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Fluctuation of Liquid Fuels Prices in 2012-2022 and Its Causes

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Abstract:

Purpose: *The aim of this paper is to identify the economic factors that have the greatest impact on fuel prices and to analyze fuel price fluctuations on the Polish and European markets. The conducted research is a preliminary stage to determine the extent to which changes in fuel prices affect the operational activities of individual transport companies.*
Design/Methodology/Approach: *The research aimed to determine changes in fuel prices in the context of transport companies' activities and identify key economic factors influencing these prices. The scope of the study included the analysis of historical data on fuel prices in 2012-2022. This data comes from industry reports, government publications, and international energy organizations' databases.*
Findings: *The statistical data analysis indicates significant changes in the demand for diesel oil in Poland over the last ten years. Diesel consumption increased by over 50%, and at the same time, the share of imported oil increased. The main factors influencing this situation are the development of transport and increased mobility in society, which causes a growing demand for fuels. Polish refineries cannot meet this demand, leading to greater import dependence.*
Practical implications: *A tangible effect of the research is to provide recommendations for maintaining the stability of fuel prices on the market. In this respect, the following actions should be mentioned: monitoring global and local trends in oil demand and supply, adapting energy policy to the dynamically changing international situation, strengthening domestic refining capacity to reduce dependence on imports, investing in alternative energy sources to reduce dependence on oil, supporting research and innovation in the field of energy efficiency and welding technologies, development of storage and distribution infrastructure for energy raw materials.*
Originality: *To sum up, data analysis on diesel prices indicates high variability of the fuel market in Poland, resulting from numerous economic, geopolitical, and technological factors. To improve price stability and reduce dependence on external suppliers, it is necessary to strengthen domestic production capacity, develop alternative energy sources, and constantly monitor global market trends.*

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1. Introduction

International transport plays a vital role in the global economy, enabling goods to move long distances and connecting different markets[7] (Bajorek 2025). In recent years, this sector has faced numerous challenges, one of the most important of which is the dynamic increase in fuel prices.[8] The rise in fuel prices affects not only the operating costs of transport companies but also the final prices of products, which may lead to inflation and reduced consumer demand.[9]

Therefore, analyzing fuel prices on the international transport market is extremely important for both enterprises and political decision-makers.[10] Several economic, geopolitical, and technological factors determine fuel prices. The most important of them include: exchange rates, oil prices on world markets, energy policies of oil-exporting countries and global events such as wars or pandemics.[11] (Przemysł i handel naftowy 2014; 2015).

Understanding how these factors affect fuel prices allows transportation companies to manage risk better and make more informed strategic decisions.[12] Over the last decade, fuel prices have shown significant volatility, resulting from fluctuations in commodity markets and unforeseen events, such as the COVID-19 pandemic or the war in Ukraine.[13] These events directly impacted the supply and demand for crude oil, which in turn affected fuel prices.[14]

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[7] *https://pl.economy-pedia.com/11032838-fuel*
[8] *https://www.motochemia.pl/paliwa-samochodowe-w-polsce-n-128.html, https://www.autodna.pl/blog/od-czego-zalezy-cena-paliwa*
[9] *https://www.toyotabank.pl/blog/co-wplywa-na-ceny-paliw-na-stacjach, https://popihn.pl/kategoria/informacje-rynek/popyt-na-paliwa*
[10] https://www.orlen.pl/pl/dla-biznesu/hurtowe-ceny-paliw#paliwa-archive, *https://www.pb.pl/ceny-paliw-bily-rekordy-w-2012-r-931546v*
[11] *https://www.e-petrol.pl/notowania-komentarz-rynek-paliw/82752/rok-2013-na-rynku, Przemysł i handel naftowy 2014, 2015*
[12] *https://motofakty.pl/ceny-paliw-na-wakacje-2015-beda-podwyzki/ar/c4-16221771, https://www.money.pl/gospodarka/wiadomosci/artykul/ceny-paliw-w-polsce-w-tym-roku-bedziemy,25,0,1988121.html*
[13] *https://motofakty.pl/majowka-2016-jakie-ceny-paliw/ar/c4-16250469*
[14] *https://www.money.pl/gospodarka/wiadomosci/artykul/ceny-paliw-w-polsce-w-tym-roku-*

High fuel prices pose a severe challenge to transport companies as they increase operating costs and reduce profit margins.[15] (Walków 2017). Transport companies must, therefore, develop strategies to minimize costs and improve efficiency to remain competitive in the market.[16] (Piotrkowski 2018). This article aims to identify the most significant economic factors impacting fuel prices and analyze price fluctuations in the Polish and European markets.

