 m. m³ more than in the previous year.

The structure of fuel consumption in Poland has been presented in Figure 21.

The differences in the breakdown of shares compared to 2022 are small – with a slight increase in the share of motor petrol and JET aviation fuel. There was a change at the expense of a slight loss of shares by LPG and light and heavy fuel oil. Diesel remained stable at the previous year's level.

The supply of liquid fuels to the Polish market is mainly through production at domestic refineries, but their capacity is not sufficient to meet total demand. Supplementation through imports is therefore necessary. In 2023, this direction of market supply has further increased, compared to the high level of the previous year. An increase in exports and re-exports in the Ukrainian direction also contributed to this, as a result of the continuing war in that country. For refineries, sales on the domestic market are more profitable than exports. At the same time such sales provide more revenues for the national budget. However, domestically produced fuels do not meet demand in its entirety, especially for products such as diesel and LPG, and more recently also for motor petrol. The international trade balance for Poland in petroleum fuels is presented in Figure 22.

In 2023, the advantage of broadly defined imports over fuel exports and re-exports was more than threefold. A 22% increase in imports, despite a 30% activation of exports, resulted in 11.7 m. m³ of a difference in the volume of fuel imports and exports from the country. This was a new record exceeding last year's result by around 1.9 m. m³.

Imports, as in previous years, were dominated by diesel and LPG. Exports were mainly determined by diesel, although the previous leader (heavy fuel oil) held firm despite the launch of deeper processing towards middle distillates at domestic refineries. As regards LPG, the level of foreign shipments was also maintained. It is assumed that current trends will continue in the coming years. This means that the current ratio between fuel imports and exports will increase in favour of imports. The growing market and export needs related to the war against Ukraine will require more fuel and from other directions than we observed up to 2022. In the perspective of the coming years, this is also unlikely to be changed by an effective increase in the number of electric cars, which have been appearing with great dynamism on Polish roads. Quantitatively, they are still a marginal size in the total fleet of motor vehicles. International trading balance for the Polish fuel sector will continue to be shaped mainly by diesel and LPG imports. However, as 2022 and 2023 have shown, there may also be a need to import larger volumes of petrol, demand for which will continue to grow due to the increasingly visible trend of moving away from diesel-fuelled vehicles.



Fot.: CIRCLE K POLSKA SP. Z O.O.

FILLING STATIONS IN POLAND

Information obtained from member companies of the Polish Organisation of Oil Industry and Trade, publicly available data and the register of fuel infrastructure maintained by the Energy Regulatory Office were used to present the fuel station market in Poland at the end of 2023. In view of the fact that the network of facilities selling liquid fuels is subject to constant modification, the lack of 100% reliable information from the Energy Regulatory Office at the end of 2023 poses a serious problem for any type of analysis. Nevertheless, based on the experience of previous years and on available information, POPIHN undertook the task of estimating this market.

Based on the Organisation's recent estimates, it results that at the end 2023 the domestic network of filling stations, comprising public filling stations selling at least motor petrol and diesel, comprised 7,915 outlets. The above represents an increase by 17 sites compared to the end of 2022. The increase in the number of filling stations was the result of the market adapting to new operating realities through modifying the structure of the station network, new investments, opening facilities after renovations or sorting out fuel sales concessions.

There were transformations in the market resulting from new investments and from the rebranding of stations, mainly previously so-called independent ones, i.e. owned by operators not affiliated to larger entities operating under a common brand name. As in previous

years, there was an ongoing process of taking over the facilities of smaller operators into larger networks, both corporate and independent, using franchising. Stations in each of the market sectors deepened the process of adapting their operations towards a convenience store model with maximisation of available services other than fuel sales, although such sales increased significantly compared to the previous year. There was a noticeable associated increase in small and large food and beverage station turnover, station shop turnover with an increasing range of goods available. There was

FIG. 24 NUMBER OF STATIONS OF RETAIL OPERATORS IN 2021-2023

Source: POPIHN's own data

	2021 31.12.2021	2022 31.12.2022	2023 31.12.2023
Filling stations network			
DOMESTIC COMPANIES			
(2022 and 2023 without LOTOS Paliwa)	2,339	1,920	1,929
FOREIGN COMPANIES			
(2022 with LOTOS Paliwa, from 2023 with MOL)	1,581	2,024	2,027
INDEPENDENT CHAINS			
(operating under a common brand)	1,339	1,411	1,467
OTHER INDEPENDENT OPERATORS (approx.)	2,414	2,372	2,295
SHOPS	178	171	197
TOTAL (approx.)	7 851	7 898	7 915

FIG. 25 FILLING STATIONS IN POLAND AT THE END OF 2023 [IN UNITS]

Source: Energy Regulatory Office and POPiHN's own calculations

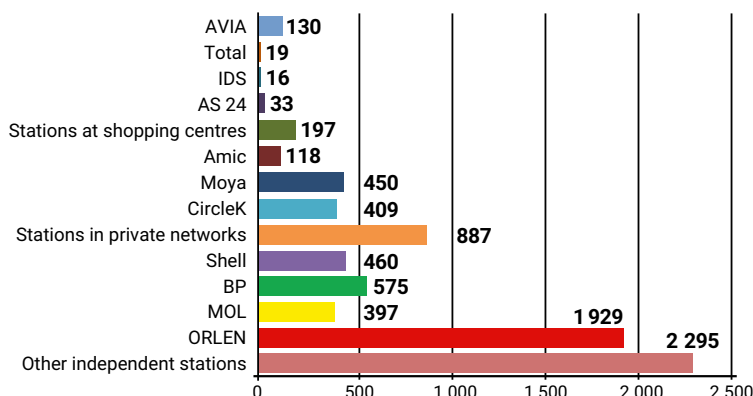
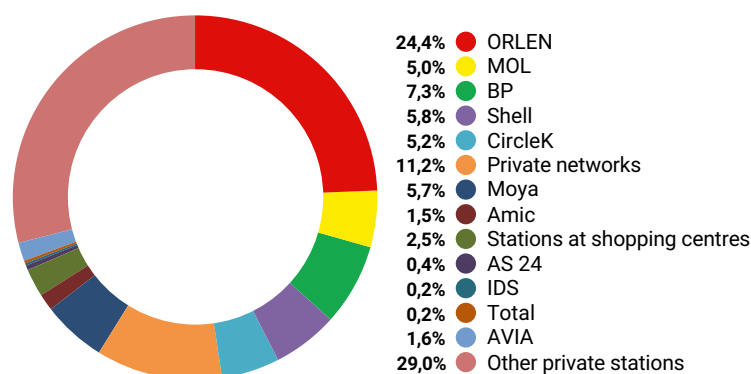


FIG. 26 BREAKDOWN OF FILLING STATIONS MARKET AT THE END OF 2023 [%]

Source: POPiHN's own data



a growing interest in chargers for electric cars. There was also an expansion of services related to leisure during the journey, the provision of financial services or the performance of simple vehicle maintenance tasks. There was growing popularity of making purchases, and not only of fuel, through the use of special apps that allow transactions to be finalised without the need to visit a filling station building or use the checkout in a shop. Even though two years had passed since the outbreak of the pandemic, basic sanitary regimes were still being maintained at filling stations.

By the end of 2023, fuel companies belonging to the Polish Organisation of Oil Industry and Trade already held a 58% share of the filling station market. This means that over a year this share had increased by a further 1 percentage point. The Organisation's member companies owned 4,568 facilities, while other operators owned 3,347. In breakdown by ownership category, out of the overall number of stations 24.4% belonged to ORLEN, 25.6% to multinationals, 2.5% to hypermarkets and 47.5% to private owners independent of other groups. In the latter group, 1,467 filling stations belonged to operators owning a minimum of 10 facilities in their networks operating under one logo. In the overall

filling station market, the share of these operators reached 18.5%, meaning that this market segment is growing all the time and is already the third largest within the individual filling station sectors operating on the domestic market. The process of changing colours by stations was based, as in previous years, mainly on franchise agreements, both for POPiHN members (the largest market operators) and for smaller private networks. New facilities were launched in virtually all market groups, although the scale of these ventures was not very large. Some operators with good station locations continued to operate independently, even though they found the requirements of competition increasingly difficult to meet.

In 2023 ORLEN had the highest number of stations. The position of runner-up in the station market was retained by the BP network, while the next place belonged to Shell. The national leader's stations progressed in standardising their colours and offering the same standard of service at all network sites. The company expanded its network by 9 facilities. There was a slight growth in the number of stations under the logo of international companies operating in Poland. At the end of 2023, there were 2027 sites operating under their colours. Compared to the previous year, in the independent segment the MOYA network, owned by ANWIM, maintained the best growth dynamics. Other private chains, such as AVIA – a brand belonging to the UNIMOT company – and Grupa Pieprzyk also developed well.

Preliminary estimates on the value of the retail market for fuel sales in Poland in 2023 oscillated around PLN 190 billion, which was similar to the previous year. The volume of fuels sold at filling stations was initially estimated at about 31 billion litres (petrol, diesel and autogas). State budget revenues from taxation (VAT, excise duty, fuel surcharge, emissions fee) from fuel sales amounted to around PLN 83 billion, about PLN 27 billion more than in the previous year. The increase in the amount of budget revenues was related to the increase in fuel consumption, but also to the expiration of anti-inflation shields. First of all, as of 2023 there was a return to the standard VAT rate of 23%. In addition, in the middle of the year the retail sales tax on liquid fuels was reinstated. It is estimated that the total value of receipts into the public finance system from the fuel sector last year exceeded PLN 94 billion.

The increasingly complete network of national motorways and expressways is encouraging Poles to travel across the country by car, bus or coach. The number of filling stations along such roads is also growing, accompanied by an increase in new service points. At these sites, it is now possible not only to fill up the vehicle, but also rest during the journey, taking a break to have a meal, do some shopping or charge the electric vehicle. In 2023, there were 86 filling stations along roads marked with the 'A' symbol. ORLEN had 38 vehicle refuelling outlets, MOL 16, BP 16, SHELL 12 and CircleK 4. Motorway Service Areas along 'S' roads were also being built and expanded. In this case – unlike the high-cost developments along motorways, which are the domain of the largest market operators: ORLEN and multinationals – companies outside the group of champions also had their realisations.

ORLEN, Poland's largest retail operator, had 1,929 filling stations in its network by the end of 2023. The economy network under the BLISKA logo retained only



20 stations. Most of the facilities operating in green colours in the past today function under the logo of the parent company.

MOL, the network of former LOTOS PALIWA stations now in the hands of a Hungarian operator, held the sixth largest position on the filling station market, operating at 397 sites. The company also supplies and controls SLOVNAFT PARTNER's 85 filling stations. The rebranding process has already covered about half of the stations acquired after the merger of ORLEN and LOTOS.

In the past year there was a slight increase in the number of stations owned by international companies operating on the Polish market. The market leader, BP, increased its network by 1 facility and at the end of the year had 575 stations. Shell Polska acquired 5 additional stations and expanded its area of operation to 460. CircleK managed 409 stations at the end of the year, having added another 16 facilities to its group. Amic Polska increased its network by one station to 118 sites. The TOTAL brand was present at 19 filling stations, having lost its logo at 4 stations. ANWIM, whose stations operate under MOYA colours, last year expanded its network dynamically. The company gained 49 outlets and ended the year with 450 stations UNIMOT, with stations operating under AVIA colours, added 24 sites and ended the year with 130 stations. As can be seen from the above, the undisputed leader in brand expansion was ANWIM, and its MOYA network has been increasingly active throughout the country.

The area from which outlets are being sourced for the expansion of companies' networks is the sector of stations of so-called independent operators, who in the past were not associated with any of the major national companies, either within a corporation or non-corporate. The main method of acquiring new facilities is through a franchise agreement. In 2023, this process also continued, depleting the number of stations operating independently. This activity included rebranding existing facilities or revitalising older ones. The group of independent operators numbered some 2,295 facilities at the end of 2023, i.e. around 80 less than the year before.

