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THE FUTURE OF THE DRUZHBA PIPELINE AS A STRATEGIC CHALLENGE FOR THE CZECH REPUBLIC AND POLAND

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The authors of this study declare that they are wholly responsible for the following text, including any possible inaccuracies or mistakes.

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1. INTRODUCTION

"*Can the Czech Republic continue to rely on the Russian Druzhba pipeline for its oil supplies in the coming years? All indications are that it cannot. According to the experts it is highly likely that the world's longest oil pipeline, which the former Soviet Union used to supply its satellites in central Europe from the sixties of the last century, will run dry in a few years.*" (see Petr, 2008)

The Druzhba pipeline is one of the most important energy infrastructure projects in Central and Eastern Europe, supplying the European part of Russia's former Soviet bloc with oil since the second half of the last century. As we can see from the above quotation, which represents the predominant discourse not only in the Czech, but also the Polish media, the future of the pipeline has become uncertain in recent years. The further use of Druzhba is in doubt mainly due to the difficult relations of the Russian Federation with transit countries, and its possible termination is indicated by Moscow's change in its export strategy, namely increasing crude oil exports via sea terminals, at the expense of pipelines.[1]

On the following pages, we will focus on how a potential curtailment of oil supplies by Druzhba can affect the energy situation of the two customer countries, i.e. the Czech Republic and Poland. The Czech Republic depends on oil imports from abroad for roughly 97% of its needs (68.5% of deliveries from Russia via the Druzhba pipeline and 31.5% via IKL pipeline), and Poland also approximately for 97% of its needs (95% of supplies come from Russia via the Druzhba pipeline, while tankers account for 5%). Security and continuity of supply is thus logically an important aspect of the energy (oil) security of both countries.

Given the broad theme, the whole issue is narrowed down to answering the following questions:

[1] Here we should mention the events of 2007, when the Russian company OAO AK Transneft (ОАО АК Транснефть), the pipeline operator, first stated it might limit repairs of the Druzhba pipeline, which is itself a risk due to the fact that there were nine accidents on the pipeline over the last ten years. OAO AK Transneft is also considering limiting or completely stopping further pipeline operation.

- Is there a danger of curtailment of the supply of oil via Druzhba to the surveyed countries?
- If so, what might be the mid-term implications of the situation, economic, security or other?
- What role can be played by the European Union in solving the issue (either preventive or for any ongoing problems)?
- Which actors will be affected by potential supply curtailment and how? Here, the study will focus on the impact on economic entities (firms), the state and even households to a limited extent.

The very structure of the text reflects the indicated allocation. First, a comprehensive analysis of the oil sector in the Czech Republic and Poland, of course, with an emphasis on facts relevant to the issue. The following section focuses on Russia, the evaluation of the Russian oil sector, the recoverable reserves, export preferences and overall vision of future developments concerning Druzhba. In the chapter devoted to transit countries, the role of Belarus and Ukraine as key actors fundamentally affecting the possibility of further operation of the investigated pipeline is then evaluated. The chapter on the European Union analyses and evaluates the potential and the will of this entity to intervene in the potential issues associated with the pipeline.

All findings will be subject to criticism and evaluated in the last two parts of the text. The impacts of possible supply curtailment will be presented.

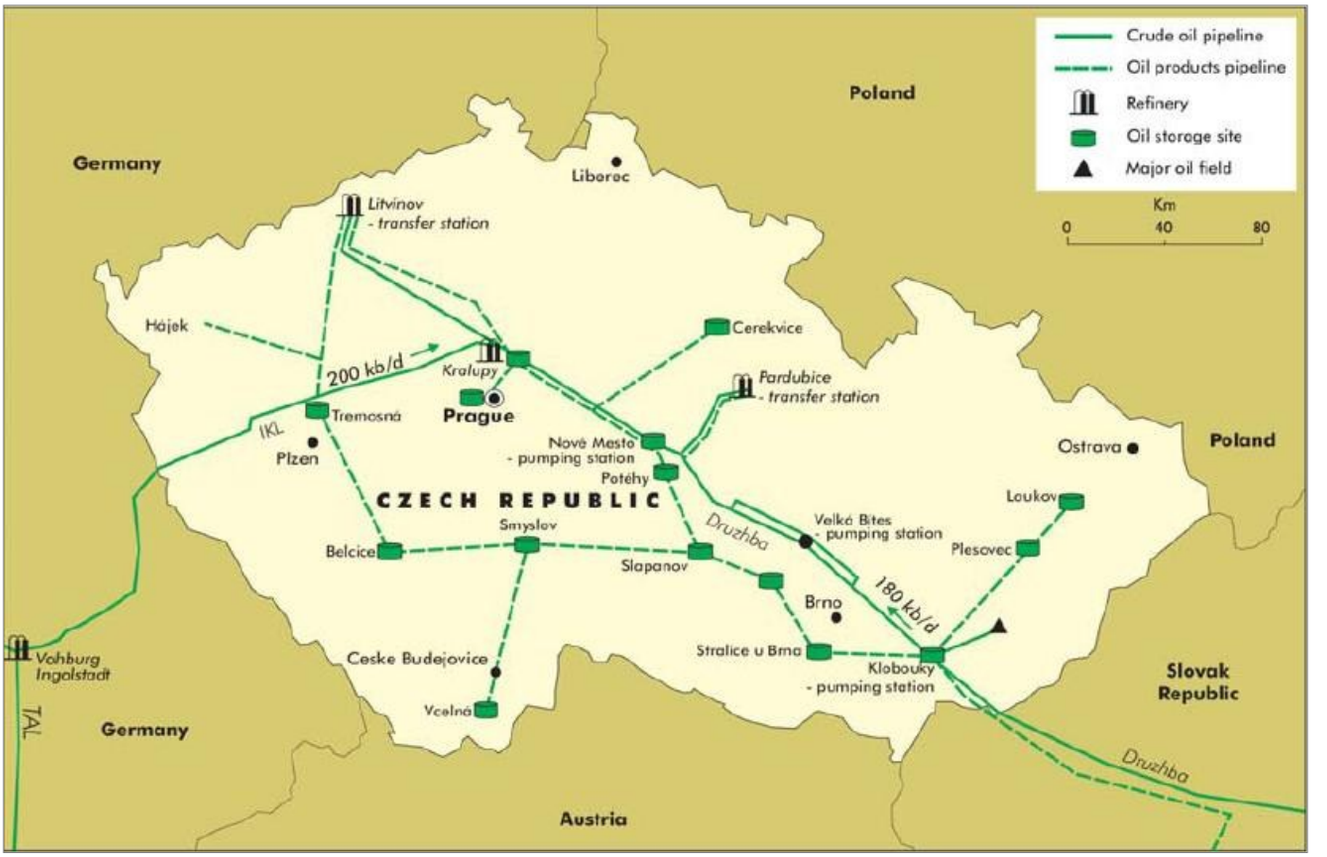
It must be noted at this point that the authors of the text focus primarily on the issue of the impacts of a potential curtailment of the supply via the Druzhba pipeline to the targeted country. Less emphasis is then placed on the question of how this curtailment is likely to occur, and in what volumes. The reason for this is the uncertain and unpredictable situation in the Russian oil sector. In principle, in the case of producer and transit countries the study assesses the prevailing trends and general characteristics of future development. On the other hand, in the case of consumers it specifies particular impacts.