The conducted research is a preliminary stage to determine the extent to which fuel price changes affect individual transport companies' operational activities. This issue is important because the research results can constitute the basis for transport companies and political decision-makers to make more informed decisions. Consequently, it contributes to developing more effective risk management strategies in changing market conditions.

2. Factor and Events Affecting Fuel Prices

Fuel is a substance that produces energy when burned. Thanks to this energy, we can generate electricity, set a device in motion, drive an engine, or use this energy as a source of heat. Among the most popular fuels available, we distinguish (Złoty, 2019):

- Gasoline (Pb) – used in spark ignition engines. It is a product of the distillation of crude oil. The number 95 or 98 next to the Pb sign indicates the octane level of gasoline, i.e., the fuel's susceptibility to spontaneous combustion.
- Diesel oil (ON) – used in diesel engines with self-ignition. Practically the same as gasoline, it is obtained while refining crude oil. At gas stations, we can already find an ecological version of biofuel. It is made from vegetable oil.
- Gas – is also a product of crude oil refining or obtained straight from natural underground deposits. It is usually a mixture of flammable and non-flammable gases. There are two types. LPG is the gas most often used in cars, combining liquefied propane and butane. LPG installations are mainly used in gasoline engines. It is characterized by low prices and low emissions of exhaust gases into the environment. CNG, i.e., natural gas, contains practically only methane and is rarely used in cars; it is often used as a heat source for heating houses (Walków 2019, Raport tygodnia - jak pandemia wpływała na rynek paliw, 2021). In recent years, the fuel price market has been quite dynamic. Not so long ago, the fuel price exceeded PLN 5 per liter, and less than two years after this event, the price ranges from PLN 7 to 8. This is influenced by many factors, from economic to geopolitical, and is also

bedziemy,25,0,1988121.html https://www.money.pl/gospodarka/wiadomosci/artykul/ceny-paliw-ceny-lpg-porozumienie-opec,166,0,2227110.html

[15]*https://raportzintegrowany2017.orlen.pl/pl-otoczenie-rynkowe-2017*

[16]*https://strefabiznesu.pl/ropa-naftowa-najdrozsza-od-czterech-lat-od-2017-r-jej-cena-wzrosla-prawie-dwukrotnie/ar/c3-13564720*

caused by various events in the world, e.g. the war in Ukraine or the Coronavirus pandemic. Before we look at these factors, it is worth paying attention to what constitutes the price of fuel. The components influencing fuel price (Pb 95) are presented in Table 1.

Table 1. *Components of the price of fuel (Pb 95) in percentage terms.*

Fuel price component	Share in fuel price %
Wholesale price at the refinery	70
Excise duty	19,4
VAT	7,4
Fuel surcharge	2,1
Emission fee	1,1
Sum	100

Source: *Own study.*

The retail price of fuel is most influenced by the wholesale price at the refinery (70%). The main factor in this price is the USD exchange rate against the PLN because the USD is the settlement currency for crude oil. Barrel prices are also influenced by the supply and demand for the raw material, which is influenced by political and economic situations such as the pandemic or inflation in recent years, as well as the activities of various organizations and investors in financial markets. These are mainly the activities of OPEC and powers such as the USA and Russia.

Another significant component is the excise duty, i.e. a tax imposed on producers and importers of fuel products. The following tax that must be paid is VAT, i.e. tax on goods and services, which is set by law by the government. Only 3.2% of the fuel price is made up of the fuel fee (a fee for introducing fuel and gas used to power vehicles with an internal combustion engine to the domestic market) and the emission fee (collected for environmental protection).

The most important economic factors influencing the price of fuel include:

- currency rates – the most important currency determining oil prices is the USD, or its exchange rate about other currencies. The USD is the currency in which oil prices are settled globally. For example, fuel prices may decrease when the USD exchange rate weakens against the PLN.
- prices of a barrel of oil – the price of a barrel of oil is influenced by many factors, mainly investment activities on financial markets, the strength of the USD, and supply and demand on the market. We also cannot forget about the operation of OPEC (Organization of the Petroleum Exporting Countries). This institution makes the most important strategic decisions related to the amount of extracted crude oil and thus directly affects its price.
- geographical location - As previously mentioned, fuel price depends on the exchange rate and taxes applicable in a given country. The stronger the currency of a given country about the USD, the lower the fuel price. Currency rates depend

on the economic situation in a specific country. It is also worth mentioning that it will be cheaper in countries where oil is widely available (producing countries), than in countries that have to import it. The cost of transport significantly impacts the price of fuel - the more accessible and shorter the delivery route, the lower the fuel price. Countries located in remote and logistically complex locations must expect higher fuel costs.