At the end of 2023, there were approximately 1,467 sites classified by POPIHN as a network of independent stations (at least 10 stations under a common logo). Of this group, the largest acquisitions were recorded by POPIHN companies such as ANWIM and UNIMOT, but operators such as Grupa Pieprzyk and WATIS were also active. The ever-growing network of independent brands and the expansion of the area in which they operate makes them increasingly attractive in the context of possible entry into such alliances of operators in terms of possible entry into such alliances by operators still operating independently. An additional incentive to choose an independent network rather than a corporate one may be the fact that such associations have somewhat looser operating rules than the networks of the largest national operators. In 2023, stations grouped in networks of independent operators were the second most numerous formation of organised facilities performing retail fuel sales. As these facilities tend to offer fuel at slightly lower prices than stations in other segments of the market, they are becoming an increasingly viable alternative to the large oil companies in the face of rising fuel prices and the ever-present overpricing.

The year under review recorded an increase in the number of stations owned by super and hypermarkets.

BY THE END OF 2023, FUEL COMPANIES BELONGING TO THE POLISH ORGANISATION OF OIL INDUSTRY AND TRADE ALREADY HELD A 58% SHARE OF THE FILLING STATION MARKET.

Out of the stations at these types of retail facilities, the total number of the ones that were successfully located increased by 26. Shop chains account for a small percentage of the total fuel station market, yet through their attractive price offer, they sell large volumes of fuel and thus their share of the fuel retail market is significant. Intermarché continues to be the leader in this group of operators.

The described statistics focus mainly on public stations selling at least 2 fuel types (P and D). In addition to these, there were still a number of stations on the market selling only LPG or only diesel. These are slowly declining in number and they are an increasingly distinct minority in relation to those described above and have therefore not been included in the presented analyses.

Figure 26 shows the percentage breakdown of the market for filling stations by retail operator group. No significant changes were recorded in this breakdown compared to the previous year. The most noticeable aspect is the reduction in the share of the group defined as 'Other private stations' by 1 percentage point. A noticeable increase was recorded by a slice of the pie representing the MOYA network (by approximately 1 percentage point), AVIA and CircleK stations. The other major network operators virtually maintained their previous year's position and shares at very similar levels.

More and more chargers for electric vehicles are being installed at filling stations in Poland, mainly in places not associated with the refuelling of classic fuels, but their number has also been growing precisely at these types of facilities. The increase in the number of registrations of new battery-powered cars is forcing this type of action. For classic fuel stations, this type of investment is an extension of additional services and preparation for the market challenges that the fuel sector will face in the near future. According to the data provided by the Polish Alternative Fuels Association, at the end of 2023, there were a total of 5,933 charging stations, out of which 1,543 offered fast (DC), and 4,390 slow (AC) charging. POPIHN managed to locate 450 fast chargers and 230 slow chargers installed at stations selling motor fuels. Chargers are an investment in the future of filling stations, but it seems that for a long time to come sales will be based on classic fuels.

■ DEMAND FORECAST FOR THE POLISH MARKET UP TO 2030

The new supply situation caused by the introduction of sanctions on Russian crude oil and the fuels produced from it has changed the approach to formulating demand forecasts for liquid fuels in Poland. After the pandemic experience, which left its mark on the entire global economy and affected Poland as well, from 2021 onwards, the demand for energy commodities started to recover along with improving markets. Unfortunately, on 24 February 2022, everything changed abruptly again. Russia's aggression against Ukraine led to numerous changes and shifts in the global energy market, including in the oil and finished petroleum products sector. The bans on oil and fuel purchases from Russia introduced at the end of 2022 and the beginning of 2023 altered the projection of demand scenarios prepared annually by the Polish Organisation of Oil Industry and Trade. The current version of the forecast takes into account new global trends, but also the economic situation in Poland, which is currently a frontline country with a whole range of problems related to the conflict beyond our eastern border.

The scenarios were prepared on the basis of knowledge of experts from member companies and the Organisation's office. Preliminary data on fuel consumption in Poland for 2023 were taken into account, as well as observed in previous years trends and factors shaping the current market, including the continued climate policy of the European Union. The impact of the war on the market in 2023 and the associated potential for disruption of fuel supply or fuel production components were also analysed. The good performance of the domestic market for petrol and slightly worse for diesel and autogas, alongside taking into account market realities translating into fuel prices now and in the future, resulted in changes in the approach to scenario building. Observed changes in international markets indicate how volatile the petroleum fuel market is. In this context, it should be noted that in previous years POPiHN succeeded in accurately

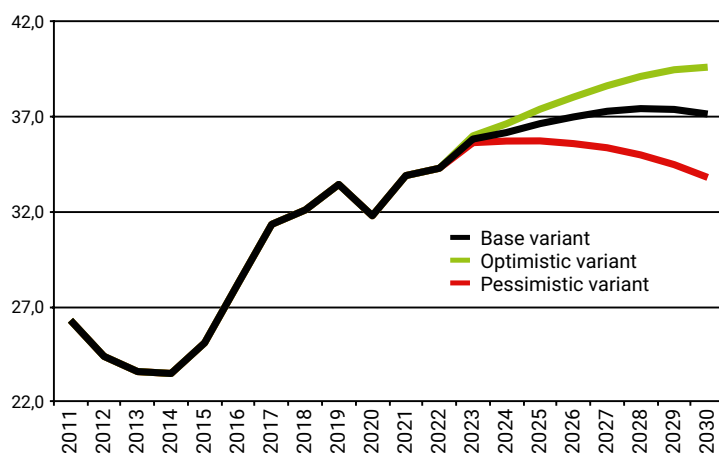
predicting trends observed in the market. It was assumed that the market for petrol, diesel and autogas would recover. In addition, it was rightly predicted that with the recovery of world economies, prices of crude oil and finished fuels would increase, albeit to an extent that would not drastically affect price levels for end users. It was also a proven assumption that, despite numerous incentives, electrification of the car fleet did not have noticeable impact on the purchases of internal combustion vehicles.

In 2023, around one million cars were purchased from car showrooms and imported from abroad. Significant numbers of vehicles on Ukrainian registration plates were also moving around the country – if not permanently placed in Poland, then at least planning to stay for long periods. Fuel tourism from neighbouring EU countries also assumed considerable proportions; its scale, due to favourable prices in Poland, compared to other EU countries, is likely to continue in the future. During the analytical work on the current version of the scenarios, efforts were made to take into account the latest changes taking place in the economy, including those necessitated by the ongoing energy transition. Several variants of the scenarios were preserved to reflect the different trends in Polish economy and the needs of Polish drivers.

The new variants of the baseline and optimistic scenarios assume effective state measures, reducing the magnitude of the economic slowdown observed in 2023 and limiting the scale of inflation. In addition, it was assumed that oil refining capacity in the EU is insufficient to meet demand on our continent, forcing purchases from distant American countries and from the Middle East. In addition, the embargo on Russian oil (from 5 December 2022) and fuels (from 5 February 2023) will result in increased competition for fuel between EU countries. Poland's independence from Russian oil and diesel supplies is now a permanent logistical and technical challenge for the country's fuel industry. Switching to oil grades other than REBCO will most likely result in a change in the yield structure and logistical complications for marine deliveries from distant directions. This may translate into a decrease in the optimisation of domestic refinery operations. It is difficult to forecast exactly what will happen in the next few years as there are many important and unpredictable variables (a possible renewed epidemiological emergency, the macro- and micro-economic situation, energy demand by the heating sector in the coming heating season, inflation, changes in petroleum fuel taxation, the energy transition, etc.). Market distortions can be both on the supply and demand side. It was presumed that in the near future, oil and finished product quotations on international markets would be around 2023 levels in the next two to three years, but that their market valuations would increase rather than decrease over time. This will be influenced by, among other things, shortfalls in the supply of oil due to the low realisation of renewal of its sources, as well as likely tax regulations aimed at promoting zero and low-emission vehicles, i.e. other than those with classic internal combustion engines. It was assumed that the USD-PLN exchange rate

■ FIG. 27 SCENARIO FOR LIQUID FUELS DEMAND IN 2023-2030 (IN M. M³)

Source: POPiHN's own data





Fot.: UNIMOT S.A.

would remain similar to the one observed at the end of the previous year. It was also assumed that the Polish economy would grow, using national and European funds under the European Recovery Plan and the new budget perspective for 2021-2027, which will, in turn, result in an increase in new investment tasks in infrastructure and the transformation of the Polish economy towards zero-emission. The assumption was maintained that in the next few years there would be changes in the drivers' preferences when buying cars and that there would be a greater emphasis on petrol, hybrid and electric vehicles at the expense of diesel-powered cars. It was estimated that heavy transport would be mostly served by diesel-powered cars by 2030. An assumption was made that inflation in Poland would decline. However, this will not imply a reduction in prices, but only their slower increase. A continuation of current social benefits was also assumed, as well as an increase in the average wage of Poles and a low level of unemployment. The view was maintained that the impact of alternative fuels on the domestic market in the next few years would still be insignificant compared to the market for traditional fuels.

In addition to the assumptions presented above for the baseline scenario, additional elements were also assumed, such as a slight weakening of the Polish currency, an increase in the rate of economic growth, a possible shortage of fuels on the European market, the continuation of significant volumes of fuel exports to Ukraine, a slight weakening of the LPG market, and a strengthening of domestic demand by vehicles from Ukraine. It was assumed that the grey market would not grow in the coming years due to the actions of the relevant state services. This option assumes that oil prices could remain between USD 80 and 100/bbl in the long term. The so-called 'black swans', i.e. unpredictable events today, such as those observed in connection with the outbreak of war against Ukraine or possible military threats in various areas of the world (the Red Sea, the Gaza Strip), could significantly alter the supply and international demand for energy raw materials. It is anticipated, however, that the turbulence in oil demand due to this should not be higher than 20-30% of current supply, which will obviously translate into prices, but can be compensated for fairly quickly by the actions of producing countries.

The declared shift away from fossil fuels to other, more environmentally friendly energy carriers in Europe, the United States of America, as well as China, should force a fairly stable situation on the international oil market. Turbulence on the energy carrier markets is, of course, possible, but the trend of increasing demand for petroleum fuels should be maintained even after 2023 with an outlook to 2028-2029. In the country, the growth effect should be achieved through an even further (over the next 3-4 years) increasing demand for diesel and petrol. Motor 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 vehicles. Due to the increasing cost of purchasing autogas and not including this fuel in the list of alternative fuels, which allow the vehicle to enter clean transport zones in cities, a gradual shift away from autogas-powered vehicles towards hybrid and electric vehicles (taxis, city supplies, car rentals) has been assumed over the next few years. In the long run, in line with EU recommendations, the role of public transport, especially in medium-sized and big cities, as well as in long distance travels, is expected to increase, particularly in large and medium-sized towns and in long-distance traffic. This is likely to be linked to the introduction of Clean Transport Zones, mainly in city centres, restrictions on the movement of individual vehicles, a reduction in the number of parking spaces and an increase in parking fees, as well as the restriction of urban space to meet the needs of motorists. Public transport will become greener thanks to using an increasingly growing range of vehicles powered by alternative fuels. Long-distance traffic will promote travelling by railway and shifting away from short-haul air travel. A further reduction in demand for heating oil is assumed, linked to a shift to other energy carriers (electricity from photovoltaics and wind, natural gas, biogas). In this variant, the official domestic market demand for liquid fuels in 2030 is currently being estimated at approximately 37 m. m³, this result being very close to the previous forecast.

In developing the optimistic variant, in addition to the main assumptions of the baseline variant, strengthening of the Polish currency was assumed, along with economic growth in Poland above 3% p.a., reduction of the level of fuel shortage on the European market, and stable fuel exports to Ukraine (potential increase possible once domestic needs are fully satisfied). In view of the introduction of restrictions on the registration of vehicles with classic engines, a higher rate of imports of used cars powered by traditional fuels was assumed. In this variant, the domestic market demand for liquid fuels in 2030 would be about 40 m. m³, which is very close to the previous forecast.