The data collection took place in the Czech Republic, Poland, Ukraine and Brussels between April 2011 and January 2012. The authors of this study declare that they are wholly responsible for the following text, including any possible inaccuracies or mistakes.

2. THE OIL SECTOR OF THE CZECH REPUBLIC

Oil in the Czech Republic has over the long term represented about one fifth of total primary energy supply (TPES). The share of liquid fuel in energy consumption was 18.6% in 2000, and 20.9% in 2008 (see SEK, 2004, pp. 11-12, 40-49; MPO, 2010a, pp. 77-92). Consumption is expected to grow by 17.1% by 2019 (see Business Monitor International, 2010, pp. 16, 72). Despite this growth in consumption, the goal of the update of the National Energy Policy of February 2010 is to maintain the share of liquid fuels in the consumption of energy sources at 20 percent by 2020.

Fig. 1: Oil Transport Infrastructure in the Czech Republic



Source: International Energy Agency, 2010, p. 8.

The Czech Republic enjoys diversified oil supply routes via the Druzhba and IKL pipelines. The Druzhba pipeline was brought down to Bratislava in 1962 and extended to Zaluzi u Mostu (now Litvinov-Zaluzi) in 1965. This pipeline transported 58.7% of oil imports (4.54 Mt) to the Czech Republic in 2010. The operation of the IKL

pipeline (Ingolstadt – Kralupy nad Vltavou - Litvinov) was launched on 13th March, 1996, and in 2010 it supplied 41.3% (3,190,000 metric tons) of the oil volume to the Czech Republic. Total imports reached 7.73 Mt of oil in 2010.

Tab. 1: Pipeline Routes in the Czech Republic

	Druzhba	IKL
Start of Supply	1962 (Slovakia), 1964 (Czech. Rep.)	1996
Transport Capacity (Mt)	9 Mt/y	10 Mt/y
Supply Volume (Mt, 2008)	4.81 Mt	3.30 Mt
Percentage Rate (%, 2008)	59.3	40.7
Supply Volume (Mt, 2009)	5.01 Mt	2.18 Mt
Percentage Rate (%, 2009)	69.7	30.3
Supply Volume (Mt, 2010)	4.54 Mt	3.19 Mt
Percentage Rate (%, 2010)	58.7	41.3
Utilization (%, 2008/2009/2010)	53.42 / 55.68 / 50.4	33 / 21.79 / 31.92
Source	Russia*	Algeria, Azerbaijan, Italy, Kazakhstan, Libya, Nigeria, Norway, Russia, Syria
Pipeline Transit Countries	Russia, Belarus, Ukraine, Slovakia	Italy, Austria, Germany

Note: The route of the south branch of the Druzhba pipeline, which transports supplies to the Czech Republic, crosses Almetevsk - Kuybyshev - Unecha - Mozyr - Brody - Uzhhorod - Sahy - Litvinov. Also, crude oil coming from Russia is not necessarily Russian.
Source: Ministry of Industry and Trade of the Czech Republic, 2009d, p. 1, Czech Association of Petroleum Industry and Trade, 2010, p 8; "Druzhba Pipeline", 2009, p. 56 Ministry of Industry and Trade of the Czech Republic, 2011, p.15

In terms of regional structure of suppliers Russia, which is the biggest exporter of oil to the Czech Republic, accounted for 64% (4,950,000 metric tons) of total supply in 2010 (7,730,000 metric tons). Azerbaijan[2] is the second largest supplier with a 26% stake (2,010,000 metric tons), and Kazakhstan third with 7.3% (0.56 Mt) (see MIT, 2011, p. 15). Other suppliers are Algeria, Italy, Libya, Norway and Syria.

The Czech oil market can be vertically divided into five levels. At the top is *interna-*

[2] Azerbaijan's oil is exported via three routes. 80% of the oil was transported via the Baku-Tbilisi-Ceyhan pipeline (BTC), 12% via the Baku – Supsa pipeline and 8% via the Baku – Novorossiysk pipeline in 2009. In all three cases, the pipeline route is connected to sea transport by tanker ships (see Ciarreta & Nasirov, 2010, p. 45).

tional carrier oil, below this level are *the processing plants*, at the third level is the distributor and finally the lowest level is composed of *traders in crude oil and oil products*. Outside these four there is a fifth level, which can be placed somewhere between international carriers and processing plants. On this level are *Czech production companies*, whose share of the oil supply is too small (2.73% of total, 217,000 metric tons in 2009) to affect the integrated structure of the remaining four levels.

2.1 PRODUCTION AND EXPORTS

There are no significant oil resources in the Czech Republic, and oil is produced only at small deposits in the Vienna Basin and in the Carpathian Fore deep in South Moravia. Deposits of oil are mostly tied to natural gas deposits. Domestic production accounts for two to four percent of the volume of oil supplied to the Czech Republic over the long-term. Production output was only 217,000 metric tons in 2009 (see ME/CGS-G, 2010, p. 185)

There are three oil-producing companies in the Czech Republic: MND, Ceska naftarska and UNIGEO. MND, Hodonin was formed by transformation of the state enterprise MND Hodonin, s.p. in 1992. Since July 2010, it has been 100% owned by the KKCG group of the entrepreneur Karel Komarek, whose parent company KKCG SE is based in Cyprus. The company holds 68 production and two exploration licenses for Moravia and holds exploration licenses in the Russian Federation, and it also operates in Germany, Romania, the Slovak Republic and recently also in Poland (see MND; Rybová, 2010). Ceska naftarska, Hodonin is a sister company of LAMA INVESTMENT (Hradec nad Moravici) within the group LAMA. The company holds an exploration license and a production license. Since 2006 it has been producing around 91 t/d of oil and gas at the Postorna deposit in the production area Charvatska Nova Ves near Breclav (see *Ceska naftarska)*. The company UNIGEO, Ostrava-Hrabova, which is 100% owned by Kooperativa insurance company, has been extracting oil since 2003 from a single oil deposit, Krásna pod Lysou horou, in the Moravian-Silesian Beskids. Oil is exported to Polish refineries. Due to the unfavourable price of Brent blend crude oil[3] (a traded item intended for consumption in the West) production was interrupted in 2009, but is now operating again (see UNIGEO).

In terms of exports, the Czech Republic is sending a relatively small volume of oil products and even smaller volumes of crude oil to Austria. Its exports are almost en-

[3] Brent Crude is a mixture of 15 blends of oil from North Sea oilfields (therefore it is also called North Sea oil). The price quoted on the London Stock Exchange is a standard from which the price of oil sold in Europe is derived.

tirely to EU countries, in fact to neighbors. A major part of the exports is fuel. It accounted for 61.2% of exports in 2008, 45.1% in 2009 and 52.6% in 2010. Exports go mainly to countries in the region: Austria, Germany, Hungary, Poland and Slovakia. Limited volumes of the order of thousands of metric tons per year are exported also to Russia, Serbia, South Korea or the USA (see MIT, 2011, p. 5).