- geopolitical situation in the world - these include changes of power in the country, war, disasters, pandemics, changes in the state system, and economic crises[17] (Mieszkowski 2024)

  Recently, the global situation has significantly impacted the fuel market.

Considering the period of the last few years, events took place that significantly impacted fuel prices (Table 2).

Table 2. *Examples of events and factors influencing the price of fuel*

Year	Factor and events
2012	Dispute between the US and Iran
2013	Revolution in the USA in oil extraction using shale
2014	War in Donbas
2015	Currency crisis in Greece
2016	Oversupply of crude oil. OPEC agreement to limit oil production
2017	Decline in oil stocks in OECD countries; strong exchange rate of the PLN against the USD
2018	Donald Trump's termination of the nuclear agreement with Iran. US sanctions on Iran
2019	Introduction of an emission fee in Poland; reducing oil imports from Iran by 60%
2020	COVID-19 pandemic, introduction of restrictions; low exchange rates
2021	Lifting restrictions related to COVID-19; record inflation in Poland
2022	War in Ukraine; high exchange rates and inflation

Source: *Own study.*

3. Discussion

The research aimed to determine changes in fuel prices in the context of transport companies' activities and identify key economic factors influencing these prices. The scope of the study included the analysis of historical data on fuel prices in 2012-2022. This data comes from industry reports, government publications, and international energy organizations' databases.

The article is a preliminary study of the relationship between changes in fuel prices in the context of international transport. It is the basis for further analysis of the relationship between providing transport services on the international market.

[17] *https://www.bankier.pl/wiadomosc/Ropa-w-USA-wciaz-drozeje-takiej-serii-tygodniowych-zwyzek-cen-nie-bylo-od-2015-8206185.html*

3.1 Analysis of Changes in Fuel Prices on the Transport Market

Fuel price developments in 2012-2022:
Analyzing the statistical data contained in Table 3, it can be seen how the demand for diesel oil has changed over the years. Over the past 10 years, diesel consumption has increased by over 50%, and the share of imported oil has also increased. The main impact of this situation is the development of transport and the increase in the mobility of Poles. The increasing share of imported fuel is caused by growing demand, and Polish refineries need to be more efficient to ensure adequate supply.

Table 3. *Estimated volume of liquid fuel consumption in the country after 3 quarters of 2012 compared to 3 quarters of 2022 (POPiHN, 2024)*

Diesel	Consumption (thousand m^3)	Including total imports (thousand m^3)	Share of import in consumption [%]
3 quarters 2012	10751	1122	10
3 quarters 2013	9982	787	8
3 quarters 2016	12528	3034	24
3 quarters 2017	14541	5006	34
3 quarters 2021	16337	5327	33
3 quarters 2022	16715	5063	30

Source: *Own study.*

Table 4. *Wholesale diesel prices from 2012 to 2022 (Orlen, 2025)*

Months/Years	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
January	4,53	4,32	4,16	3,39	2,92	3,62	3,64	3,84	4,02	3,68	4,79
February	4,46	4,44	4,20	3,62	2,94	3,60	3,53	3,99	3,79	3,85	5,10
March	4,50	4,34	4,15	3,65	3,07	3,50	3,60	3,04	3,36	4,01	6,75
April	4,51	4,19	4,15	3,65	3,08	3,51	3,76	4,14	3,07	3,99	6,58
May	4,44	4,21	4,13	3,73	3,30	3,37	4,03	4,16	3,13	4,07	6,62
June	4,26	4,25	4,14	3,72	3,39	3,27	4,01	3,92	3,35	4,20	7,22
July	4,40	4,36	4,12	3,59	3,29	3,36	4,02	3,99	3,40	4,29	6,99
August	4,51	4,34	4,13	3,38	3,25	3,39	4,02	4,02	3,36	4,25	6,73
September	4,54	4,39	4,11	3,40	3,37	3,51	4,11	4,11	3,24	4,41	6,69
October	4,49	4,25	3,98	3,39	3,48	3,55	4,25	4,03	3,28	4,90	7,36
November	4,42	4,21	3,88	3,39	3,42	3,63	4,10	4,03	3,34	4,92	6,81
December	4,26	4,22	3,54	3,15	3,65	3,62	3,86	4,11	3,53	4,68	6,60
Average annual price	4,44	4,29	4,06	3,51	3,26	3,49	3,91	3,95	3,41	4,27	6,52
Minimum price of the year	4,26	4,19	3,54	3,15	2,92	3,27	3,53	3,04	3,07	3,68	4,79
Maximum price per year	4,54	4,44	4,20	3,73	3,65	3,63	4,25	4,16	4,02	4,92	7,36