The pessimistic variant assumes a recession of the economy in Poland related to the high cost of electricity and heat, a worsening of the fuel shortage in the European market, reduced production in refineries across the EU, logistical constraints related to the situation in Middle Eastern markets, a large increase in fuel exports to Ukraine, and the collapse of the LPG market in Poland due to the introduction of sanctions from 2025 on the supply of this fuel from Russia. It also assumed a possible increase in inflation and a fundamental depreciation of the Polish zloty (PLN) against other currencies,

which would result in an increase in domestic prices. As a variant, but with a similar effect we may also assume a destabilisation of the international situation and notable increments in crude oil quotations, resulting in a significant increase in the operating costs of the Polish economy and major increases of fuel prices, as well as intensified fiscalism reaching, as has usually been the case in the past, first to the fuel sector with a consequent reduction in demand. In this scenario, the demand for liquid fuels in 2030 is estimated at 34 m. m³, which is about 1 m. m³ more than in last year's scenario.

Compared to the forecasts prepared a year ago, there has been no significant change in the expected fuel consumption ceilings in 2030; the peak of domestic demand will be in the years 2027-2028. As this report is being prepared, it is already known that the world will need more than 100 million barrels of crude oil per day in the coming years. Furthermore, it is estimated that demand for refinery crude will continue to increase, especially in Asian and African markets. Clearly, this is not the end of the traditional fuels era. For the time being, the world still cannot develop without oil and petroleum-based fuels, although it will probably try to eliminate this energy carrier more and more in the coming years. 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'. Building a low-carbon economy will set new targets for the oil industry over the coming years, especially as the European Commission seeks to shorten the timescales for achieving significant emissions reductions. The ban on the registration of passenger vehicles with internal combustion engines from 2035 is to be maintained, while the inclusion of car transport in the greenhouse gas emissions trading scheme from 2026, the inclusion of maritime transport in the greenhouse gas emissions trading scheme, or the inclusion of air transport in the greenhouse gas emissions trading scheme and the elimination of current tax credits are expected to support these new reduction targets.

The energy transition will have a huge impact on both society and the economy. Today, in Poland, the EU and worldwide, the use of oil plays a key role as the most important source of primary energy used to move transport. It is still the most important factor enabling economic development. Relatively inexpensive fuels and their reliable supplies are essential elements of a vision for the future. Liquid hydrocarbons continue to be products with a unique energy density and are easy and safe to store, transport and use. It seems that in the short term there is no single technology that, especially in Polish conditions, could replace fuels obtained by processing crude oil. Nevertheless, the share of alternative fuels (including electricity) will gradually increase. In the long term, the transport sector will be largely driven by electricity from distributed RES, linked to various forms of energy storage, supplemented systemically by nuclear power plants. However, such changes are to be expected in the long run rather than in the next few years.

Fot.: TOTALENERGIES MARKETING POLSKA SP. Z O.O.



■ MOTOR FUEL PRICES

The year 2023 will most likely be remembered as a time of relatively stable retail petrol and autogas prices and successively declining diesel prices. Fuel prices are linked to the geopolitical situation in the world, as demonstrated by events related to the pandemic or the war in Ukraine and Gaza. In the past year the situation was stable and in terms of prices at fuel pumps, we observed reductions more frequently rather than increases. Although at the beginning of the year sanctions imposed on Russian diesel imports significantly increased its prices, by the end of the first half of the year they were already significantly lower. Over time, diesel prices moved closer to those of the basic grade of petrol. Since the beginning of the year, VAT rates returned to 23%, and excise and fuel duty rates increased significantly with the withdrawal of anti-inflation shielding. The price hike at filling stations observed at the beginning of the year contributed to the development of inflation indicators. Nonetheless, price declines in the remaining quarters of this year had a slowing effect on inflation rates. Following the introduction in December 2022 of sanctions on Russian oil transported by tankers and then, from 5 February 2023, on finished fuels originating from Russia, there were fears of possible market destabilisation. Oil companies managed to avoid a crisis. Large stocks and slowing demand even forced gradual reductions in quotations, which then translated into prices offered at filling stations. The decline in global oil and finished fuel stock levels was halted. It was hoped that China's post-pandemic economy would drive oil demand, but the Middle Kingdom failed to return to the pre-pandemic economy's growth rate. Producing countries acted to salvage crude quotation levels that were profitable for

them by introducing new restrictions on oil production. The world still fears a significant economic slowdown, which is not good for the oil market, but filling station prices are not rising. The final level of average fuel prices in Poland was also influenced by pricing decisions taken since the beginning of September by the largest market operators. Reductions of retail prices below 6 PLN/l for both main fuel types corrected average market prices for the whole year sharply downwards. Average wholesale prices also declined significantly. This led to temporary turbulence in the logistics of fuel deliveries within the country, but also imported from outside Poland, for which import parity was well above domestic prices. Margins, the levels of which could hardly be considered satisfactory, became a challenge for domestic operators. It was only at the end of the year that this trend managed to change. It is noteworthy that this took place without affecting motorists' wallets. The global fuel market operates as an interconnected system. This means that changes in the market affect all countries to a similar extent. In Poland, this was observed in price levels at wholesale and at filling stations. The assumptions made at the end of 2022 by the Polish Organisation of Oil Industry and Trade regarding decreases in retail motor fuel prices in 2023 were confirmed in practice. Average annual reductions in motor fuel prices were assumed and diesel prices were assumed to be higher than the price of standard 95 petrol. Once again, life showed that in the oil market, everything is possible and changeable in a very short time.

Since the outbreak of the war against Ukraine, filling station pylons displayed prices higher than the ones observed before the war. At the beginning of 2023,

THE GLOBAL FUEL MARKET OPERATES AS AN INTERCONNECTED SYSTEM. THIS MEANS THAT CHANGES IN THE MARKET AFFECT ALL COUNTRIES TO A SIMILAR EXTENT.

price increases followed the sanctions on Russian oil delivered by sea transport introduced at the end of 2022 and the ban on motor fuel imports from Russia (with the exception of LPG) introduced on 5 February. In addition, motor fuel price levels were influenced by the prices of gaseous fuels used for power and heating purposes, which stabilised over time, but at high levels. This meant that petroleum products continued to be used for energy purposes. World oil and fuel stock levels were stabilising and producing countries were not significantly increasing production while receiving lavish revenues for their products. The reductions in OPEC+ production limits introduced in previous years were maintained and, over time, further increased, but this did not result in significant increases in finished product quotations. Changes in international markets meant that in Poland the subsequent months of 2023 were increasingly favourable for the wallets of motorists filling up their vehicles.

The global fuel market operates as an interconnected system. This means that changes occurring on it affect all countries to a similar extent. In Q1 and Q4, buying diesel in Poland was more expensive than buying 95 octane petrol, with the price difference at the beginning of the year being as much as PLN 1.12/l and at the end of the year it was only PLN 0.21/l. Retail prices of both fuel types equalled at the beginning of April, then EU95 petrol was slightly more expensive until September,

when diesel again exceeded the price of the basic type of fuel for spark ignition engines. On an annual basis, for diesel we paid on average 8% and for the basic grade of petrol for spark ignition engines 2% less than in the previous year. Wholesale prices only periodically (mainly at the end of the year) allowed all filling station operators to maintain margins at satisfactory levels. For most of the year, earnings from fuel sales alone would not allow most operators to maintain their stations solely from fuel sales. The situation was slightly better for fuel producers, whose total margins were slightly higher than those of strictly retail operators. At the beginning of the year, high retail prices (especially for diesel) had a dampening effect on domestic demand. However, in view of the increased mobility of Poles in the country, necessary handling of traffic related to military operations in Ukraine, handling of traffic related to refugees and periodical large purchases at border stations in the west and south of the country by drivers from neighbouring EU countries, the sector was not particularly affected and the final consumption result came out at a positive level.

The upper limits for domestic diesel prices were around PLN 7.7/l and for 95 octane petrol around PLN 7/l. For autogas, it was almost PLN 3.5/l. Last year, a litre of diesel was on average PLN 0.10 more expensive than a litre of EU95 petrol. Let us recall that in the previous year this difference was PLN 0.55/l. In relation to the average prices for 2022, a litre of EU95 petrol cost PLN 0.13 less and diesel PLN 0.58 less. Throughout the year autogas was on average PLN 0.23/l cheaper. In 2023 the price range for petrol 95 was between PLN 5.99 and PLN 6.82 per litre. For diesel, this range was between PLN 5.99 and PLN 7.69 per litre. Thus, the difference between the lowest and highest price of both fuel types during the year was, for EU95 and diesel, around PLN 0.83/l and PLN 1.7/l respectively.

The start of the year in terms of prices was dominated by concerns about the impact of sanctions on oil and fuels from Russia. The actions of OPEC+ countries, which were reducing production limits, aiming at generating very high revenues from the sale of crude oil and petroleum products, also contributed to market volatility. The war against Ukraine was ongoing, generating large transport fuel supply needs. An important factor, which had a stabilising effect on the price of oil on international markets, was the systematic rebuilding of world stocks of crude oil and the return to production of installations on US shale deposits. The international situation forced a reduction in sanctions for some oil-producing countries, which strengthened the world balance after the reduction in supplies from Russia. Supply routes for European refineries were changed in order to have alternative to the Russian ones. In shaky market balance conditions, such actions must have raised crude quotations at the beginning of the year and introduced anxiety in terms of the availability of finished fuels. It was indeed the high demand for fuel (other than from the Russian market) that was the element driving crude prices up. When it became apparent that Europe and the world were coping with the new situation, prices of the raw material, and subsequently of finished fuels, began to fall steadily. Trends in global price changes as usually translated into domestic price levels. The Polish zloty also gained

FIG. 28 PRICES FOR BRENT CRUDE AND THE USD EXCHANGE RATE IN 2023

Source: e-petrol.pl, POPIHN

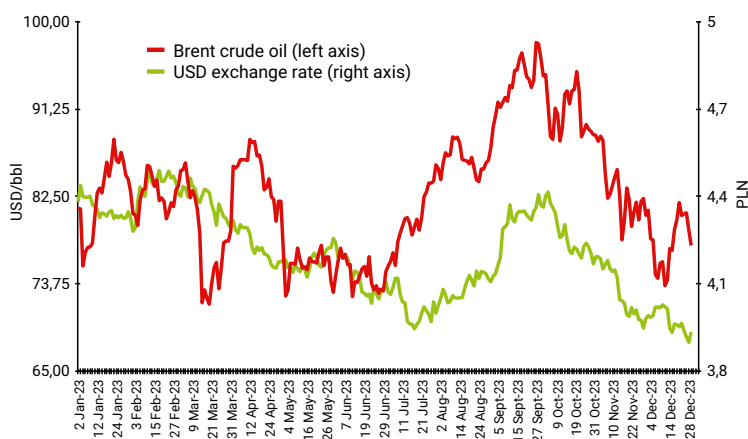




FIG. 29 COMPARISON OF ANNUAL AVERAGE PRICES FOR CRUDE OIL, LIQUID FUELS AND THE USD EXCHANGE RATE IN 2022 AND 2023

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

Description	YEAR 2022		YEAR 2023		Reference 2023 to 2022 2022=100
	Value	Units	Value	Units	
Prices for Brent crude	101.15	USD/bbl	82.66	USD/bbl	82
Prices for Premium Petrol 10 ppm S	1,057.6	USD/t	910.2	USD/t	86
Prices for diesel 10 ppm S	1,067.0	USD/t	837.8	USD/t	79
USD exchange rate	4.4568	PLN	4.2011	PLN	94

against the US dollar over time, which in turn favoured price reductions for motorists.