2.2 IMPORTS

Daily oil consumption reached 27.88 thousand metric tons in 2008. A gradual increase in consumption of an annual rate of 1.5 to 2 percent of the 2008 volume in is predicted from 2011. In 2020, consumption could reach up to 33.16 thousand metric tons daily.

Tab. 2: Oil Consumption Prediction for the Czech Republic

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Consumption (Tt/d)	27.88	26.95	27.21	28.54	29.07	29.60	30.27	30.67	31.20	31.60	32.13	32.66	33.16
% change	100	96.7	97.6	102.4	104.3	106.2	108.6	110.0	111.9	113.3	115.2	117.1	118.9

Source: Business Monitor International, 2010, pp. 16, 72. Data for 2020 is the author's estimate.

The exclusive operator of international oil pipelines in the Czech Republic is MERO. The company, based in Kralupy nad Vltavou, owns and operates the Czech part of the Druzhba and IKL pipelines. It is the only carrier of oil to the Czech Republic and the most important company providing emergency storage of strategic oil reserves. MERO is a 100% shareholder of a subsidiary company MERO AG based in Germany Vohburg on the Danube, which operates and maintains the IKL pipeline in Germany and a crude oil tank in Vohburg on the Danube with a total volume of 200,000 cubic meters. The 100% owner of MERO is the Ministry of Finance. The company also owns and operates the Central Crude Oil Tank in Nelahozeves with a capacity of 1,550,000 cubic meters, where the operational and strategic reserves for the Administration of State Material Reserves are stored (see Zaplatílek, 2007, p. 69).

2.3 USE OF OIL

Oil is processed in the Czech Republic primarily for use in the transport and industrial sectors. Total oil consumption was 9.93 Mt (including imported oil products) in 2007. 64.55% of this was consumed by transport and 27.15% in the industrial sector. There were 6499 petrol stations in the Czech Republic at the end of 2009, of which 3615 were public petrol stations (see Česká asociace petrolejářského průmyslu a obchodu, 2010). Energy generation (electricity and heating) accounts for less than five percent of total oil consumption.

Consumption was 10.33 Mt of oil (including imported oil products) in 2009. Oil product imports accounted for a total of 2.95 Mt in 2009, an 8.5% increase over 2008. Physical imports of fuels, i.e. petrol and diesel, represented 67.4% of all imports of refined products. Exports of refined products totaled 1.23 Mt a year in 2009 and they were down by 16.1% (1,470,000 metric tons) on 2008. Physical exports of fuel represented approximately 45.1% of all exports of refined products (see the Czech Association of Petroleum Industry and Trade [CAPIT], 2010, p. 8).

Tab. 3: Oil Consumption in the Czech Republic by sector

Total Consumption	9.93	(100%)
Transformation	0.45	(4.55%)
Industry	2.70	(27.15%)
Transport	6.41	(64.55%)
- Petrol	2.10	
- Diesel	3.69	
- Aviation Fuels	0.37	
- Other	0.25	
Other Sectors	0.37	(3.75%)

Note: 2007 data in Mt. Data including oil products imports, which reached 2.25 Mt in 2007. Net imports of crude oil had reached 7.26 Mt, and domestic production of crude oil amounted to 0.25 Mt. Source: International Energy Agency, 2009g, p. III.139.

Tab. 4: Oil Refining in the Czech Republic

Total Refinery Intake	8.78	
Refinery Losses	0.04	
Total Refinery Output	8.74	(100%)
- LPG and ethane	0.21	(2.40%)
- Naphtha	0.84	(9.59%)
- Kerosene	0.17	(1.95%)
- Petrol	1.62	(18.56%)
- Diesel	3.56	(41.14%)
- Fuel oil	0.34	(3.84%)
- Other Products	1.97	(22.52%)

Note: Assessment of IEA for 2008, in Mt. Data including total domestic production of oil and natural gas (0.566 mil. ton).
Source: International Energy Agency, 2009g, s. III. 139.

Tab. 5: The share of selected domestic oil products in total supplies to the Czech market in 2009

Product	Share (%)
Unleaded petrol (including bio-components)	66.2
Unleaded petrol "Special"	92.3
Kerosene (aviation fuel)	22.7
Diesel (including bio-components)	67.7
Heating oil total	63.4
LPG total	58.0
Motor oil total	22.6
Asphalt and asphalt product	41.7

Source: Czech Association of Petroleum Industry and Trade, 2010, p. 8.

Fuels dedicated for transport and sold or distributed through the network of public and private petrol stations in the Czech Republic have a big share of country's total oil and petroleum products consumption. The remainder of the oil in the Czech Republic is used in the petrochemicals industry for the production of pharmaceutical products, detergents, dyes, explosives, fragrances, etc. Spolana Neratovice is one of the most important petrochemicals companies in the Czech Republic, and is the only manufacturer of PVC or plastics dedicated for further processing in the country. Its sole shareholder is the Polish company ANWIL, a subsidiary of PKN Orlen. Zentiva Group in Prague or Teva Czech Industries (formerly Galena) in Opava are important pharmaceutical companies in the Czech Republic. Synthesia Pardubice is a leading

European manufacturer of advanced organic intermediates, cellulose derivatives, pigments and dyes. Spolek pro chemickou a hutni vyrobu (Spolchemie), Usti nad Labem is engaged mainly in manufacturing synthetic resins and inorganic compounds. Hexion Specialty Chemicals, a.s., Sokolov is engaged in the manufacture and sale of coatings, sealants and adhesives. Gumarny Zubri produces a wide range of rubbers. BorsodChem MCHZ Ostrava (former Moravske chemicke zavody) manufactures products for manufacturers of polyurethane, rubber, pharmaceuticals, agricultural and food products. Lovochemie Lovosice is the largest producer of fertilizers in the Czech Republic, currently focusing on the manufacturing and marketing of nitrogenous and compound fertilizers in solid and liquid form. Petrochemicals companies do not buy crude oil but rather intermediate products from Czech or foreign refineries.

2.4 COMPANIES IN THE CZECH MARKET

2.4.1 Processing Plants

There are two processing companies in the Czech Republic - Ceska rafinerska and Paramo. Each is divided into two more refining plants that make up the four refining plants in the Czech Republic.[4] They processed 7.41 Mt of oil in 2009 and 7.90 Mt in 2010 (see MIT, 2011, p. 3).