Source: *Own study.*

Analyzing the data in Table 4, it can be seen that over the last 10 years, the average price of diesel oil was the lowest in 2016 and the highest in 2022. This was because in 2016, the price per barrel of crude oil was one of the lowest levels for 10 years; compared to 2015, it recorded a reduction of approximately 17 percentage points. A huge supply and demand also caused such a low price. In turn, in 2022, the price reached an absolute record.

The main reason for this was that many adverse events occurred in a very short period. Russia's invasion of Ukraine, rapidly growing inflation, and reduced supply of crude oil pushed the price of diesel oil up. It is also worth noting that the average price of diesel fuel in the analyzed period was PLN 4.11.

As you can see, the price was higher than average the price was higher than average in 2012-2013 and 2021-2022. If it weren't for last year, the situation in the fuel market would be stable. Unfortunately, the current economic crisis and the political situation in the world have a significant impact on diesel fuel prices.

According to the results in Table 4, during the remaining years of 2012, the diesel price fluctuated around the annual average. The most significant temporary price drop possible in June. Despite this, the yearly average was high and amounted to PLN 4.45. There would be a lot of additional factors. First, there are disputes between the USA and Iran.

The Americans are putting pressure on the Iranian government to stop implementing the program available in their country. The result of this was the imposition of an embargo on European Union companies' purchase of the Iranian network. This dispute resulted in an increase in global oil prices as net imports from Iran dropped by 40%. The second suspect was the weaker PLN exchange rate about communications (Jarco 2022).

The data show in Table 4 that 2013 was better than the previous year; the average annual diesel fuel price per liter was PLN 4.29, and the additional fourth price per liter was PLN 4.44, almost as much as the yearly average price in 2012. The price remained at the level throughout the year, and there may have been a deviation from the average annual prices, which did not exceed PLN 0.10.

In II, tracking at lower monitoring levels in the dispute between the US and Iran and stopping the upward trend in the oil market in London (decrease in barrel prices checked in general until 2012).

The price drop from the security breach resulted in the stabilization of supplies from Libya and Iran's actual return to the global market. When it comes to distinctive applications in the USA, it is also worth applying the disclosure of the mining revolution. This durability until September 2014, when the price ranged from PLN 4.10 to PLN 4.20 per liter (Szypulski 2022).

Analyzing the data in Table 4, it can be concluded that in 2014 the downward trend from the end of 2013 continued. This resulted in the average annual price being lower than the previous year and amounting to PLN 4.06. As you can see in the chart, practically throughout the year until November, the price remained close to the annual average, and there were no significant price fluctuations.

There is a visible decline in diesel prices at the end of the year. The price dropped by as much as PLN 0.57 per liter within three months. The reason for this was that the average price for a barrel of Brent in 2014 was around USD 99, and the highest jump occurred in June at USD 115. However, from that moment on, the price began to fall systematically, and by the end of the year, the price per barrel was already USD 55.

The reason for this situation was several events. OPEC countries wanted to stop the development of shale oil production by the US, and there was also a reduction in the flow of money to revive the US economy from federal reserves. There was also an oversupply of oil, which resulted in lower prices, although countries such as Saudi Arabia did not want to lower production limits (Dreszyński 2022).

The data in Table 4 indicate that the price drop from the end of 2014 influenced 2015. The average annual oil price was PLN 3.50, a reduction of as much as PLN 0.56 compared to the previous year. The price was quite moderate throughout the year and was within the average annual price. Fuel levels remained low despite the conflict in Ukraine and the civil war in Iraq. A slight increase can be seen in the pre-holiday period.