The main driver of petroleum fuel prices in our geographic area, i.e. the average annual spot price of Brent crude oil, reached USD 82.7/bbl. This was 18% less than for the same quotations a year earlier, which then equalled over USD 101/bbl. The largest oil producers, i.e. the OPEC+ countries, regulated the market by reducing production limits. At the same time, they kept these limits at levels that would not allow refinery crude prices to fall too much. Relationships with the oil market, strengthened at the beginning of the year by the situation with large stocks of diesel accumulated in the event of strong production restrictions in Russia, spilled over to the market for finished fuels, which were traded on international exchanges. The fall in average annual diesel quotations was 3 percentage points higher than the fall in crude oil quotations. For premium petrol, on the other hand, the increase exceeded that of crude by 4 percentage points. These figures show that it was the demand for fuels, and in particular diesel, that largely influenced the situation on the stock markets, forcing quotations down. In the Polish market, net wholesale prices were shaped by changes in exchange quotations of finished fuels and changes in the PLN-USD exchange rate. It turned out that drivers did not have to dig as deep into their pockets as they did the year before.

As in previous years, for most of the year it was the level of import parity that determined the direction of changes in wholesale prices, and these shaped retail prices. The fall in net prices, with growing tax rates, resulted in an increase in the share of the tax burden per litre of motor fuel.

Brent crude oil prices, which determine prices for the European market, are shown in Figure 28.

The economic results, as reported by domestic fuel producers, show that these operators maximised their production capacities to supply the internal market, thus avoiding fuel shortages in the market, despite periodic logistical problems and concerns about buying fuels up.

The factors influencing domestic wholesale and retail prices (crude oil prices, major motor fuel prices and the USD exchange rate) in 2023 were as follows (Fig. 29).

The interdependence of crude oil prices and the USD exchange rate in the Polish market is shown in Figure 30.

A comparison of trends for crude oil and fuel is presented in Figure 31.

The clear decline in oil prices on a cumulative basis lasted from the beginning of the year until the end of the first half of the year. The trend then reversed. A similar trend to that for crude was also observed for diesel, but on an even larger percentage scale. In contrast, motor petrol quotations remained stable in percentage terms throughout the year, quite a lot lower than in the previous year (Fig. 32).

FIG. 30 FLUCTUATIONS IN BRENT CRUDE PRICES AND IN THE EXCHANGE RATE OF THE USD IN 2023 COMPARED WITH AVERAGE IN 2022 [%]

Source: POPIHN and e-petrol.pl

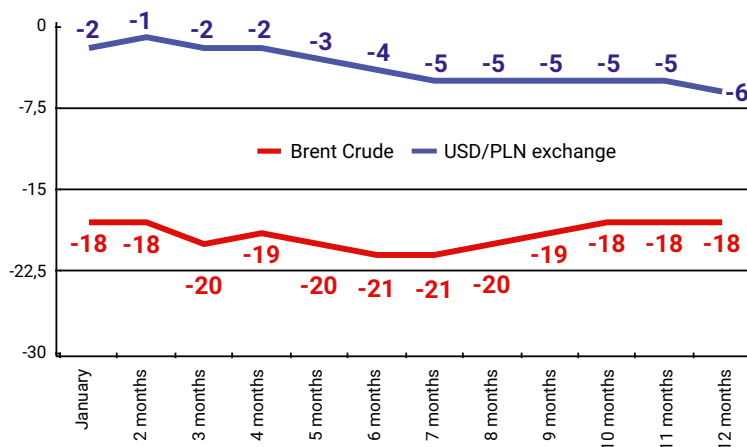


FIG. 31 FLUCTUATIONS IN CRUDE OIL AND FUEL QUOTATIONS IN 2023 COMPARED WITH 2022 AVERAGES [%]

Source: POPIHN and e-petrol.pl

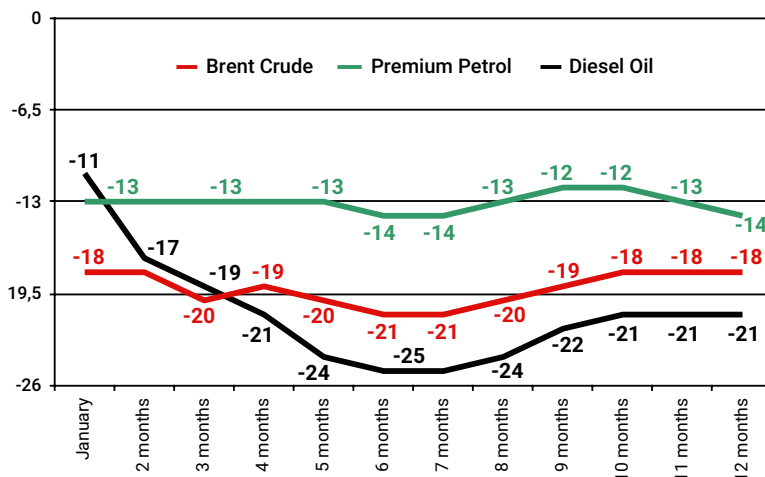


FIG. 32 COMPARISON OF ANNUAL AVERAGE WHOLESALE PRICES OF PETROL AT DOMESTIC FUEL PRODUCERS

Source: ORLEN S.A., AFP Sp. z o.o., POPiHN

Description	YEAR 2022		YEAR 2023		Reference 2023 to 2022 2022=100
	Value	Units	Value	Units	
EU95 petrol gross (without VAT)	5,985	PLN/1000 l	5,128	PLN/1000 l	86
Excise	1,413	PLN/1000 l	1,529	PLN/1000 l	108
Fuel surcharge	153	PLN/1000 l	173	PLN/1000 l	113
Emissions fee	80	PLN/1000 l	80	PLN/1000 l	100
EU95 petrol net	4,339	PLN/1000 l	3,346	PLN/1000 l	77

FIG. 33 COMPARISON OF ANNUAL AVERAGE WHOLESALE PRICES OF DIESEL AT DOMESTIC FUEL PRODUCERS

Source: ORLEN S.A., AFP Sp. z o.o., POPiHN

Description	YEAR 2022		YEAR 2023		Reference 2023 to 2022 2022=100
	Value	Units	Value	Units	
Diesel with S 0.001% (without VAT)	6,543	PLN/1000 l	5,234	PLN/1000 l	80
Excise diesel with S 0,001%	1,104	PLN/1000 l	1,160	PLN/1000 l	105
Fuel surcharge	329	PLN/1000 l	373	PLN/1000 l	113
Emissions fee	80	PLN/1000 l	80	PLN/1000 l	100
Diesel with S 0,001% net	5,030	PLN/1000 l	3 621	PLN/1000 l	72

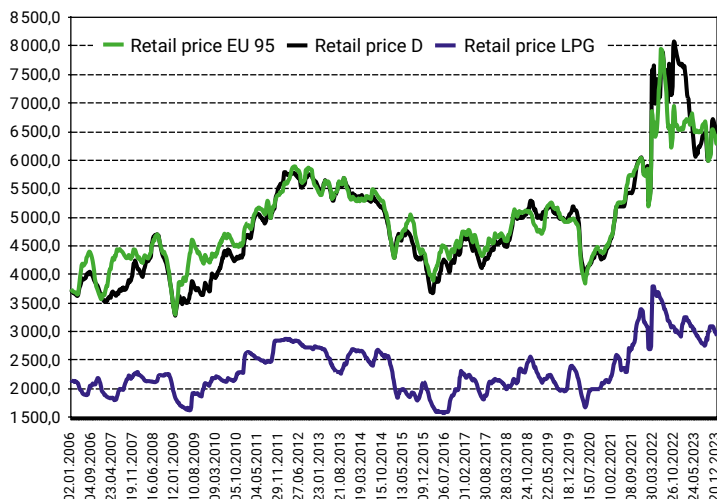
FIG. 34 COMPARISON OF MOTOR FUELS' RETAIL PRICES

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

Description	YEAR 2022		YEAR 2023		Reference 2023 to 2022 2022=100
	Value	Units	Value	Units	
Average retail price of EU95	6.64	PLN/l	6.51	PLN/l	98
Average retail price of EU95	7.19	PLN/l	6.61	PLN/l	92
Average retail price of autogas	3.24	PLN/l	3.01	PLN/l	93

FIG. 35 RETAIL PRICES OF EU95, DIESEL AND LPG IN 2006-2023 [PLN/1000 L]

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



Events on the international oil and finished fuels markets traditionally spilled over almost automatically into the Polish market, albeit with greater downward force. To a large extent, this is the result of the strengthening of PLN against the US dollar. In Poland, the exchange rate of the domestic currency in relation to the US currency in some way always influences prices at our producers and at filling stations. In 2023 we witnessed a 6 per cent strengthening of PLN against the US dollar. Instead, the tax burden increased due to a change in the excise and fuel surcharge rates and the return of the VAT rate to 23%. Changes in average annual ex-refinery prices for Polish oil companies are shown in tables 32 and 33.

As can be seen from the table in Figure 32, the net prices, i.e. excluding tax burdens, of EU95 petrol at Polish producers, directly correlated with stock exchange quotations, fell more than global prices of this fuel type. This was partially due to the increase in the value of the Polish currency, but there was also an additional impact of negotiated oil transaction prices,



logistics costs, the level of domestic demand and the sales policy of fuel companies.

Comparisons of diesel prices in the Polish supply market are given in Figure 33.

Diesel also became cheaper domestically, to a greater extent than stock market quotations would indicate, but the difference here was smaller than for standard petrol (Fig. 33).

In 2023, from January to April and from the end of September to the end of the year, retail EU95 petrol cost less than diesel. In the final settlement, the price difference between the two grades of fuel was much less significant than in 2022.

A comparison of the retail prices of EU95 petrol, autogas and diesel in the years 2022-2023 is shown in the table (Fig. 34).

The price relationship of EU95 petrol/autogas followed a similar pattern as in previous years in favour of autogas, and the profitability of fuel switching remained at similar level to 2022, albeit slightly lower. In 2023 the ratio of the price of autogas to the price of EU95 petrol was, on average, at around 46%, and 49% the year before. The development of prices of individual fuels on the domestic market are shown by the graphs in Figures 35 and 36.

The last very significant increase in fuel prices lasted from May to September 2022. After this period, prices started to fall. This was particularly evident in the case of diesel. The year 2023 was not full of surprising developments and therefore, in the case of motor petrol from the beginning of the year and for diesel from April onwards, prices remained fairly stable.

Figure 37 illustrates the relationship between international exchange quotations and retail motor fuel prices in Poland.