Ceska rafinerska, based in Litvinov, is the largest producer of crude oil and processor of oil products in the Czech Republic. It operates oil refineries in Litvinov and Kralupy nad Vltavou. It processed 7.65 Mt of oil in 2008, which is a record in the company's history. The refinery processed 2.27 Mt of oil in the Kralupy nad Vltavou refinery, and 4.56 Mt of oil in the Litvinov refinery giving a total of 6.83 Mt of oil in 2009. In 2010 it was 7.37 Mt (2.69 mil. metric tons in Kralupy nad Vltavou and 4.86 mil. metric tons in Litvinov) (see Ceska rafinerska, 2009, p. 4, Ceska rafinerska, 2010, p. 4, Ceska rafinerska, 2011, p. 5). Ceska rafinerska, is a joint venture of Unipetrol[5] (51.22%; see Unipetrol a.s.), the Italian company Eni International B.V. (32.45%) and Royal Dutch Shell through its subsidiary Shell Overseas Investments B.V. (16.33%) (see Ceska rafinerska, 2010, p. 24).

Ceska rafinerska is a so-called reprocessing refinery, which places its focus only into

[4] The Koramo plant owned by Paramo does not process crude oil but mainly produces motor oils by mixing the input components – base oils and additives. Only diesel fuel was produced in Paramo, but its production is being phased out from 2012.

[5] Unipetrol shareholder structure - 62.99% is owned by Poland's PKN Orlen and 37.01% is composed of publicly traded shares (see *Unipetrol*).

the production of oil products, and not the purchase of resources and sale of oil products. The oil reprocessing refinery is supplied with crude oil by its shareholders through their trading companies - the so-called processors. These are Eni CR, Shell Czech Republic and Unipetrol RPA in the case of Ceska rafinerska. Refinery operating in the reprocessing mode processes the supplied oil at the request of processor into high-quality oil products. The refinery receives a *processing fee* for this activity, which is both bound to the installed refinery capacity (including staff costs and other fixed costs) and is also derived from the volume of processed oil, respectively the consumption of energy and other variable costs. A processing fee paid by each processor is the only refinery income (see Ceska rafinerska, n.d.). The key to the refinery business is refining margin (the difference between the price of crude oil and of petroleum products), and according to company information it varies from 2.2 to 4.4 euro per barrel. The shareholders cover the costs of refinery operation from this margin, namely by the "processing fee" relative to the amount of oil processed. The amount of oil for reprocessing is dependent on the size of the shareholder's stake. The supplies of oil are dictated by the processor's business contracts.

Ceska rafinerska is supplied with oil via the Druzhba and IKL pipelines (via the Nelahozeves central crude oil tank). The refinery complex is supplied with small volumes of oil extracted by Moravské naftové doly in the Czech Republic via the Druzhba pipeline. The refinery in Litvinov processes the Russian oil mixture REB (Russian Export Blend – medium sour oil imported from Russia via the Druzhba pipeline in particular), while the refinery in Kralupy processes so-called sweet oil, low sulfur crude oil that is imported into the Czech Republic via the IKL pipeline (Ingolstadt - Kralupy - Litvinov) and domestic oil extracted by Moravske naftove doly a.s. (see Ministry of Environment / Czech Geological Service - Geofond [ME / CGS-G], 2009, p. 180). Products after the processing of crude oil are then distributed based on instructions from processors to the Czech or foreign markets via state-owned CEPRO (see below) oil products pipelines. Refinery products of Ceska rafinerska are for example aviation kerosene, automotive petrol, sulfur, LPG, heating oil, diesel, propylene, asphalt, hydrogenated oil and various intermediate products for further processing in the Litvinov refinery.

Paramo (Pardubice refinery of mineral oil) based in Pardubice operates two plants, one in Pardubice and the other in Kolin. The company processed 0.55 Mt of oil in 2009 and 0.53 Mt in 2010 (see Paramo, 2010, p. 11; Paramo, 2011, p. 7). Since March 2009 it has been wholly owned by Unipetrol. At the same time Paramo wholly owns Mogul Slovakia based in Hradiste pod Vratnom, which deals in buying and selling oils and lubricants in the Slovak Republic. Paramo focuses on refining crude oil into

refinery and asphalt products and on the production of lubricating and processing oils, including related and auxiliary products. The company also buys and processes hydrogenated oil from Unipetrol RPA. The acquired intermediate products are used in the production of base and lubricating oils with very low sulfur content (see Paramo, 2010, p. 10). Refinery products of Paramo a.s. are motor fuels, heating oil, asphalt and other asphalt products, lubricating oils and greases. The company operates a fuel refinery in Pardubice that is engaged in the processing of Russian crude oil primarily for fuel, lubricating oil and asphalt. It also operates a smaller branch in Kolin, which is operated as a so-called oil refinery to produce lubricating oil (see ME / CGS-G, 2009, p. 180). The company is thus refining Russian oil purchased by its stakeholder PKN Orlen and transported via the Druzhba pipeline. It focuses both on the production and the purchase of resources and the sale of oil products. The main trading partner in the refinery products in the period under consideration was a sister company Unipetrol RPA, to which the supplies of primary petrol and vacuum distillates went (see Paramo, 2010, p 11). The future of Paramo refinery is not clear as Unipetrol's management is considering closing the plant due to falling demand for asphalt — principally the result of sharp cutbacks in Czech government funding for road-building — and low prices for the material compared to oil prices. Unipetrol decided to close operations in Paramo in December 2011, but in March 2012 all operations were restarted. In 2010, Paramo recorded a €7,5 million loss.[6]

2.4.2 Distributors

The products are distributed after processing. Petroleum products are both material for other technologies in the petrochemicals, agrochemicals and plastics industries, and are also taken out directly from the refineries' shipping terminals by end-customers or various distributors. This is particularly true for sulfur, LPG, bitumen, fuel oil, jet fuel, but also for normal fuel. CEPRO is the exclusive distributor through product pipelines in the Czech Republic. The Ministry of Finance has been the sole shareholder in the company since 2006. It is engaged in the transport, storage and sale of oil products; providing transport, storage and other specialized services in this area to external entities; protection of the Administration of State Material Reserves (ASMR) and operating the EuroOil petrol station network (see CEPRO, 2010, p. 4). The oil products pipeline system connects the company's CEPRO storage depots and centers with refineries in Litvinov, Kralupy nad Vltavou and Bratislava (owned by the Slovak company Slovnaft). The system allows direct pumping and supply between its various depots. Construction of the first sections of the oil products pipeline began

[6] All figures featuring national currencies were coverted to euro according to their five-years averages. In this publication one euro thus equals to 1.35 U.S. Dollars, 42 Russian Rubles (unless it is stated otherwise), 4.2 Polish Zlotys and 25 Czech Korunas.

in 1953, and currently exceeds 1100 km. CEPRO central dispatch controls the operation of oil product pipelines, monitors basic technical operational parameters (e.g. quantity of supply in the centers, pumping modes) and data from security systems (see Zaplatílek, 2008). Due to the nature of the oil products produced in Pardubice and Kolin (asphalt products, oils, etc.) there is no entry point into the system of oil product pipelines in these refineries. The company is primarily engaged in the transportation of oil products according to the customer's needs (through the oil product pipelines, rail tankers, tank trucks and trucks) and the wholesaling of fuel.