The reason for this was the currency crisis in Greece. As a result, analysts predicted that the USD rate would go up in the long run and the euro would go down. This was largely influenced by monetary policy worldwide, which resulted in Europe reducing interest rates and the USA gradually increasing them (Sobczak 2022). The significant price drop in December will continue in 2016. The situation influencing this reduction will be described later in the work when analyzing the fuel situation in 2016.

Analyzing the data presented in Table 4, it can be concluded that 2016 was a record year. The price in January was only PLN 2.92. The annual average was PLN 3.26, the lowest result in the last 10 years regarding crude oil prices. The reason for this situation was oversupply. Oil stocks were huge, their quantity constantly increased, and demand on European and Chinese markets gradually decreased.

The return to the Iranian market after the agreement on the nuclear program and the lifting of sanctions resulted in the price of a barrel reaching record lows of even USD 15-20 per barrel.[18] Since March, there has been an increase in prices, which in May was at the annual average level, and this situation continued with minor deviations until November. It is difficult to determine the reason for the price increase.

[18] *https://www.wnp.pl/nafta/ceny-paliw-w-polsce-prawie-najnizsze-w-europie,502069.html*

The majority of the reasons were speculations such as the agreement between the Arabian Peninsula and Russia to limit production, which ultimately did not materialize, and the companies BP, Nabors Industries Ltd., and Pioneer Natural Resources also found the price of a barrel of oil at USD 50 to be favorable for the development of investments.

And making the mining industry more dynamic. This resulted in the price per barrel of oil being around USD 50 (31). At the end of the year, a price increase occurred that lasted until the beginning of 2017. It is worth mentioning that the amplitude from January to December was as much as PLN 0.73.

The data in Table 4 show that the end of 2016 and the beginning of 2017 saw an increase in prices to approximately PLN 3.60. This was because companies wanted to compensate for their losses due to the previous record low year, so the OPEC agreement decided to limit production to increase oil prices. The leading country that sought this state of affairs was Russia, for which the price of a barrel of oil in the previous year was meager (an average of USD 30-40 per barrel), contributing to budget problems in this country (Janoś, 2016).

This situation continued until April, when the price fluctuated around the annual average, i.e., PLN 3.50. The reduction over the next four months was due to the calming down of the situation on the fuel market and the stabilization of the price of a barrel of crude oil below USD 50, as well as the strong exchange rate of the PLN against the USD (Walków 2017).

In the second half of 2017, the decline in crude oil reserves in OECD countries contributed to the price's starting to rise again. Despite the increase in production in the USA, the price of a barrel fluctuated around USD 60. At the end of the year, prices rose to the level from the beginning of the year.

Also in this case, the reason for this price was the OPEC summit and the extension of production restrictions until the end of 2018. Additionally, Libya and Nigeria were included in the agreement (Raport Zintegrowany - Grupy ORLEN, 2017), which predicted that the price of fuel would increase in 2018. The price remained around PLN 3.60 until March 2018.

Based on the data in Table 4, it can be concluded that at the beginning of 2018, the price situation continued from the end of 2017, which contributed to the fact that the average annual price was not so high and amounted to PLN 3.91. However, this makes a big difference compared to the previous year and an increase of as much as 41 cents. It can be noticed that since March, the price has gone up significantly and remained above average almost until the end. In May, you had to pay PLN 4.03 for a liter of diesel, which is 43 cents more compared to March. Several events contributed to this difference.

The most important of them was Donald Trump's termination of the nuclear agreement with Iran, which was opposed by European countries.[19] This has caused much speculation about the prospects for global oil production. In August, the first sanctions on Iran were introduced by the US.

At the end of September, the price per barrel was already USD 80, a difference of USD 20 compared to the beginning of the year. The price peaked in the last quarter as the rest of the announced sanctions on Iran were implemented. It is worth mentioning that Japan, Korea, and India have also imposed sanctions.

As a result, a barrel of oil was already around USD 100. The price situation of crude oil in Poland at the end of the year was not helped by the weak exchange rate of the PLN against the USD and the prospect of introducing an emission fee, reflected in the highest fuel prices at stations since 2014.[20]

Additionally, by analyzing the data in Table 4, it can be concluded that December 2018 and January 2019 were temporary price declines. This was mainly due to the high production rate in the global crude oil market and the lack of direct threats that could affect the price of crude oil. The first increases were visible in February, and practically throughout the year, the price of crude oil fluctuated around the annual average of PLN 4.03. This is PLN 0.12 more compared to the previous year.