With relatively stable fuel prices, average margins on sales of diesel and EU95 petrol were, in 2023, at levels slightly lower than in 2022. These figures meant that filling station operators, with the exception of the last months of the previous year, when margin ceilings were above standard for the Polish market, would not count this period as successful. For significant periods of time, some filling stations were able to stay in business only by trading in shops and running small and large catering outlets. This was particularly the case for smaller operators without extensive local

FIG. 36 RETAIL PRICES OF EU95, DIESEL, LPG AND LFO IN 2023 [PLN/1000 L]

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

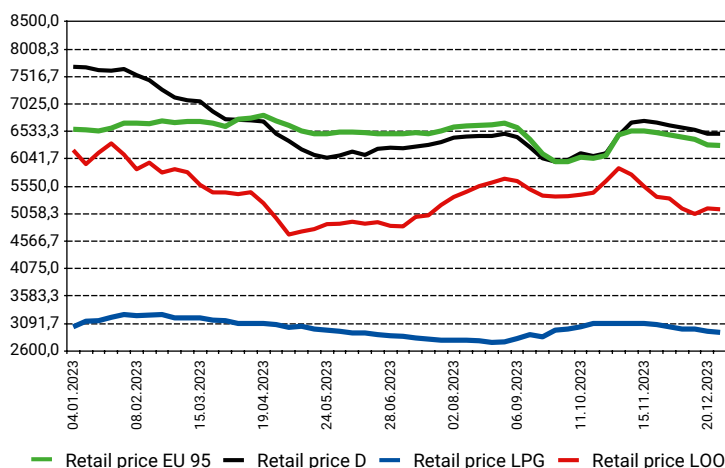


FIG. 37 CHANGES IN QUOTATIONS FOR FUELS ON INTERNATIONAL COMMODITY STOCK EXCHANGES AND IN RETAIL PRICES OF EU95 PETROL AND DIESEL IN POLAND IN 2023 COMPARED TO 2022 AVERAGE PRICES [%]

Source: POPIHN and e-petrol.pl

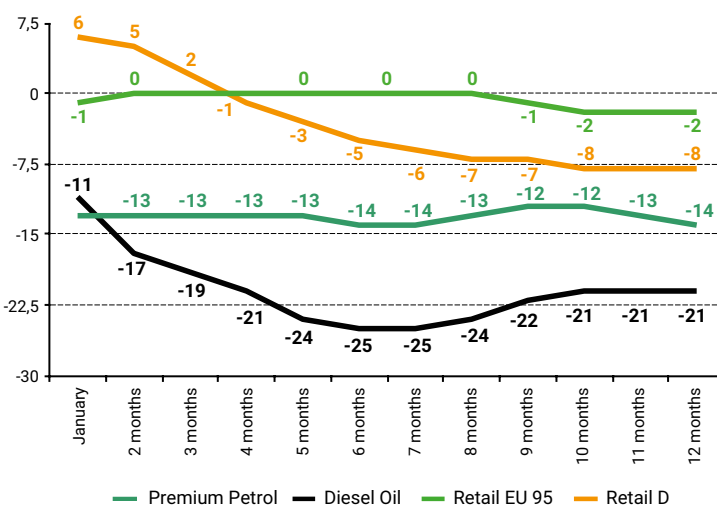


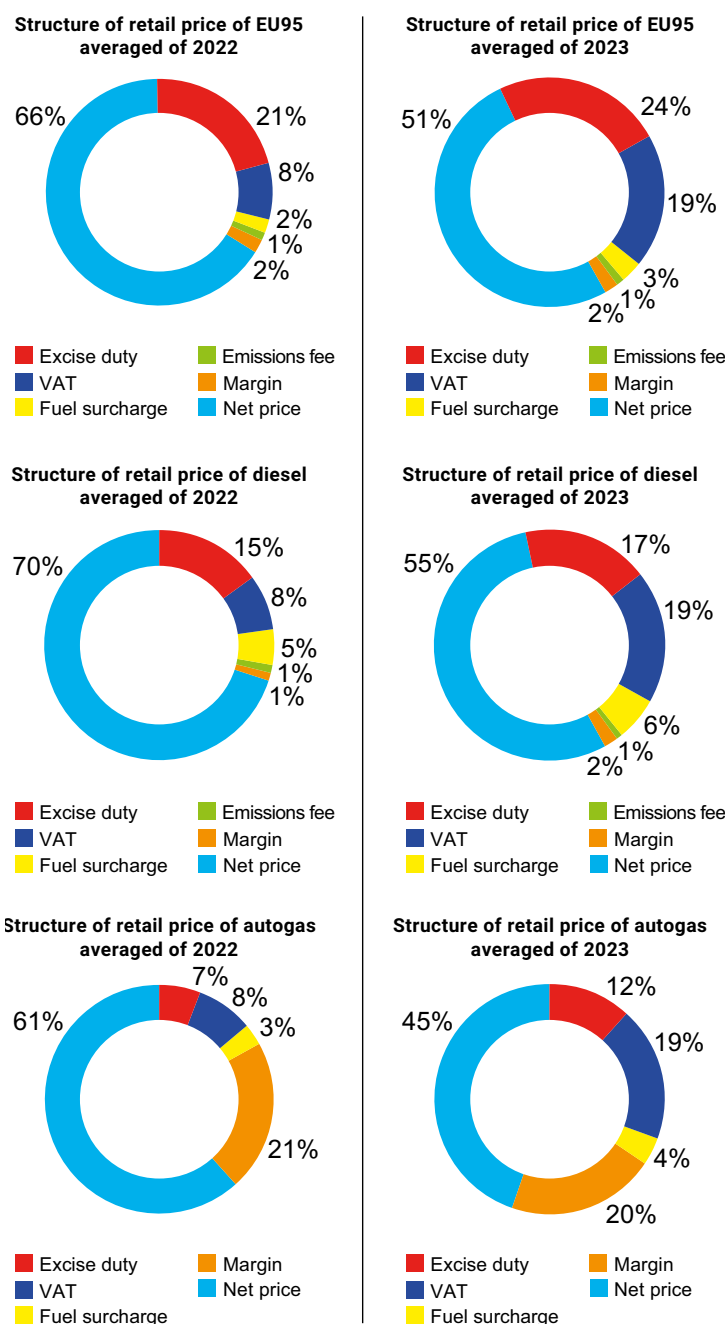
FIG. 38 COMPARISON OF TAX BURDENS ON MOTOR FUELS IN 2022 AND 2023 [IN THOUSAND M³]

Source: POPIHN's own data

Description	YEAR 2022		YEAR 2023		Reference 2023 to 2022 2022=100
	Value	Units	Value	Units	
Total taxes for EU95 (VAT+excise tax +fuel surcharge+emissions fee)	2,192	PLN/1000 l	3,000	PLN/1000 l	137
Total taxes for D (VAT+excise tax +fuel surcharge+emissions fee)	2,101	PLN/1000 l	2,848	PLN/1000 l	136
% share of taxes in retail price of EU95	33	%	46	%	140
% share of taxes in retail price of D	29	%	43	%	148

FIG. 39 STRUCTURE OF RETAIL PRICE OF MOTOR FUELS IN 2022 AND 2023

Source: POPIHN's own calculations



or national networks. The situation was also saved by sales of autogas, for which retail margins were higher than last year's.

Retail price levels in different areas of the country were still determined by demand, the scale of competition between different operators, as well as the range of goods offered in shops and additional services provided. Free competition prevented shortages in the market and reduced significant fluctuations in fuel prices.

In previous years, it became the norm to maintain different prices between certain areas of the country

during holiday or weekend travel seasons and depending on the category of road at which the station is located. This was also the case in 2023. It should be noted, however, that in this category of filling station operators' activities, there was a phenomenon of satisfying the needs of fuel tourism, which had become well established in western and southern Poland, while traffic related to military operations in Ukraine reinforced price pressure near our border with that country.

In Poland, taxes imposed on fuels determine the level of retail prices. Figure 38 presents average tax burdens on motor fuels in 2023.

The data in the table show that last year the quantitative average of taxes paid for both fuel types was significantly higher than the value for the whole of 2022. The share of taxes in the price of EU95 petrol and diesel due to the higher net price and withdrawing of anti-inflation shields increased and reached 46% and 43% respectively. This is 13 percentage points more for fuel for spark-ignition engines and 14 percentage points more for diesel than the average for the whole of 2022. The amount of taxes paid to the state treasury for every 1,000 litres of fuel sold was on average around PLN 800 more for the basic petrol grade and around PLN 750 more for diesel. For both grades of fuel, the increase in taxes paid was mainly due to the withdrawal of the anti-inflation shields in force in 2022 and the reinstatement of the VAT rate on fuels to 23%. During that period there was no change to the emissions fee.

The structure of annual average retail prices for EU95 petrol and diesel is presented in the charts in Figure 39.

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

The table below (Fig. 41) shows the comparison of prices of motor fuels in the European Union with domestic prices at the end of December 2023.

An analysis of price levels in Poland and other EU countries has for years indicated that, when converted to euro, prices in our country were among the lowest in the EU, but also moved towards the European average in subsequent years. This was also the case last year. The situation for retail prices in December 2023 is shown in the table in Figure 40 for both motor petrol and diesel. In the case of net prices (without tax), we have already exceeded this European average as for EU95 petrol, and as for diesel, we have come very close to it. At the end of 2023, the average domestic retail price of EU95 petrol was 8% lower, and of diesel 6% lower than the average price for the entire analysed market of the 27 European countries. This, compared to December 2022, is a difference of 3 percentage points less for 95 octane petrol and 2 percentage points less for diesel.

Domestic net prices (excluding taxes), converted to euro, of EU95 petrol at the end of December 2023 were 2% higher than the European average, and in case of diesel they were 4% lower.

In December 2023, for EU95 petrol the difference between the highest and lowest net price observed in European countries was EUR 209 (EUR 81 less than a year earlier) and between the highest and lowest retail price it was EUR 557/1000 l (EUR 7 less than a year ago). This represents a narrowing of the retail price spread and a significant reduction in the pre-tax price difference. For diesel, net prices differed by €528/1000 litres (€89 more than a year ago) and retail



FIG. 40 STRUCTURE OF RETAIL FUEL PRICES IN 2022 AND 2023 (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	Margin	Net price	Retail price	Excise	VAT	Fuel surcharge	Margin	Net price
12 months 2022	6.64	1.41	0.55	0.15	0.08	0.11	4.34	7.19	1.10	0.59	0.33	0.08	0.06	5.03	3.24	0.21	0.27	0.10	0.68	1.98
12 months 2023	6.51	1.53	1.23	0.17	0.08	0.15	3.35	6.61	1.16	1.25	0.37	0.08	0.12	3.63	3.01	0.35	0.57	0.11	0.62	1.36
% change	-2.0	8.5	123.6	13.3	0.0	36.4	-22.8	-8.1	5.5	111.9	12.1	0.0	100.0	-27.8	-7.1	66.7	111.1	10.0	-8.8	-31.3

FIG. 41 AVERAGE RETAIL PRICES AND TAXES IN EU MEMBER STATES AND IN POLAND AT THE END OF DECEMBER 2023 IN EUR/1000 L

Source: Weekly Oil Bulletin EIA, POPIHN

	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	1,478.0	668.0	563.7	246.3	Austria	1,594.0	841.3	487.0	265.7	20	
Belgium	1,604.9	726.2	600.2	278.5	Belgium	1,737.8	836.1	600.1	301.4	21	
Bulgaria	1,331.9	746.9	363.0	222.0	Bulgaria	1,342.7	788.6	330.3	223.8	20	
Croatia	1,485.0	732.0	456.0	297.0	Croatia	1,592.0	890.6	383.0	318.4	25	
Cyprus	1,348.4	763.4	369.7	215.3	Cyprus	1,469.3	894.0	340.7	234.6	19	
The Czech Republic	1,462.9	686.8	522.2	253.9	The Czech Republic	1,485.4	822.9	404.7	257.8	21	
Denmark	1,845.5	840.4	636.0	369.1	Denmark	1,663.1	887.5	443.0	332.6	25	
Estonia	1,619.0	786.2	563.0	269.8	Estonia	1,524.0	898.0	372.0	254.0	20	
Finland	1,793.0	723.6	722.4	347.0	Finland	1,889.0	1,012.9	510.5	365.6	24	
France	1,799.0	807.9	691.3	299.8	France	1,742.2	842.9	608.9	290.4	20	
Greece	1,820.0	752.4	715.3	352.3	Greece	1,653.0	908.7	424.4	319.9	24	
Spain	1,531.9	793.4	472.6	265.9	Spain	1,493.0	854.8	379.0	259.1	21	
The Netherlands	1,888.0	763.2	797.1	327.7	The Netherlands	1,711.0	889.8	524.2	297.0	21	
Ireland	1,715.7	768.5	626.4	320.8	Ireland	1,717.6	849.6	546.8	321.2	23	
Lithuania	1,438.9	723.1	466.1	249.7	Lithuania	1,493.7	862.5	372.0	259.2	21	
Luxembourg	1,460.0	720.6	527.3	212.1	Luxembourg	1,499.0	863.5	417.7	217.8	17	
Latvia	1,584.0	748.7	560.4	274.9	Latvia	1,584.0	838.9	470.2	274.9	21	
Malta	1,340.0	760.0	375.6	204.4	Malta	1,400.0	890.0	296.4	213.6	18	
Germany	1,773.0	767.0	722.9	283.1	Germany	1,697.0	880.9	545.2	270.9	19	
Portugal	1,641.0	756.0	578.1	306.9	Portugal	1,574.0	836.9	442.8	294.3	23	
Romania	1,331.3	761.4	357.3	212.6	Romania	1,411.1	857.3	328.5	225.3	19	
Slovakia	1,529.0	730.5	543.7	254.8	Slovakia	1,521.0	869.8	397.7	253.5	20	
Slovenia	1,415.4	631.2	529.0	255.2	Slovenia	1,468.2	742.1	461.3	264.8	22	
Sweden	1,668.0	763.7	570.7	333.6	Sweden	2,047.6	1,269.7	368.4	409.5	25	
Hungary	1,429.8	801.1	324.7	304.0	Hungary	1,522.9	899.7	299.4	323.8	27	
Italy	1,765.9	719.1	728.4	318.4	Italy	1,732.1	802.3	617.5	312.3	22	
POLAND	1,444.3	760.1	409.8	274.4	POLAND	1,492.7	838.1	371.0	283.6	23	
European average	1,575.7	748.2	547.9	279.6	European average	1,594.7	876.6	434.9	283.2		
Price in Poland against average					Price in Poland against average						
European price	92%	102%	75%	98%	European price	94%	96%	85%	100%		