Tab. 6: The Quantity of Fuel Transported in the CEPRO System

	2008	2009	2010
Fuel – oil products pipeline	2.69	2.79	2.64
of which Diesel	0.91	0.91	0.86
of which Petrol	1.78	1.88	1.78
Fuel – rail tankers	0.15	0.23	0.20
of which Diesel	0.02	0.07	0.06
of which Petrol	0.13	0.15	0.14
Fuel total	2.84	3.02	2.84

Note: data in Mt.
Source: CEPRO, 2010, p. 18; CEPRO, 2011, p. 16.

Tab. 7: Wholesaling of fuel by CEPRO

	2008	2009	2010
Petrol	321,300	412,300	350,000
Diesel	741,000	942,000	801,300
Aviation fuel	8,000	77,800	143,700
Fuel total	1,070,300	1,432,100	1,295,000

Note: excluding sales of ASMR, data in metric tons.
Source: CEPRO, 2010, p. 20; CEPRO, 2011, p. 18.

2.4.3 Traders in Oil Products

The last level consists of oil products traders. The most important ones in the Czech Republic are Unipetrol, BENZINA (a subsidiary of Unipetrol), Shell Czech Republic, OMV Czech Republic, EuroOil, Eni Czech Republic, RoBIN OIL and LUKOIL Czech Republic.

Unipetrol is a subsidiary of PKN Orlen (Polski Koncern Naftowy Orlen) and is an important player in the Czech oil market. Unipetrol, headquartered in Prague, covers

a group of twenty companies and as of 30th April 2010, in terms of revenue, the company ranked sixth in the Czech Republic. In addition to the processing of crude oil in refineries of Ceska rafinerska (in this company it operates through Unipetrol RPA - RPA stands for refineries, petro-chemistry and agro chemistry)[7] and Paramo a.s. (100% ownership), the company is primarily engaged in the sale of fuel through BENZINA s.r.o. (100% ownership).

BENZINA has the largest number of petrol stations in the Czech Republic, operating 337 as of 31st December 2010. Aside from sales at its own petrol stations it manages direct bulk deliveries of fuels to other business partners and entities. BENZINA (and thus the Unipetrol Group) is also 100% owner of Petrotrans, one of the largest road transporters of fuel in the Czech Republic. The company owner (Polish PKN Orlen through the Unipetrol Group) decided to try to change the brand of seven petrol stations from Benzina and Benzina plus to Orlen and Star respectively in April 2011. PKN Orlen does business under the brand name of Orlen in Poland, and Star in Germany (see Petr, 2011). Depending on customer feedback the company will proceed further with re-branding.

The sole shareholder in Shell Czech Republic a.s. is the Dutch company Shell Overseas Investments B.V. Shell Czech Republic a.s. operates through a network of 186 service stations (as of 31st December 2010) in the Czech Republic. It also refuels aircraft at the airports of Prague, Brno and Ostrava, sells automotive and industrial oils and lubricants, asphalts, chemical intermediate products for further processing, and operates as a fuel wholesaler, etc. It is also charged to act as a processor in Ceska rafinerska. All this makes the company one of the most valued in its field on the Czech market but also in the industry as whole. It entered the market in 1991 and it took over the business activities of DEA Mineraloel, Lukoil and Total in the Czech Republic.

OMV Czech Republic is 100% owned by the Viennese company Vienna International Marketing-und Handels-GmbH, which is wholly owned by OMV Refining & Marketing GmbH, a subsidiary of the Austrian group OMV A.G. Wien. It launched its independent activity in 1993 (it had been part of OMW ČSFR since 1990). The activities of OMV CR can be divided into two main areas - construction and the operation of the OMV petrol stations and trading with customers (includes trade in fuels, fuel oils, lubricants and other products). OMV Czech Republic gradually took over the petrol stations of the local companies ROKAS and SETA, as well as those operated by

[7] This subsidiary also acquires resources for the petrochemicals production of the Unipetrol group including foreign crude oil purchasing for refinery products.

BP, AVANTI and, most recently in 2006 ARAL. It currently operates 220 filling stations (see *OMV Czech Republic*).

EuroOil is 100% owned by CEPRO. It ran 192 petrol stations in total in 2009, 180 through franchising and 12 CEPRO petrol stations (see CEPRO, 2010, p. 22). The main part of the network of the company's petrol stations consists of the former network of Benzina s.p., created during privatization in the early 90's.

Eni Czech Republic has operated in the Czech market since its establishment on 30th August 1991. It is engaged in refining, distribution and sales. It owns 124 Agip petrol stations (see *Eni Czech Republic*). The company is owned by foreign branches of Eni.[8]

RoBiN OIL, based in Kladno, is 100% owned by the entrepreneur Jiri Zoubek. It started to operate in the Czech Republic in 1991 and has focused exclusively on a systematic build up of trade, distribution and fuel logistics since. It operates 70 petrol stations in the Czech Republic (see *RoBiN OIL*).

Finally, LUKOIL Czech Republic has operated on the market since July 2007, when it became the successor to ConocoPhillips Czech Republic and took over its JET petrol stations. LUKOIL operates 43 petrol stations in the Czech Republic today (see *LUKOIL Czech Republic*). The company is 99.9% owned by LUKOIL Europe Holdings B.V. and 0.1% is owned by LUKOIL Holding AG, both companies being subsidiaries of Russian OAO LUKOIL.

[8] The ownership structure of Eni Česká republika is 99.9975% Eni International B.V. and 0.0025% Eni Oil Holdings B.V.

Tab. 8: Ownership Structure of the Most Important Companies in the Czech Oil Sector as of 1st January 2011

Company	Owner	%
BENZINA, s.r.o.	Unipetrol, a.s.	100
CEPRO, a.s.	Ministry of Finance of the Czech. Rep.	100
Ceska naftarská spolecnost s.r.o.	LAMA INVESTMENTS, a.s.	100
Ceska rafinerska, a.s.	Unipetrol, a.s. Eni International B.V. Shell Overseas Investments B.V.	51.2 32.5 16.3
Eni Czech Republic, s.r.o.	Eni International B.V. Eni Oil Holdings B.V.	> 99.9 < 0.1
EuroOil, a.s.	CEPRO, a.s.	100
LAMA INVESTMENTS, a.s.	Petr Lamich Company Management	51 49
LUKOIL Czech Republic s.r.o.	LUKOIL Europe Holdings B.V. LUKOIL Holding AG	99.9 0.1
MERO CR, a. s.	Ministry of Finance of the Czech. Rep.	100
Moravské naftové doly a.s.	KKCG Oil & Gas B.V.	100
Nafta a.s.	Slovenský plynárenský priemysel, a.s. E.ON Ruhrgas International AG Other Shareholders	56.2 40.5 3.3
OMV Czech Republic, s.r.o.	VIVA International Marketing- und Handels-GmbH	100
Paramo, a.s.	Unipetrol, a.s.	100
Petrotrans, s.r.o.	BENZINA, s.r.o.	100
RoBIN OIL s.r.o.	Jiří Zoubek	100
Shell Czech Republic a.s.	Shell Overseas Investments B.V.	100
Unipetrol, a.s.	PKN Orlen SA Publicly Traded shares	63 37

Source: Compiled using public sources by Tomáš Vlček.