The main factors for this were subsequent actions by OPEC to limit production to maintain high margins, as well as the introduction of an emission fee in Poland (it aims to reduce the amount of exhaust gases and subsidize the development of electric cars) (Złoty, 2019) It is worth recalling that prices in 2019 were still influenced by the situation in Iran and the sanctions imposed on this country. Oil exports from Iran to China dropped by almost 60%, and the US constantly pressured Asian countries to give up oil imports or reduce them to a minimum (Business Insider Polska, 2019).

The data in Table 4 allow us to conclude that 2020 is a year of high price drops in the fuel market. The main factor was the coronavirus pandemic. In the first quarter, prices dropped dramatically. Comparing December 2019 with April 2020, the average cost of diesel fuel decreased by over 1 PLN.

From that moment until December, the price stayed within the annual average. Due to travel restrictions, market demand has slowed down significantly. Even though the demand for public transport has dropped significantly, the diesel market has not suffered considerably because truck transport was mainly responsible for the

[19]*https://pism.pl/publikacje/Decyzja_USA_o_wyj_ciu_z_porozumienia_nuklearnego_z_Iranem*

[20]*https://www.credit-agricole.pl/male-i-srednie-firmy/strefa-biznesu*

continuity of supplies[21] (Rynek Paliw 2021). The OPEC+ agreement caused the upward price rebound in the second quarter, the aim of which, as in previous years, was to limit oil production to limit oversupply (Business Insider Polska 2020).

As shown by the data in Table 4, diesel oil prices increased practically throughout 2021. The average annual price was PLN 0.86, higher than the previous year. The main reason for this was the revival of demand on the fuel market due to the reduction of pandemic restrictions, as well as the global energy crisis caused by a huge deficit of crude oil on the market (there is a shortage of 1 million barrels of oil daily)[22]

Additionally, the European Union announced introducing a legislative package aimed at reducing greenhouse gas emissions and protecting the environment. When analyzing the situation on the fuel market in Poland in 2021, we must remember the record inflation, the highest in 24 years, and the weak PLN/USD exchange rate since March 2020[23] This resulted in record fuel prices in the last quarter of 2021.

In turn, the analysis of the data presented in Table 4 indicates that 2022 will bring further price records to fuel markets. The average annual price increased by almost PLN 2.30 compared to the previous year.

However, to best illustrate how high these increases are, it is enough to compare the prices from 2016 (the lowest average price in the analyzed period) and 2022. The difference was as much as PLN 3.26, i.e., the price increased by 200%. For the first two months, the price trend from 2021 continued.

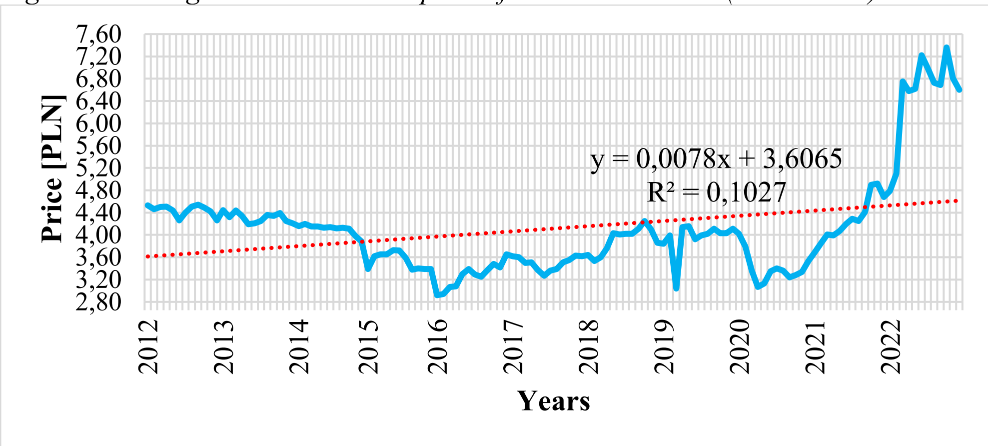
However, at the end of February, the war in Ukraine broke out, which had a dramatic impact on the entire economy and, in particular, on the fuel market. This was influenced by many factors, and above all, sanctions imposed on Russia resulted in restrictions on the import of all types of goods, constantly rising inflation reaching new records throughout Europe (Inflacja w Polsce w maju 2022), and the need to import oil from other directions than before.

