Fuel market analysis

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ABSTRACT

The aim of the study is to present the entire fuel sector since their characteristics through their occurrence in the environment as well as those in the Polish economy involved in the production and distribution of fuels. I would like to bring the possibility of development of alternative fuels, which are less impacting on the environment and what factors determine changes in fuel prices in the world and that Polish oil companies are key entities at the national level to ensure the necessary resources that are required for the growing demand for fuel Poland. Then I wanted to determine the structures and resources that are held by companies involved in the extraction of crude oil, fuel production and sales network owned by individual companies.

Keywords: liquid fuels; fuel market

1. Basic characteristics of fuels

Fuels are an essential component of a complementary economy and have a direct impact on economic growth and development. To systematize my work would have to start from the notion of "market" and the "fuel" that are included in the topic. Namely, the market is a set of mechanisms allowing contact between producers and consumers through the purchase and sale transactions, and the conditions in which they take place and when it comes to fuel is a substance that consists of chemical compounds or mixtures of organic and inorganic origin natural or can also be prepared artificially and are able to extract large amounts of heat during combustion. We can, so go to the characteristics of the fuel, which occur due to the state of matter: solid, liquid and gas. Classification of fuel is more distinction between different origins.
or calorific value, but the more I wanted to get closer to what this classification, because this type of classification is one of the most widely used in the economy [1,2].

2. Liquid fuels

Liquid fuels can be defined as a fuel derived from crude oil or coal and lignite. As used of the type used include combustion engines, as well as for heating and technology. By addition of suitable components and a suitable process produces fuel different from each other fuels and physical values. The main fuel in commercial use are:

- LPG,
- gasoline and its various types,
- diesel ON.

3. Gaseous fuels

By gaseous fuels we mean flammable hydrocarbon compounds, is taken from the earth's crust, odorless, non-toxic (contains no carbon). Their use in the automotive industry is close to the fuel gas with the exception that they are in a different physical state and must be stored in some other way. An example of fuels that we can mention are:

- methane,
- ethane, propane, butane

4. Alternative fuels

This is a group of fuels that result from environmental actions namely I mean here the fuel by some scientists working in the field as the future fuel namely hydrogen is on ecological fuel that arises min. by electrolysis of water containing different metal hydroxides. It can pass the strict sense among the gaseous fuels because these fuels is around ten times lighter than air. This type of energy is recently used in automotive sometimes called "hybrid" although it was discovered in 1660. and made it R. Boyle defining this phenomenon as "inflammable air." [3]

5. Resources and their distribution in Poland

Poland is an example of a country with limited natural resources, unfortunately, in the oil and therefore we are dependent on imports. Our country has the resources, which are minutes in the Polish Lowlands with the most deposits in the amount of 41, the second occurrence of these deposits occurs in the Carpathians, with 29 points from drilling successively clause the foothills of the Carpathian of 12 deposits and also in the Baltic Sea belonging to part of the Polish economic zone. The deposits located in the Carpathian Mountains and the foothills are the oldest areas the presence and operation in these areas oil fields. As of today, these deposits are nearly exhausted, and the reason for this is the excessive exploitation of which led to this state of things, knowing that such resources are limited in quantity. However, these resources that we can determine the remaining centers of greatest economic importance located in the Polish Lowlands in the villages: Barnówko, Mustno and Buszewo, Gorzow Wielkopolski.
6. Production volume and the flow of fuel in Poland

Oil production in Poland is estimated at about 23 million tons. Predominant are deposits that are used and they account for about 86% of all available resources, the remaining reserves are those who for some reason are not developed and any, constitute approximately 11% of the total, is also a part of these resources that use was discontinued and approximately 3%. Crude oil production in 2009. From deposits on land and areas of Polish economic zone in the Baltic Sea amounted to 687 thousand. tons of crude oil. In comparison to the previous year, production decreased by 960 thousand. tone. In 2014, as reported by the Central Statistical
Office production in Poland it was at the level of 984 thousand tone. Detailed data are presented in Figure 1.