2.5 THE OIL INFRASTRUCTURE OF THE CZECH REPUBLIC

2.5.1 Current Infrastructure

The total length of the Druzhba pipeline is 3,840 km (see "*Druzhba Pipeline*", 2009, p. 56). The Druzhba pipeline on Czech territory has a maximum throughput capacity of 9 Mt of oil annually. It is 357 km long in the Czech Republic, the pipe diameter is 528 mm (700 mm in the Moravian part) with a flow rate of oil of 1 - 1.4 m/s (see *MERO CR*). Utilization of the pipeline was 53.42% in 2008 and 55.68% in 2009 (see

above). The pipeline brings oil from the Russian regions of Western Siberia and the Volga-Urals. IKL pipeline has a maximum throughput capacity of 10 Mt a year. It is 169.7 km long in the Czech Republic, the pipe diameter is 714 mm with a flow rate of 0.5 to 1.2 m/s. The total length of pipeline from Vohburg on the Danube to the Central Crude Oil Tank Nelahozeves CCOT is 349 km (see *MERO CR*). Utilization of the IKL pipeline was 33% in 2008 and 21.79% in 2009 (see above).

MERO CR is the sole provider of transportation services for oil to the Czech Republic. It does not own any oil. Processor plants realizing contracts with crude oil suppliers have to also arrange transport contract with MERO CR. This company provides its services based on tariff charges fixed in the long-term contract with the oil processor.[9] It also provides so-called free capacity of oil products pipelines to transport crude oil or oil products outside of long-term contracts.[10]

2.5.2 The Proposed Projects

There are two possible options of further oil route diversification in the Czech Republic. The first option is to connect the northern and the southern branches of the Druzhba pipeline, namely to build a pipeline between refineries in Litvinov and in German Spergau near Leipzig. As the Litvinov refinery ends the southern part of the Druzhba pipeline, TOTAL *Raffinerie Mitteldeutschland GmbH Spergau* (also called *Leuna*) is located at the end of the northern branch of Druzhba. This project is pursued by MERO CR, as, which also initiated it and which would provide the necessary funds. The plan has been endorsed by the Czech government. Also Russian oil companies have shown their interest in this project. Its aim is to increase the oil security of the Czech Republic in terms of supply routes not only by closing the gap between the two branches of the Druzhba pipeline but also providing Czech refineries with access to oil terminals on the Baltic coast: Rostock (Germany) and Gdansk (Poland). In connection with the Litvinov - Spergau pipeline, the Czech Republic could become a transit country for oil. According to current information however the owner of the German refinery, the French company TOTAL, shows no interest in this project as connecting the pipeline leading from Rostock would need further necessary invest-

[9] E.g. On 11th December 2009 Ceska rafinerska cancelled the contract on transport and storage of oil with MERO CR, mainly due to dispute over the level of tariff charges. The company will negotiate a new contract with new conditions, which will better reflect the current market environment in Europe and adequacy of costs linked to providing of individual services, in a three year cancelling term. (see "*Ceska rafinerska vypovědela"*, 2009) Another conflict has started at the beginning of 2012, when the tariffs on transport of oil through the TAL pipeline has been raised. Mero, which took part in negotiations on new shipment fees, charged Ceska rafinerska, However, the refining company refused to pay higher tariffs and its debt to Mero is rising by €72 thousand per month.

[10] Oil is traded under long-term (up to five year) contracts, quarterly and on the spot market (i.e. monthly), while about half of demand is supplied through spot transactions.

ment to increase its capacity and connection to the port of Gdansk is constrained by the limited capacity in the Plock - Schwedt Druzhba pipeline section. The Litvinov-Spergau link would secure supplies of oil to the Czech Republic should transports from one of the Druzhba branches be limited and the second one be used as normal. This project however raises some concerns on the Polish side, as the East German refineries are currently supplied mainly via the northern branch of Druzhba and the Gdansk oil terminal. The owner of the Polish section of the Druzhba pipeline, the state-owned company PERN which collects the transit fees, will have a serious competitor, once the Litvinov-Spergau link has been completed.

The second option is a pipeline connection from Klobouky u Brna to the Austrian OMV refinery *Raffinerie Schwechat* near Vienna. This project was also designed by MERO CR. The oil flows there from the Italian port of Trieste at present (similar to IKL). This proposal is also linked to developments in the Slovak Republic. Within the scope of the diversification of activities in the Slovak Republic the BSP pipeline (Bratislava - Schwechat Pipeline), with a length of 62 km (50 km in Austria and 12 in the Slovak Republic) and total capacity of 2.5 to 5 million metric tons of oil annually, has been discussed frequently over the years since 2003. This project was proposed by the Slovak state-owned company Transpetrol with a potential effect on the Czech Republic as well, which could diversify the oil sector in terms of pipeline routes (through the Austrian Schwechat, whether it is the Druzhba or TAL pipeline), but not in terms of resources. However, the project also meets the limited capacity of the TAL pipeline. The BSP pipeline is planned as a link between the *Slovnaft* refinery in Bratislava and the Austrian OMV Raffinerie Schwechat near Vienna. The purpose of this project is to expand the existing Russian pipeline network to Austria, which would allow for the first time delivery of cheap Russian oil directly to Austria. For Austria it is an important diversification project, since Austria is currently supplied only by TAL (Transalpine Pipeline) and AWP (Adria-Wien Pipeline). The Slovaks perceive this pipeline as an essential project aiming to enhance the country's energy security. Firstly, the new connection is to motivate Russian companies to send more oil via the southern branch of Druzhba. Secondly, the planned capacity of the pipeline route would be able to cover the possible complete loss of oil supplies via the Druzhba pipeline (the domestic sector consumes about 2.7 Mt of oil annually) in the event of loss of supplies from the East, however, only if there would be spare capacity in the TAL-AWP section. Also the Schwechat refinery consumption would have to decrease to compensate for oil intended for Slovakia in this case. The owner of the Bratislava refinery, Slovnaft, owned by the Hungarian company MOL, is promoting an alternative project. MOL, which is a rival of the Austrian owner of the Schwechat refinery (OMV), is championing the idea of modernizing the Adria oil pipeline which