Additionally, oil prices in Poland are driven up by the weak PLN exchange rate and the increase in diesel exports to Ukraine (Poland has as much as 54% share in these exports).[24][25] It is also worth mentioning the introduction of 8% VAT on fuels, which

[21] *https://flota.com.pl/artykul/flota.com.pl/artykul/ceny-paliw-i-ruch-na-stacjach-w-czasie-epidemii*
[22] *https://www.bankier.pl/wiadomosc/Ropa-w-USA-wciaz-drozeje-takiej-serii-tygodniowych-zwyzek-cen-nie-bylo-od-2015-8206185.html*
[23] *https://www.bankier.pl/wiadomosc/Ceny-paliw-w-pazdzierniku-2021-8206420.html*
[24] *https://www.auto-swiat.pl/wiadomosci/aktualnosci/rosja-ukraina-wojna-powoduje-gwaltowny-wzrost-cen-paliw-ile-paliwa-importujemy-z/fbqr8nj*
[25] *https://i.pl/ceny-paliw-w-polsce-i-na-swiecie-wojna-na-ukrainie-zaburzyla-globalne-lancuchy-dostaw-i-zachwiala-rynkami-paliwowymi/ar/c1-16416731*

resulted in a specific reduction in the retail price of fuel.[26] Still, it hurts entrepreneurs operating in the transport industry, as they can deduct 15% less tax than before. Price dynamics in 2022 were very high; fluctuations reached up to PLN 100 per week, and since March, the price has not dropped below the annual average.

Figure 1. Average wholesale diesel prices from 2012 to 2022 (Orlen 2025)



Source: *Own study.*

The presented statistical data show that the situation in the fuel market in Poland is changing dynamically. This was due to many factors, from the global crisis and inter-state arrangements to decisions made within a given country. Therefore, the fuel price often changes, affecting the entire economy of a given country and the world.

3.2 Fuel Price in Poland Compared to Selected European Countries

To assess the price situation of the Polish fuel market compared to those of selected European Union countries, the data below shows diesel prices compared to minimum wages in these countries.

Analyzing the data in Table 5, it can be concluded that the price of diesel fuel in Poland in 2021 was the lowest among the countries presented. The pricing situation can be divided into two geographical areas. The first area includes Poland and our southern neighbors, whose difference does not exceed EUR 0.05.

The second area is Western countries, where the price difference from Southern countries ranges from 11% to 20%. It is also worth adding that the average price for the analyzed countries is EUR 1.38, and in all Western countries, the price is significantly higher than the average.

[26]*https://www.prawo.pl/prawo/druga-tarcza-antyinflacyjna-nizszy-vat-na-paliwa,512702.html*

However, to illustrate the actual situation of the fuel market in a given country, it is necessary to compare the minimum wages and the amount of fuel that a citizen of a given country can purchase. Table 5 presents the tables for 2021 and Table 6 - for 2022.

Table 5. *Selected fuel market statistics for selected EU countries in 2021*[27],[28]

Country	Poland	Czech Republic	Slovakia	Germany	France	Netherlands	Belgium
Average price for 1L of diesel (EUR)	1,23	1,26	1,28	1,44	1,46	1,49	1,53
National minimum wage (EUR)	619	596	623	1585	1555	1701	1626
Number of liters purchased for the minimum wage (EUR)	504	473	487	1101	1065	1142	1063

Source: *Own study.*

The data indicate that the price per liter of diesel in the southern countries is the lowest of the mentioned ones, but due to earnings, it does not translate into the quantity of fuel purchased. The situation is entirely different in Western countries, where the minimum wage is much higher (even several times higher). Despite the expensive fuel, the inhabitants of these countries can afford to buy more than twice as much of it. Compared to the countries of the south, Poland is the best, but considering the west, there are diametric differences.