![Crude oil production in Poland in the years 2000-2014](image)

**Fig. 2.** Crude oil production in Poland in 2010-2014  
**Source:** GUS

We are forced to import oil because our resources are insufficient compared to the demand for the good. Despite the production growth that has been recorded in particular in 2003, the demand market reports which exceeds our production. In 2008, oil imports amounted to about 20 million. ton and most of its suppliers are Russia with over 19 million. tons, and the next are countries such as Norway, Azerbaijan and Belarus [4,5].

### 7. Polish fuel market

The origins of the fuel market and the development of this sector is associated with Ignacy Lukasiewicz, who in 1853 developed the oil lamp and a year later opened Europe's first oil mine near Krosno in the village Bóbrka. During today operates seven refineries. In the two large in Plock and Gdansk, and smaller in Trzebinia, Jasło, Jedlicze, Czechowice and Gorlitz. To distribute the products above. Head refineries used Petroleum Products commonly known as CPN, which distributed a fuel petrol, diesel, heating oil and LPG. Consumption of diesel oil - the basic and most important fuel for the economy, which is 55 per cent. The whole domestic consumption - fell in 2012 by 9.2 percent. The negative growth remained well in the first quarter 2013. According to the Polish Chamber of Oil Industry and Trade of May this year in
the first quarter. Diesel oil consumption fell by 9 percent. The main causes of the decline in consumption of liquid fuels are: changes in the excise tax on diesel, the state of the economy and a decrease in revenues of society. "It is believed that diesel oil consumption reflects the condition of the economy. In 2012, the Polish economy has slowed, which was particularly evident in the second half of the year” - the authors wrote the report "Oil Industry and Commerce 2012" published by the Polish Organization of Oil Industry and Trade, the only Polish research institute monitoring the Polish fuel market. Selected elements are shown in Fig. 3 [6,7].

**Figure 3.** Domestic consumption of liquid fuels in the year 2011-2012

**Source:** [http://www.akcjonariatobywatelski.pl/pl/centrum-edukacyjne/gospodarka/775,Rynek-paliwow-y-w-Polsce-perspektywy-i-stan-obecny.print](http://www.akcjonariatobywatelski.pl/pl/centrum-edukacyjne/gospodarka/775,Rynek-paliwow-y-w-Polsce-perspektywy-i-stan-obecny.print)

8. **The mechanism of formation of fuel prices in Poland**

The liquid fuel market is very dependent on the macroeconomic situation which occur in a given period of time. This is due to the uneven distribution of oil which is the world and the associated growing demand for this kind of good, which is the result of growth in the automotive sector, despite the efforts of vehicle manufacturers to minimize operating costs, we can also take into account the growth of fuel consumption by the energy sector [8].

The number of cars registered in Poland is 14.6 million for public counting 38,12mln in this case, we are forcing keep oil imports. This fact has an impact on the unfavorable structure of consumption of raw materials. Such a state of considerable import in the amount of the total demand for oil on a significant impact on the final amount of the price because of higher purchase costs than is the case for having its own raw materials. The level of prices on the
Polish market is dependent on the level of oil prices on world markets. Additional components in fuel prices is the level of excise tax and fuel charges, as well as in the case of Polish as a result of imports also has significance level of the zloty against the euro or USD. So we can say that the fuel market in Poland is mainly shaped by the world market [9,10].

The increase in oil prices is largely the result of major changes in the structure of supply and demand for oil in the global economy. Efforts manufacturers focus on producing such a quantity of fuel to meet the global demand that is most generated in India and China. Prices also affects the problems of accessibility and exploitation and unregulated levels of mining deposits. The oil market is increasingly conformed to the financial market and the most important information for investors of this type of investment flows around the world, and sometimes it is not directly related to oil which may indicate that the level of oil prices on world markets can also occur hesitation prices without reference of oil supply. The graph shows us to increase sales of crude oil (diesel) in each year, or even superior to gasoline. This involves the development of agriculture and the transport industry in Poland (most companies buys auto diesel because they have lower fuel consumption) [11].