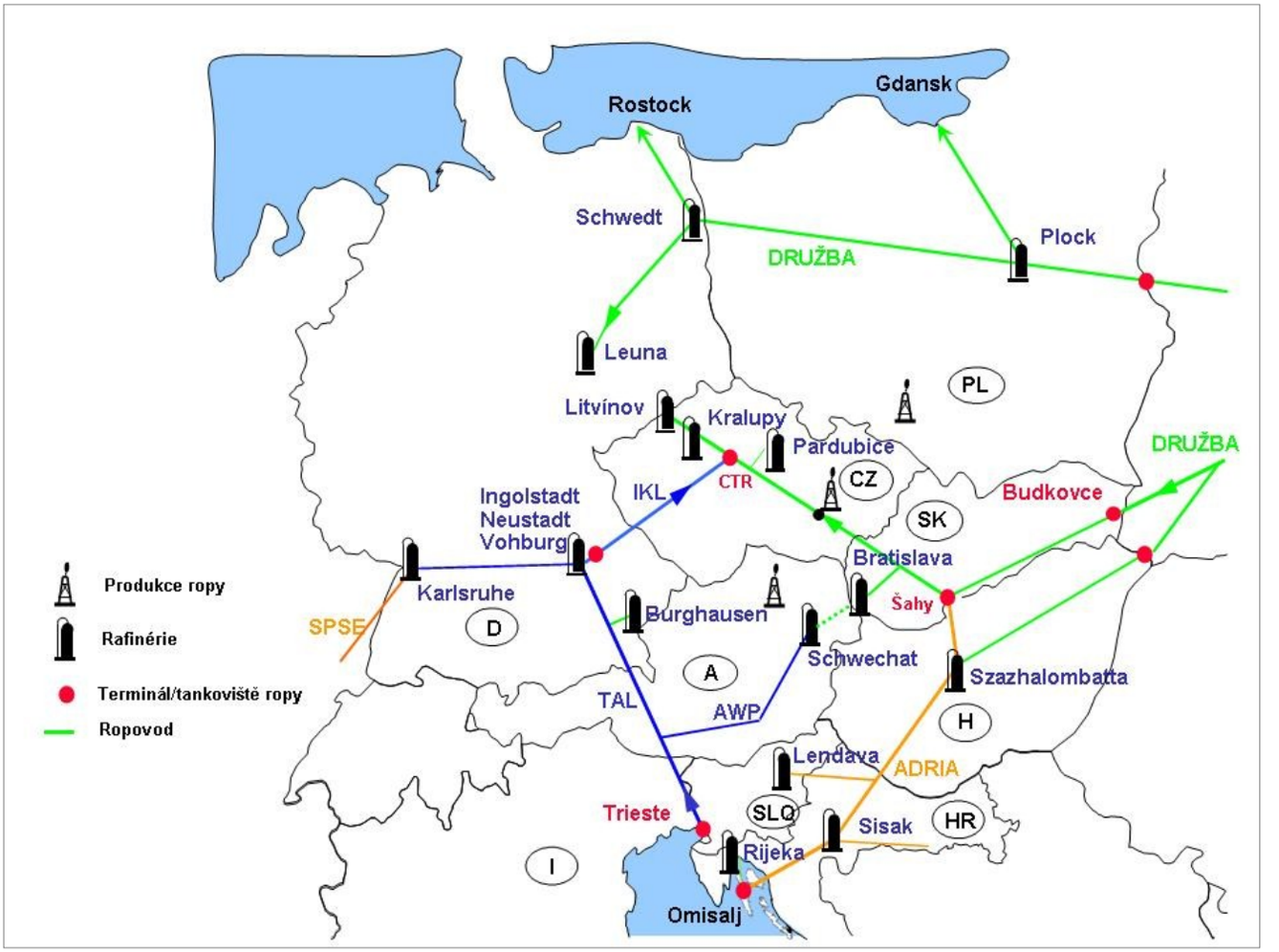
could carry oil from the coast of Croatia to the Czech Republic and Slovakia. This plan is not particularly interesting for Slovakia because of the high transport tariff (24 €/ton/whole line) and limited capacity. The Adria pipeline is currently used only occasionally, for transport in the direction and in the section of Sahy - Szazhalombatta.

The chances of implementation of the BSP project have increased after the Robert Fico-led government came to power in Slovakia. The venture involves Austria's OMV and Slovak Transpetrol.[11] The Austrian Federal Minister for Economic Affairs Reinhold Mitterlehner and his Slovak counterpart Lubomir Jahnatek signed a Memorandum of Understanding on 19th October 2009 to enhance cooperation between Austria and Slovakia in the area of trade in oil and natural gas, based on which pipeline construction should start in 2012. A joint venture Bratislava-Schwechat Pipeline GmbH will be established to realize this project; it will consist of Transpetrol Bratislava (74%) and OMV Refining & Marketing GmbH, Vienna (26%) (see "*Memorandum of Understanding*", 2009).

There are no obstacles on the Austrian side of the project; one of the key issues on the Slovak side is the proposed pipeline route, as the one previously proposed via Bratislava Zitny ostrov is very problematic in terms of environmental hazards (risk of contamination of an aquifer) (see "Jahnátek: Spojiť", 2009, *Na vytyčení novej trasy*," 2008; "pipeline Bratislava - Schwechat", 2009, "OMV prosazuje," 2009). The campaign against the pipeline by the Slovak public has been relatively successful, and that is why nine other routes are still under consideration alongside the most economic route via Bratislava Zitny ostrov. Therefore, the overall length of the pipeline may be 81 to 152 km according to the selected route and cost €70 to €112 million.

[11] The sole owner of Transpetrol is Slovakia.

Fig. 2: The Central European Oil Sector



Source: Oil Transport and Storage. (N.d.).