* – for Poland, excise duty = excise duty + fuel surcharge + emissions fee * – for other countries, excise duty = Indirect Taxes

1 EUR = PLN 4.3480

prices by €705/1000 litres (€111 more than a year ago). For diesel, the difference between net prices equalled EUR 528 per 1000 litres (EUR 89 more than in the previous year), and the difference between retail prices amounted to EUR 705 per 1000 litres (EUR 111 more than in the previous year). In this case, the differences in net prices and retail prices between EU countries increased significantly.

From the beginning of 2023, Poland's VAT rate on fuel was reinstated from 8% to 23%. At the end of December 2023, the difference between the amount of VAT paid on 95EU petrol, relative to the EU average, was 2% lower. A year earlier, it was 64%. For diesel, the figures for Poland were the same as the European average, and the year before this amount was 61% less. The amounts of excise tax paid (after conversion into EUR and including fuel surcharge and emissions

fee) for EU95 petrol and diesel were respectively 25% and 15% lower than the European averages. This is 7 percentage points less for petrol and 5 less for diesel than a year ago.

The analysis shows that, of all European countries, the share of taxes in the price of EU95 petrol did not exceed the level of 50% of the retail price only in 8 countries, including Poland, which is 4 countries less than a year ago. The average share of taxes in the price of petrol increased to 52.5% in December 2023 from 50.5% in December 2022. For diesel, 4 countries exceeded this 50% limit; this is 3 more than the year before. The average value of the share of taxes in the retail price for this type of fuel is 45% against 41% a year ago. In December 2023, the size of the tax share spread in the retail price between the most taxed Finland and the least taxed Romania for EU95 petrol

FIG. 42 RETAIL PRICES OF EU95 PETROL IN EU MEMBER STATES AT THE END OF DECEMBER 2023

Source: Weekly Oil Bulletin EIA

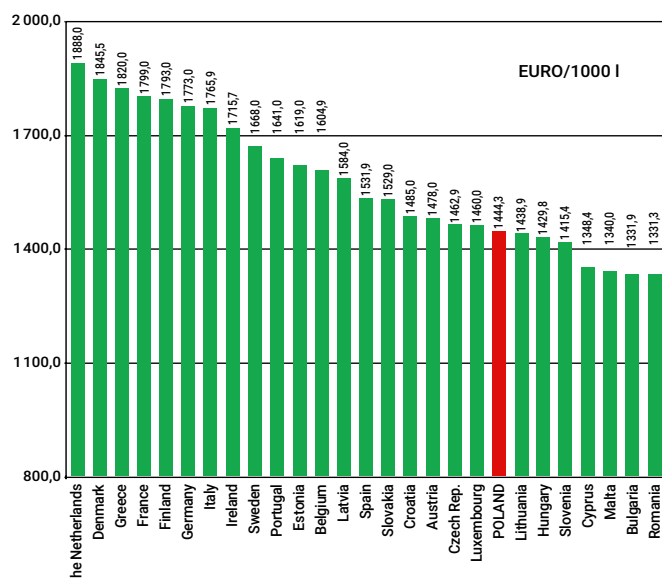
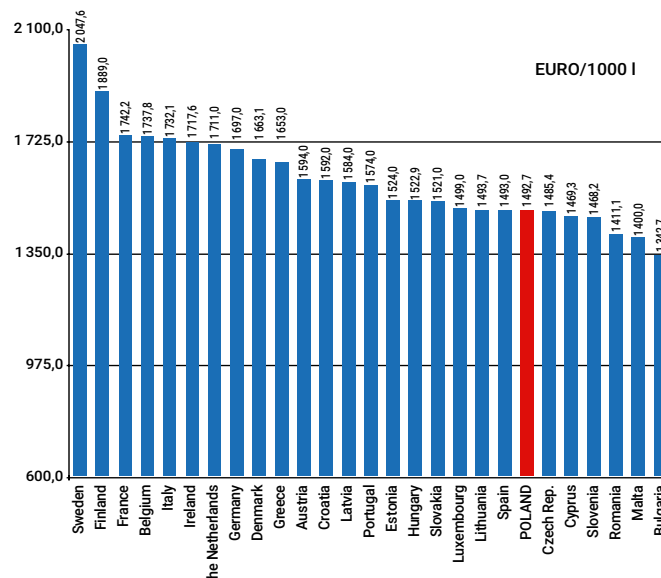


FIG. 43 EX POMPA PRICES OF EU95 PETROL IN EU MEMBER STATES AT THE END OF DECEMBER 2023

Source: Weekly Oil Bulletin EIA



was 17 percentage points. A year ago it was 26 points and this difference was the result of a very low rate for Poland. For diesel, between Italy and last-place Malta, this relationship was 17 percentage points, showing a drop of 8 percentage points. Also here the lowest rate a year ago belonged to Poland. A comparison of the total tax burdens on fuels in the EU countries at the end of 2023 is presented in Figures 44 and 45.

In December 2023, the cheapest EU95 petrol in the European Union was sold, just like in December 2022, at filling stations in Bulgaria and Romania. Diesel was cheapest in the same countries and also in Malta. Furthermore, prices in Poland were well below

the EU average and far below those of our immediate EU neighbours. This means that it was worthwhile for drivers from these countries to come to Poland and fill up their vehicle, and sometimes even fill up a few extra canisters. Drivers from Germany visited Polish stations in particularly large numbers last year. Traditionally, fuels across our eastern border, in non-EU countries, were cheaper than in Poland. Nevertheless, it was virtually impossible to travel to get them due to heavy restrictions because of the war situation in Ukraine, in which buying fuel was an extremely difficult and expensive thing to do.



Fot.: ANWIM S.A.

FIG. 44 SHARE OF TAXES IN RETAIL PRICE OF EU95 PETROL IN EUROPEAN COUNTRIES AT THE END OF DECEMBER 2023

Source: POPIHN's own data

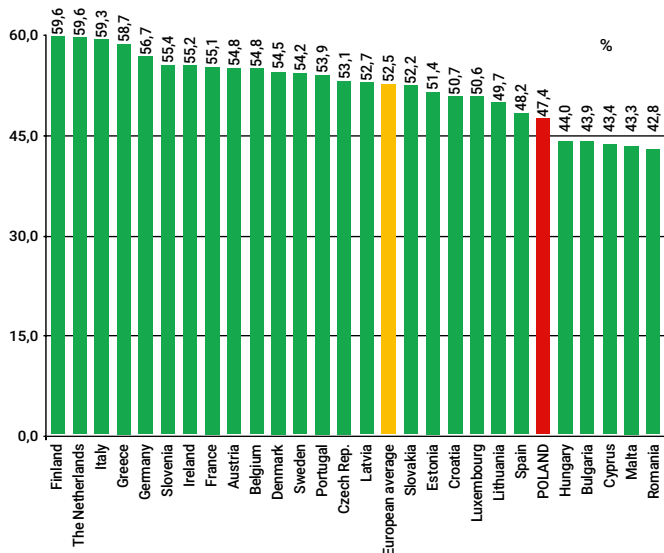
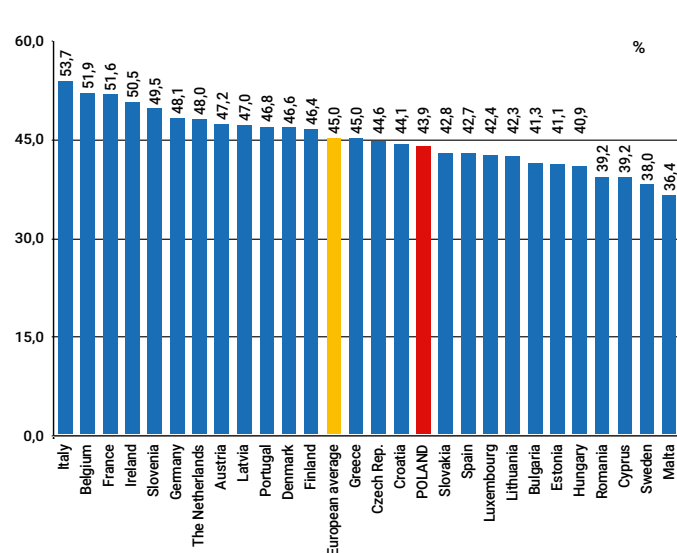


FIG. 45 SHARE OF TAXES IN RETAIL PRICE OF DIESEL IN EUROPEAN COUNTRIES AT THE END OF DECEMBER 2023

Source: POPIHN's own data



Fot.: BP EUROPA SE

LUBRICATING OILS MARKET

The year 2023 will be remembered as a time of economic stagnation in the EU, when quarterly GDP growths were close to zero. The first two quarters recorded growth of a symbolic 0.1% q/q, in the third quarter it was already -0.1% q/q, while in the fourth quarter it equalled zero. When compared to the EU countries, Poland comes out as '0+', with GDP growth of 0.2% y/y¹.

At the same time, in 2023 the legislation of most of the regulations proposed as part of the 'Fit for 55' package was completed. However, the revision of the Energy Taxation Directive was not completed due to a unanimity condition, which was difficult to meet. The sudden turnaround on stringent new CO₂ emission standards for cars and vans came as a bit of a surprise. The regulation assumes a 100% reduction in carbon dioxide emissions for new vehicles after 2035. Nonetheless, this does not mean the definitive end of internal combustion engine vehicles. As a result of Germany's intervention, a gateway was left in the form of the possibility to register cars powered by vehicle-recognised synthetic fuels after 2035. This certainly improves the multi-year outlook for the lubricating oil industry, as does the fact that cars with internal combustion engines will remain on the roads for many more years after the new stringent CO₂ regulations come into force.

The issue of meeting recovery and recycling obligations², imposed on companies placing lubricating oils on the market is a persisting problem. The energy crisis exacerbated the phenomenon of illegal burning of waste oils. Recovery organisations and recyclers have a serious problem with obtaining raw material from the market, and even attractive purchase prices were not helpful. This translates into the cost of fulfilling the obligation borne by entities placing lubricating oils on the market: it has increased several times in the last three years. In 2023, the energy crisis was virtually averted, with gas and electricity prices returning to 'pre-war' levels; unfortunately, this did not translate into a significant improvement in the availability of waste oils. POPiHN signalled the problem of illegal burning of waste oils to individual authorities, postulating control of vehicle repair plants, where waste generated from used products such as engine oils is produced and stored. Its actions, however, did not result in greater involvement in combating this harmful practice.