Table 6. *Selected fuel market statistics for selected EU countries in 2022*[29]

Country	Poland	Czech Republic	Slovakia	Germany	France	Netherlands	Belgium
Average price for 1L of diesel (EUR)	1,64	1,59	1,65	1,78	1,73	1,78	1,76
National minimum wage (EUR)	664	664	646	1600	1603	1725	1626
Number of liters purchased for the minimum wage (EUR)	405	418	392	899	927	969	924

Source: *Own study.*

Comparing 2022 to the previous year, a significant increase in diesel prices is immediately visible. The average cost per liter of diesel fuel increased by almost 20% (EUR 1.70). Due to the war in Ukraine and high inflation, fuel prices have risen

[27]*https://www.wnp.pl/nafta/ceny-paliw-w-polsce-prawie-najnizsze-w-europie,502069.html*
[28]*https://www.wyborkierowcow.pl/aktualne-srednie-ceny-paliw-w-europie-95-on-lpg/*
[29]*https://www.wyborkierowcow.pl/aktualne-srednie-ceny-paliw-w-europie-95-on-lpg/*

throughout Europe. Even though minimum wages slightly increased, the amount of fuel available for purchase decreased significantly, even by 20% compared to the previous year. As in the last year, the trend of a significant difference in the fuel purchasing power of citizens in Western countries compared to the South continued. It is also worth paying attention to the situation in the Polish fuel market, where the purchasing power of fuel has decreased by almost 100 liters.

4. Conclusion

The article analyzes changes in fuel prices in Poland and Europe. The analysis of historical trends in fuel prices in 2012-2022, carried out as part of the research, shows rising fuel prices in the analyzed period.

The statistical data analysis indicates significant changes in the demand for diesel oil in Poland over the last ten years. Diesel consumption increased by over 50%, and at the same time, the share of imported oil increased. The main factors influencing this situation are the development of transport and increased mobility in society, which causes a growing demand for fuels. Polish refineries cannot meet this demand, leading to greater import dependence.

Analyzing diesel oil prices, it can be noticed that the lowest prices were recorded in 2016 when the price of a barrel of crude oil was at one of the lowest levels in ten years. This was the result of ample supply about demand. In turn, in 2022, prices reached record levels, mainly due to Russia's invasion of Ukraine, rising inflation and reduced oil supply. The average price of diesel fuel in the period under review was PLN 4.11, with the highest prices recorded in 2012-2013 and 2021-2022.

Data from 2012 show that diesel prices fluctuated around the annual average, with the most significant drop in June. High prices were caused by the conflict between the USA and Iran and the weakening exchange rate of the PLN against the USD. In 2013, prices were more stable thanks to US-Iran negotiations and increased US oil supply. The downward trend continued in 2014, with oil prices falling to USD 55 per barrel by the end of the year due to oversupply and OPEC policies.

In 2015 saw further price declines due to Greece's currency crisis and Ukraine's conflict. In 2016, record low prices were recorded, mainly due to the oversupply of oil and Iran's return to the market after the lifting of sanctions. The price increase in 2017 resulted from OPEC agreements to limit oil production. 2018 brought further price increases, mainly due to sanctions on Iran imposed by the US.

The COVID-19 pandemic in 2020 resulted in significant price drops due to reduced demand for fuel. However, fuel prices have increased in 2021 due to the recovery in demand and the global energy crisis. In 2022, the war in Ukraine and sanctions against Russia further increased fuel prices.

Analyzing literature and industry studies allowed us to identify key economic factors that influence fuel prices. These include: demand and supply of crude oil, geopolitical conflicts and sanctions, exchange rates, especially the PLN against the USD, monetary policy and interest rates, OPEC and oil production agreements, oversupply or shortage of raw materials on the market, technological revolutions in oil extraction (e.g. shale revolution in the USA), global inflation.

The COVID-19 pandemic and related restrictions, increase in costs related to ecological regulations, economic situation in producer countries, introduction of new taxes (e.g., emission fee in Poland), EU energy policy, crude oil stocks, speculation on commodity markets, oil extraction in non-OPEC countries, changes in the trade policy of significant oil importers, development of alternative energy sources, the impact of global initiatives for sustainable development, technological changes in the oil industry.

A tangible effect of the research is to provide recommendations for maintaining the stability of fuel prices on the market. In this respect, the following actions should be mentioned: monitoring global and local trends in oil demand and supply, adapting energy policy to the dynamically changing international situation, strengthening domestic refining capacity to reduce dependence on imports, investing in alternative energy sources to reduce dependence on oil, supporting research and innovation in the field of energy efficiency and welding technologies, development of storage and distribution infrastructure for energy raw materials.

To sum up, data analysis on diesel prices indicates high variability of the fuel market in Poland, resulting from numerous economic, geopolitical, and technological factors. To improve price stability and reduce dependence on external suppliers, it is necessary to strengthen domestic production capacity, develop alternative energy sources, and constantly monitor global market trends.

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