Table 1. Retail fuel prices in individual distributors on 27.03.2010

<table>
<thead>
<tr>
<th></th>
<th>ON</th>
<th>E95</th>
<th>S98</th>
<th>LPG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporations</td>
<td>4,03 zł</td>
<td>4,41 zł</td>
<td>B.d.</td>
<td>1,59 zł</td>
</tr>
<tr>
<td>PKN Orlen</td>
<td>4,04 zł</td>
<td>4,39 zł</td>
<td>4,71 zł</td>
<td>1,60 zł</td>
</tr>
<tr>
<td>Private distributors</td>
<td>4,00 zł</td>
<td>4,36 zł</td>
<td>4,64 zł</td>
<td>1,60 zł</td>
</tr>
</tbody>
</table>
Based on the above data collected I can say that the prices of petroleum products are dependent also on companies and implemented by them overhead margin. We can get a better price by purchasing private stations due to lower costs they must bear and which comprises a lower margin.

Undoubted factor in the increase in fuel prices is their demand, the economy is clear that with the increase in demand for a given good increases the purchase price of the emerging in a given period of time in response to changes in demand for fuel in terms of degressivity which is below the expected variant of the pessimistic doubt in this situation concerns oil would be forced to reduce their margins anyhow induce customers to increase purchases. In the existing economy, which is based mostly on oil is an abstract situation and possible only when the dissemination of alternative ecological and economic of other more innovative ways which could at least partly to resist the world's economies [12].

9. Contracts and participants of the fuel market

One of the largest companies in the fuel market in Poland, PKN ORLEN and LOTOS. The creation of Polish PKN ORLEN started in 1999, its activities in conjunction S.A CPN and Petrochemia Plock SA It is one of the largest oil industry corporations located in Central and Eastern Europe. Ownership of the Group are Treasury owns ING OFE AVIVA OFE and other shareholders.

Table 2. The shareholding structure of PKN ORLEN as at 27 June 2013.

<table>
<thead>
<tr>
<th>Shareholders</th>
<th>Number of shares</th>
<th>Part</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exchequer</td>
<td>117 710 196</td>
<td>27,52 %</td>
</tr>
<tr>
<td>ING OFE</td>
<td>40 000 000</td>
<td>9,35%</td>
</tr>
<tr>
<td>AVIVA OFE</td>
<td>30 000 000</td>
<td>7,01 %</td>
</tr>
<tr>
<td>Other shareholders</td>
<td>239 998 865</td>
<td>56,12 %</td>
</tr>
<tr>
<td>Total</td>
<td>427 709 865</td>
<td>100%</td>
</tr>
</tbody>
</table>

PKN Orlen is a shareholder and shareholder 58spółek commercial law and including 34 subsidiaries, 20 minority companies and 2 companies, joint ventures and associates. The Company manages up to seven refineries located throughout the Czech Republic, Lithuania, and Poland in Plock, Trzebinia, Jedlicze. For the realization of such large amounts of performed tasks Orlen Group needs a suitable infrastructure which can efficiently transmit raw materials and finished products therefore has available land storage facilities, offshore transhipment facilities and a network of pipelines and the transport truck and rail transport. For the realization of such a large infrastructure of storage and transhipment also needed sales base corresponding production capabilities and able to satisfy customer demand network stations. The data is presented in Table 3.

Table 3. The shareholding structure of PKN ORLEN as at 27 June 2013.

<table>
<thead>
<tr>
<th>Poland</th>
<th>1748</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>509</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>334</td>
</tr>
<tr>
<td>Lithuania</td>
<td>35</td>
</tr>
<tr>
<td>Total</td>
<td>2626</td>
</tr>
</tbody>
</table>

Source: Annual Report ORLEN

The second largest company on the Polish fuel market is Grupa LOTOS S.A. and its owners are the same as the previous company which ING OFE, State Treasury and other shareholders what kind acquired the rights to the company through the purchase of shares. The shareholding structure is shown in Table 4.

Table 4. Shareholder Structure S.A day 29.04.2013.