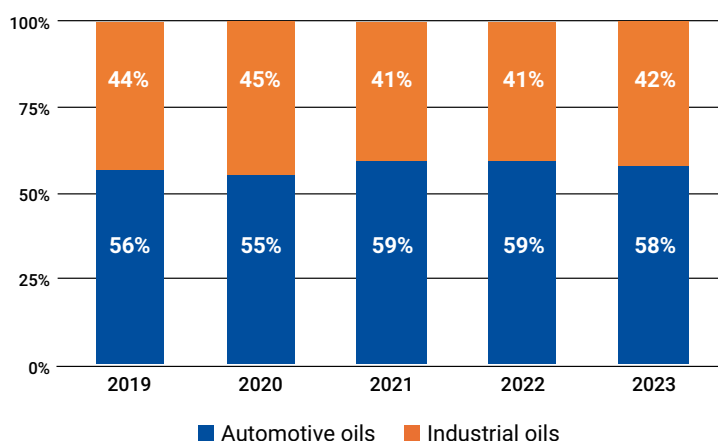
In 2023 the Polish lubricating oil market reached a volume of 234,742 tonnes, which, compared to the result of 237,219 tonnes in 2022, represents a decrease in the overall sales level by 1.0 % y/y.

The decline in demand for lubricating oils is primarily due to the difficult situation of the TSL industry, the largest consumer of engine oils for heavy goods vehicles. The negative assessment of the economic situation in this sector has practically persisted since December 2021. The main problem was a significant drop in demand for transport services. According to some sources, in 2023 there was almost half as much demand as in the corresponding periods of 2022³, although the scale of the drop in demand was more often indicated at 15-20%. The decline in transport rates was also evident. In the third quarter of 2023, the transport market in Poland was in such a difficult situation that spot rates were lower than contract rates. Traders indicated that cars were standing in yards due to the lack of orders. This had a direct impact on the decline in demand for heavy-duty engine oils.

The outlook for the industry looks better. The improved conditions are due, among other things, to the fall in electricity and natural gas prices, which returned to the levels seen before the Russian invasion of Ukraine. This is particularly important for energy-intensive industries, which had to reduce production or stop it altogether during the energy crisis⁴. Forecasts for the coming years signal a recovery. Between 2024 and 2026, we can expect annual GDP growth of more than 3%⁵.

FIG. 46 COMPARISON OF MARKET STRUCTURE FOR LUBRICATING OILS BETWEEN 2019 AND 2023

Source: POPiHN's own data



¹ Preliminary estimates, the Polish Central Statistical Office.

² The Act of 11 May 2001 on Duties of Business Operators with respect to Managing Certain Types of Waste and the Product Fee (Journal of Laws of 2020, item 1903, 2361, of 2023, item 877)

³ <https://logistyka.rp.pl/drogowy/art39319181-maleje-liczba-zleceń-na-przewozy-drogowe> [access: 29 February 2024]

⁴ Compared to the CEE countries, Polish industry has coped relatively well. 'Condition of energy-intensive industries in Central and Eastern Europe two years after the energy shock' report, Polish Economic Institute, Warsaw, December 2023

⁵ National Bank of Poland, Inflation and GDP projection published on 11 March 2024. The scenario of withdrawal of anti-inflationary shielding measures on food and energy prices seems appropriate, given that the Ministry of Finance announced its decision not to extend the zero VAT rate on foodstuffs.

Fot.: FUCHS OIL CORPORATION (PL) SP. Z O.O.



European scenarios for the lubricating oil industry are oriented towards a slow decline in demand for lubricants, with stagnation in individual countries of the European Community⁶. Among the reasons cited are the energy crisis, the move towards a zero-carbon economy, and the electrification of transport. Better prospects can only be indicated for modern, highly specialised lubricants, improving energy efficiency and supporting low-carbon targets.

In 2023, the share of the automotive segment shrank by 1 p.p. in favour of the industrial segment. The market structure has changed little over the last five years.

ENGINE OILS FOR THE AUTOMOTIVE INDUSTRY

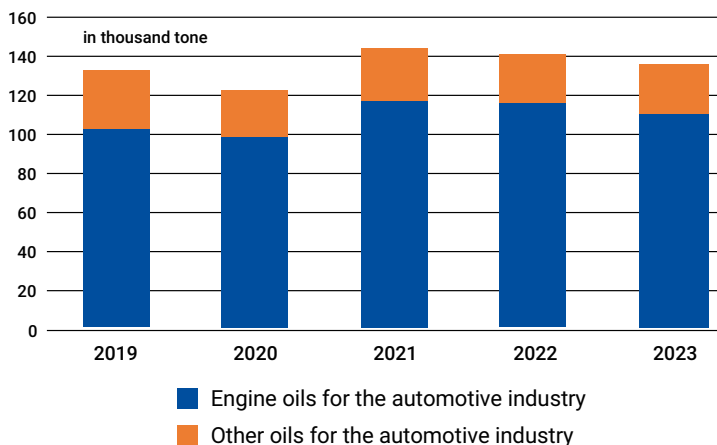
Automotive engine oils account for 47.1% of all lubricating oils sold in Poland, representing 81.5% of sales within the automotive segment. Their sales in 2023 amounted to 110,622 tonnes, i.e. 4.1% less than in 2022.

This segment saw declines in demand for each category, the exceptions being monograde oils (+1.5% y/y) and 0W-X, 5W-X heavy-duty engine oils (+4.7% y/y). There has been a consistent increase in the importance of passenger cars motor oils. In 2023 passenger car motor oils accounted for over half of the total automotive oil market, with sales of 68,506 tonnes, i.e. an increase by 2.2% y/y. The situation was different for heavy-duty engine oils, of which 37,701 tonnes were supplied to the market, i.e. 8.1% less than in 2022.

In a broader perspective, in 2023 the total automotive lubricating oil market amounted to 135,749 tonnes,

FIG. 47 DEMAND FOR AUTOMOTIVE ENGINE OILS BETWEEN 2019 AND 2023

Source: POPiHN's own data



Automotive engine oils contain passenger car and heavy-duty motor oils as well as monograde oils. Other automotive oils include gearbox oils, ATF oils for automatic transmissions, marine engine oils and other automotive oils.

which was a drop in sales by 3.1% compared to 140,115 tonnes sold in 2022.

Among automotive oils other than engine oils, there was an increase in demand for marine engine oils (+1.6% y/y) and gearbox oils (+16.2% y/y); ATF oils for automatic transmissions sold less well (-6.1%).

⁶https://www.lubesngreases.com/lubereport-emea/6_48/slow-decline-forecast-for-european-market/ [access: 4 March 2024]

PASSENGER CARS MOTOR OILS (PCMO)

In 2023 sales of motor oils for passenger vehicles amounted to 68,506 tonnes, i.e. 2.2% less than in 2022. The decline in demand affects all oil classes, even 0W-X and 5W-X (-0.4%). There is a consistent decrease in sales of motor oils for 10W-X passenger cars (-11.0% y/y), as well as 15W-X and 20W-X (-6.8% y/y), which is a natural consequence of the replacement of the car fleet in Poland.

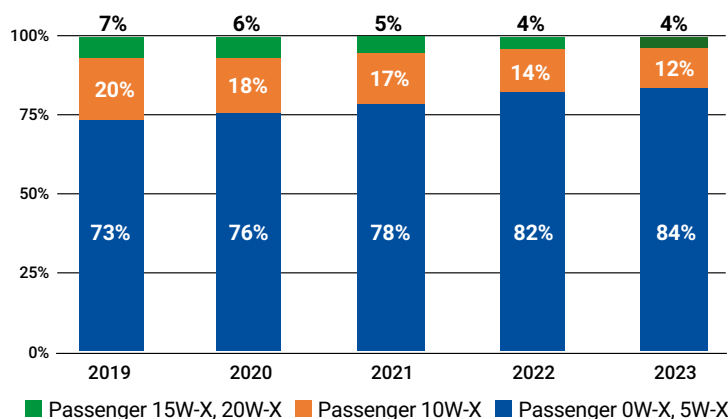
In recent years, one of the biggest regulatory risks for passenger cars motor oils segment was the draft of the new CO² emission standard assuming a 100% reduction in carbon dioxide emissions. Its aim was to effectively eliminate the registration of new cars and vans with internal combustion engines from 2035. In the end, the adopted form of the new CO² emission standards left this possibility, but the conditions for using this gateway

are complicated. For such vehicles it will be required to prove that the fuel supplied is in fact a synthetic fuel that meets the CO² reduction requirements. This is a major challenge for car manufacturers.

The zero-emission direction indicated for European automotive sector will be slow to implement. There is no doubt that countries with less affluent societies will take much longer to replace their vehicle fleets with zero-emission vehicles, using second-hand cars that come to them from richer countries. The increasing cost of internal combustion engine cars is expected to induce drivers to give them up. In Poland, a registration fee is still to be introduced in 2024, while a car ownership tax is planned to be implemented by the end of the second quarter of 2026, as a result of national obligations contained in the National Recovery Plan. Based on the above factors, a decline in demand for automotive lubricants is expected.

FIG. 48 PASSENGER CAR MOTOR OILS WITH REFERENCE TO VISCOSITY CATEGORIES (EXCLUDING MONOGRADE OILS) – MARKET STRUCTURE BETWEEN 2019 AND 2023

Source: POPIHN's own data



HEAVY-DUTY ENGINE OILS (HDEO)

In 2023, 37,701 tonnes of heavy-duty engine oils were sold in Poland, which was a decrease of 8.1% compared to 41,040 tonnes sold in 2022.

The continuation of the decline in demand for heavy-duty engine oils in 2023 was the result of accumulating problems in the TSL industry, which is a large consumer of these lubricants. In addition to the existing difficulties related to transport to the east, competition from Ukrainian hauliers has emerged, who, as a result of the European Union's agreement with Ukraine, have been able to carry out bilateral transport without permits. The above led to protests by Polish hauliers at border crossings with Ukraine.

At the same time, the situation across our western border became more complicated. In December 2023, road tolls were raised in Germany⁷, which is an important transit country for Polish hauliers and provides a window to the rest of Western Europe.

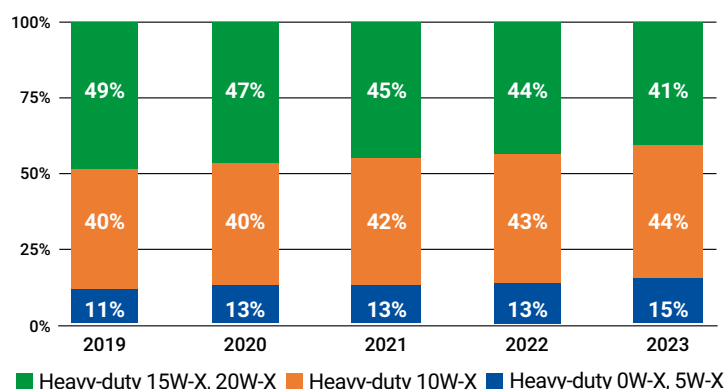
The business environment in freight transport is becoming increasingly difficult. Business operators are faced with the need to adapt to new regulations and guidelines related to the Mobility Package and sustainable development. Besides, environmental issues require increasing commitment. According to the Sustainability Reporting Directive (CSRD), the first reports containing data for 2024 will already appear in 2025. Transport companies, even if not directly covered by the CSRD, will have to take into account requirements from their CSRD-reporting contractors.

All of the aforementioned factors are resulting in lower freight volumes, which is directly affecting demand for heavy-duty engine oils, while also indicating a negative outlook for the coming years.

Despite the overall problems of this lubricating oil segment in 2023, 0W-X and 5W-X oils continued their multi-year upward trend, recording sales 4.7% higher than in 2022. 10W-X oils recorded a 6.7% y/y decline in sales, but this was sufficient to account for the largest share of the segment, as demand for 15W-X and 20W-X oils contracted by as much as 13.5% y/y.

FIG. 49 HEAVY-DUTY ENGINE OILS WITH REFERENCE TO VISCOSITY CATEGORIES (EXCLUDING MONOGRADE OILS) – MARKET STRUCTURE BETWEEN 2019 AND 2023

Source: POPIHN's own data



⁷The new tolls are being introduced on the basis of the Eurovignette Directive, i.e. Directive 2022/362 amending Directives 1999/62/EC, 1999/37/EC and (EU) 2019/520 with regard to the charging of vehicles for the use of certain infrastructures.



LUBRICANTS FOR INDUSTRY

98,994 tonnes of industrial lubricating oils were sold in Poland in 2023, which was an increase of 2.0% compared to 97,103 tonnes sold in 2022.

Over the past four years, the industrial sector has been operating in an extremely difficult, unpredictable environment. From the decline in economic activity as a result of successive lockdowns during the COVID-19 pandemic, through the energy crisis that began in the second half of 2021, to the Russian aggression against Ukraine and the subsequent sanctions and embargoes introduced, not to mention a rampant inflation accompanying all of the above. The situation has now improved. In 2023, inflation was brought under control, electricity prices fell significantly – both in the spot market and in contracts with one year's delivery – to the levels observed before the outbreak of war against Ukraine. Nonetheless, they are still far from the rates seen before the pandemic. This has some relevance to the industrial lubricating oils market; sales volumes have not been back yet to the levels seen in 2019.

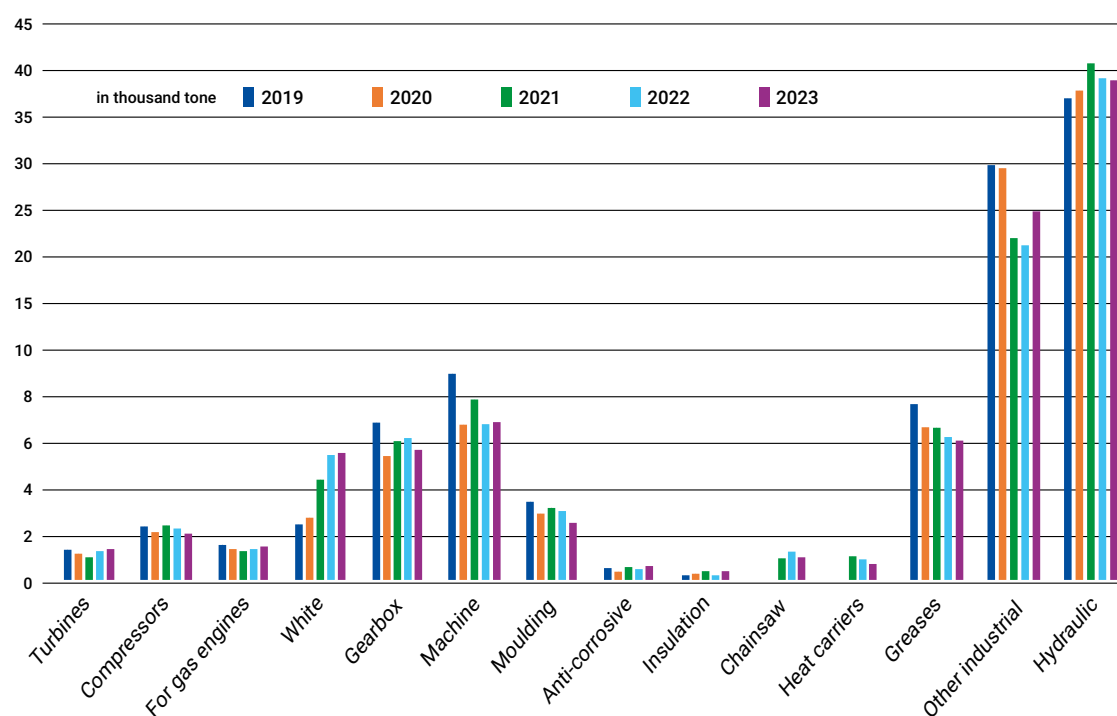
Looking ahead to the next few years, the National Recovery Plan measures are indicated as a strong boost to the economy, which translates into optimistic forecasts for GDP growth. However, not every industry will benefit. The European Association of Steel Manufacturers in its forecast for 2024⁸ indicated that it expects a weakening of production in the automotive segment, due to, among other things, weak export activity of European multinationals, especially to markets such as the USA and China.

OVER THE PAST FOUR YEARS, THE INDUSTRIAL SECTOR HAS BEEN OPERATING IN AN EXTREMELY DIFFICULT, UNPREDICTABLE ENVIRONMENT.

The market for industrial oils remained unrelated to the changes of Polish GDP, which fell to just 0.2 per cent in 2023 from 5.3 per cent in 2022, while demand for industrial lubricating oils grew by 2.0 per cent y/y. It is difficult to pinpoint the responsible area, as the highest growth volume was recorded in the 'Other industrial' product group. Sales of the most important group of industrial oils, i.e. hydraulic oils, decreased by 0.9 % y/y, while the aforementioned 'Other industrial' group increased by as much as 16.9 % y/y. Decreases prevailed in groups significant in terms of volume: gearbox oils (-8.8% y/y), plastic lubricants (-3.2% y/y), moulding oils (-17.6% y/y). Among the groups that increased sales, one can point to machine oils, where demand grew by 1.0% y/y, as well as white oils, which, with an increase of 1.6% y/y, significantly slowed their multi-year rally (14.0% y/y in 2020; 60.1% y/y in 2021; 22.7% y/y in 2022).

FIG. 50 DEMAND FOR INDUSTRIAL OILS BETWEEN 2019 AND 2023

Source: POPIHN's own data



There is no data for 2019 and 2020 for the 'Chainsaw oils' and 'Heat carriers' groups - their separation in monitoring did not take place until 2021.

⁸EUROFER, Economic and steel market outlook 2023-2024
https://www.eurofer.eu/assets/publications/economic-market-outlook/economic-and-steel-market-outlook-2023-2024-third-quarter-2/Eurofer_Quarter_4_2023-2024.pdf [Access: 12 March 2024]

CRITICAL INFRASTRUCTURE AND THE NEW OIL AND FUEL SUPPLY ARCHITECTURE

Last year was an important period for Poland's critical oil and fuel infrastructure. It was also a major challenge for Naftoport from the PERN group and the Fuel Depot in Dębogórze, which reached record turnover due to the reorientation of the directions of crude oil and fuel supplies to Poland.

Naftoport handled almost 37 million tonnes of crude oil and liquid fuels throughout 2023. This represents an increase by as much as half compared to 2022. On the other hand, PERN's fuel depot in Dębogórze received 3 million tonnes of diesel delivered by tankers to the Port of Gdynia in the same period – also half as much as in 2022. This is the effect of a reorientation of the directions of crude and fuel supplies to Poland triggered by the ongoing war in Ukraine and shifting away from Russian hydrocarbons, which is a pan-European phenomenon.

Last year, 471 vessels were received and handled at Naftoport, compared to 363 tankers the year before. The depot at Dębogórze, on the other hand, unloaded 93 tankers, i.e. 26 more than in 2022.

OIL AND FUELS FROM THE SEA

Naftoport is currently operating at full capacity. That is why it is already working intensively to expand the terminal by launching another berth to handle the largest tankers. The Company is in the process of designing





the investment and obtaining the necessary permits. This is an important milestone towards increasing Naftoport's operational efficiency and capacity, thereby strengthening the country's energy security.

PERN and Naftoport have also signed a service agreement in the scope of technical maintenance of equipment and installations. As a result, Naftoport and PERN will increase the technological safety of Poland's key operations related to the handling of raw material and fuels.

In 2023 in Dębogórze two diesel tanks – each with a capacity of 32,000 m³ – were commissioned. At the same time, PERN is planning to build three more significantly larger storage facilities there – with a capacity of as much as 50,000 m³ each. In addition, an extension of the rail gate loading facility and the railway siding is underway, which will significantly increase the fuel distribution capacity for rail transport.

COASTAL RESOURCE BASES IN THE SPOTLIGHT

PERN's key infrastructure in Pomerania also includes 2 oil depots and the Pomeranian pipeline. At the Gdańsk Depot and TNG Depot, various grades of crude oil from all over the world are received via Naftoport from tankers. The raw material is then transported via pipelines according to clients' demand to the Polish refineries in Gdańsk and Płock and to the German refineries in Schwedt and Leuna.

PERN's potential at the coast comprises a total of 31 tanks at the Gdańsk Depot and TNG Depot with a total capacity of 1.86 million m³, representing nearly 50% of PERN's total oil storage capacity.

PERN'S POTENTIAL AT THE COAST COMPRISES A TOTAL OF 31 TANKS AT THE GDAŃSK DEPOT AND TNG DEPOT WITH A TOTAL CAPACITY OF 1.86 MILLION M³, REPRESENTING NEARLY 50% OF PERN'S TOTAL OIL STORAGE CAPACITY.

In 2023, PERN purchased and applied a Drag Reduction Additive (DRA) in the Pomeranian pipeline at the facilities in Gdańsk, Pelplin, Łasin and Rypin, which helped to reduce oil pumping resistance and increase the capacity of the Pomeranian pipeline.

INVESTMENTS IN THE LONG TERM

In 2023 PERN put a quarter of a million of new fuel storage capacity at its clients' disposal. The company completed a project to build eight new diesel tanks located at four key depots – Dębogórze, Rejowiec, Nowa Wieś Wielka and Boronów.

In the same year, PERN completed the construction of a strategic investment, the Boronów-Trzebinia product pipeline. The 97-kilometre section leads from the PERN Fuel Depot in Boronów to the PKN ORLEN Fuel Terminal in Trzebinia. Thanks to it, fuels reach the southern part of our country faster and more safely.



TODAY, THE NATIONAL OIL INFRASTRUCTURE MANAGED BY PERN COMPRISES 19 FUEL DEPOTS WITH A CAPACITY OF MORE THAN 2.65 MILLION M³ AND FOUR CRUDE OIL DEPOTS WITH A TOTAL CAPACITY OF MORE THAN 4.1 MILLION M³.

The Ignacy Łukasiewicz Institute for Energy Policy, in its report on the directions of the development of Poland's critical infrastructure in the face of challenges to regional security and energy transition, points out that the PERN Group in the years 2013-2023 carried out a number of investments aiming at strengthening the energy security of Poland and the countries of the Central European region in the area of crude oil and motor oil products supply. The investments carried out were fostered by political consensus on the need to improve energy security in terms of reliability of oil and fuel supplies. There is a deep justification for continuing and strengthening this security strategy across divisions. The reason is the increased threat from Russia's military aggression against Ukraine¹.

Today, the national oil infrastructure managed by PERN comprises 19 fuel depots with a capacity of more than 2.65 million m³ and four crude oil depots with a total capacity of more than 4.1 million m³.

TECHNICAL CONDITION OF INFRASTRUCTURE

PERN's plans for 2024 include a total of around 400 new tasks from the Investment Plan and the Renovations Plan, including several key investments such as the construction of new tank capacities at the Fuel Depot in Dębogórze. PERN's planned capital expenditures for 2024 amount to almost PLN 450 million and renovations to around PLN 90 million. A key investment implemented by Naftoport will be the construction of another crude oil transshipment site.

PERN will also focus on the construction and modernisation of rail loading infrastructure at key facilities including the fuel depots at Dębogórze and Nowa Wieś Wielka. The development of rail infrastructure accounts for almost 12% of all investment expenditure earmarked for next year. The largest item, however, is investment related to broadly understood infrastructure safety – around 17%.

¹https://www.institutpe.pl/wp-content/uploads/2023/12/Analiza-IPE-4_2023_www.pdf



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