<table>
<thead>
<tr>
<th>Shareholders</th>
<th>Number of shares</th>
<th>Part</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exchequer</td>
<td>69 076 392</td>
<td>53,19%</td>
</tr>
<tr>
<td>ING OFE</td>
<td>6 893 079</td>
<td>5,31%</td>
</tr>
<tr>
<td>Other shareholders</td>
<td>53 903 891</td>
<td>5,31%</td>
</tr>
</tbody>
</table>

Source: „The structure of share capital” http://inwestor.lotos.pl/print.ajax

The company has 20 subsidiaries to her and all of which are related to the production of fuel. They deal with the mini refineries located in Gdansk, Jaslo. He is also entering the field of biofuels, and this is a separate subsidiary of LOTOS Biofuels Sp. o.o. and LOTOS Exploration
& Production Norge AS in its tasks is the exploration and production of crude oil on the Norwegian shelf. The Company can not qualify only for the processing and extraction of oil because they do not take active in the field of commercial activity from LPG by greases, oils and finishing with asphalt production and sales. For better financial results, the company has its own network of retail stations in the amount of 439. It can be said that on the Polish market only operate two oil companies, however, provide the data as there are many more. The graph 4 are presented data on the structure of petrol stations in Poland.

**Figure 5.** The market structure of petrol stations in Poland in 2013

![Market structure of petrol stations in Poland in 2013](http://www.popihn.pl/download.php?id=73)

In Poland, 17.5 million tonnes of crude oil processed annually jointly by PKN Orlen and Grupa Lotos under permanent contracts oil supply min. such companies as: J & S Service and Investment, Petroval, Petraço. The company J & S Service and Investment sells oil in the amount of 8 million tons per year. Oil purchased by J & S comes from more than 20 manufacturers of oil from Russia and Kazakhstan. Each contract is secured by financial guarantees and, in the absence of oil supply pipeline supplier is obliged to deliver oil other possible means of transport for a specified contract period. This obligation is secured by an irrevocable bank guarantee.

The company Petraço - sells for Polish in the amount of 3.36 million tons. Oil will come from reserves Rosneft, which is entirely controlled by the Kremlin. Unfortunately, there are some situations which, on conclusion of the contract are not predictable as it was the case with
the company Petroval that this agreement is not made. Crude Petrovalu came from Yukos. There was at that time a settlement between PKN Orlen and trustee in relation to the breach of the agreement by the fault Petroval. PKN Orlen gave up claims for an amount of approx. 110 million dollars, which is probably the result of an agreement, that took place between PKN Orlen and Rosneft. (Previously PKN Orlen signed an agreement for the supply of oil from Petraco Oil, Rosneft intermediary). As a result, Orlen not only gave up claims for 110 million dollars, but also increased dependence on supplies from Russia.

By "well protected" legal provisions in contracts on a permanent basis and should be understood that such regulations will be secured all the supplies in such a way that in case of default providers, there is immediate and infer the possibility of covering losses resulting from the difference in the price of oil purchased elsewhere [14].

It would seek to ensure that such a provision (the so-called. "Performance bond") was in all permanent contracts with suppliers, which does not have a place, and is an element that can be treated as a threat to energy security.

10. Conclusions

The fuel market can be divided into a liquid fuel or LPG, gasoline, diesel and fuel gases such as methane, ethane, propane, butane. Nowadays, more and more often it takes the action to the development of alternative fuels. They are referred to the third kind of non-traditional fuels. In the future, the development of unconventional techniques will become increasingly important for the economy. In Poland, the production of fuels takes place mainly in Podkarpackie and Greater. The national mining deposits is less than the demand for them by the economy. Necessary in this situation, action is to import the raw materials from Russia, Norway, Azerbaijan and Belarus. Crude oil prices in global markets directly affect the level of retail prices at petrol stations. Factors which affect their level is world-class mining, armed conflict, the odds USD. The supply of crude oil is the main factor which decides the price increase or its decline. Classical economic theory shows the relationship between the price of the product and its supply. Increasing the supply and also the availability of the product reacts inversely to change its price.

References


[6] Nicholls, Anthony, Kim A. Sharp, and Barry Honig. "Protein folding and association:


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