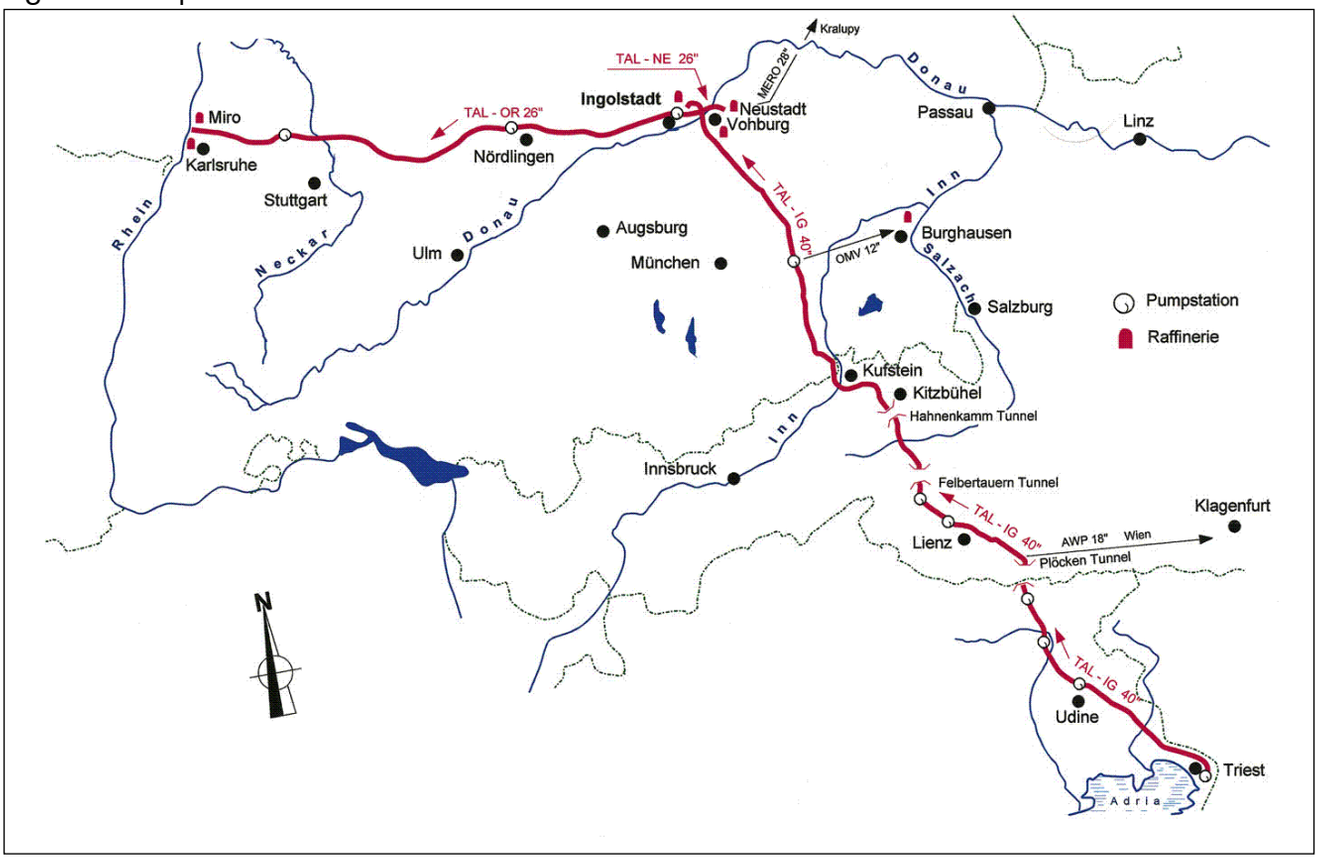
In addition to the mentioned projects Czech entities are further involved in existing pipelines. One of the projects proposed by MERO CR is the reverse operation of the IKL the pipeline with the aim of delivering Russian oil through the Druzhba and IKL pipelines to German refineries, and by doing that to increase the interest of the Russian Federation in exports via the southern branch of the Druzhba pipeline, and to increase its own profit from the transport of oil. However, the project faces a difficult swing operation. In the case of possible supply of crude oil from Russia to Germany, a volume of approximately 110,000 metric tons (that is the pipeline capacity between stations in Vohburg and Kralupy nad Vltavou) would need to be pushed from the pipeline. The options for use of this oil are either storage in CCOT Nelahozeves, which would result in the necessary partial operational release of stored oil, or to processing in the refinery in Litvinov, which would take about 10 days. Another option, to force out the oil back to Vohburg, would result in occupying more than 50% of MERO's local storage capacity. Technological issues for refineries should be carefully considered as they are set to process a certain kind of oil blend and to process

a different one presents extra costs from altering technology or a significant decrease in products yield.

The Czech state is trying to secure a secondary oil supply in the event of disruption via the Druzhba pipeline. The IKL pipeline is a rational choice; it follows the Italian-Austrian-German TAL pipeline (Transalpine Ölleitung). Utilization of the IKL pipeline reaches 20-40%, so it would seem that there is enough space to increase supply. However, the pipeline is linked to the TAL pipeline, which is used to almost 100% capacity and the possibility of increasing the supply to the Czech Republic is thus minimal. One solution is to have ownership in the TAL pipeline, which would automatically secure a permanent capacity share for the country. TAL is owned by a group of nine companies: OMV AG (25%), Royal Dutch Shell p.l.c. (24%), Petroplus Holdings AG (10%), Exxon Mobil Corporation (6%), Ruhr Oel GmbH (11%), Eni SpA (10%), BP p.l.c. (9%), ConocoPhillips Company (3%) and Total (2%). The Czech Republic is trying to negotiate the purchase of a two percent stake in the pipeline through MERO CR (see Hovet, 2008; Stopp, Voltz, & Lother, 2005, p. 24; *The Transalpine Pipeline, "Oil Transit Company,"* 2010; Graham, 2008; Jones, 2010). However, none of the owners has expressed any interest in selling their shares.

The Druzhba pipeline can be used only at up to 12-month nomination of capacity in advance with a flexibility of +/- 10%. The IKL pipeline can be used only with 18-month nomination of capacity in advance. In addition, shareholders in the pipeline are served first. Delivery takes 6 to 8 weeks from loading an oil tanker in the Persian Gulf through unloading in Trieste to delivery to Kralupy nad Vltavou. Pipeline capacity is 42 Mt per year, but there is potential to increase it to more than 50, by renewing the operation of the pumping stations on the route of the pipeline that were put out of service. Two out of the six stations are currently operating, and the cost of renewing each of the four remaining stations would be of the order of hundreds of thousands of euro.

Fig. 3: TAL Pipeline



2.6 STRATEGIC PETROLEUM RESERVES

The Czech Republic fulfills its EU and IEA[12] membership obligations through the Administration of State Material Reserves (ASMR). The obligation to the IEA among other things is maintaining the reserves as of the date 31st December 2005, and maintaining a reserve of a minimum 90-days average daily consumption of oil products last year. The obligation to the EU is securing oil reserves of 90 days average of daily crude oil imports or 61 days average of daily domestic consumption of oil (it depends which figure is greater, calculated in the preceding year) to the date 31st December 2012, based on EU directives 2006/67/EC and 2009/119/EC[13]. The implementing legislation in the Czech Republic is Act No. 189/1999 Coll. as amended by later regulations.

The storage and protection of oil, oil products and intermediate products is realized by state-owned business entities in the Czech Republic. MERO CR is responsible for

[12] The Czech Republic joined the International Energy Agency on 5th February 2001.
[13] The new directive also modified the rules of the operation of storage organization, the central administrators of reserves can be exclusively established by the state and the European Commission is in charge of controlling these reserves according to this directive (see Nowak & Hnilica, 2010, p. 7).

crude oil storage, while CEPRO a.s. stores oil products. Protected products are petrol, diesel, aviation kerosene, lubricating oils and heating oil (see *CEPRO*). CEPRO has 14 main stores, which are connected by oil products pipelines. The construction of pipelines and warehouses began during World War II (see Zabo, 2008, p. 76).

MERO CR operates the Central Crude Oil Tank (CCOT) Nelahozeves, which is part of the IKL pipeline. It is used to receive oil from the Druzhba pipeline to and from the IKL pipeline; for storage and mixing of different types of oil according to customer's needs and capacities; and for oil distribution to the customer as well. The largest part of the CCOT's capacity is used by the State Material Reserves Administration for the storage of strategic petroleum reserves. Total storage capacity is currently 1.55 million cubic meters and consists of four tanks with a single volume of 50,000 cubic meters, six tanks with a capacity of 100,000 cubic meters and six tanks with a capacity of 125,000 cubic meters, giving a total of 16 tanks. These steel tanks are on the surface, with a steel protection pool and floating roof (see Zaplatílek, 2007, p. 70; Cieslar, 2008a). "In January 2007 the revision of the State material reserves and businesses showed that ASMR had strategic reserves of crude oil and refined products for approximately 102 days of the average consumption of the previous year, and along with reserves of businesses this figure amounted to approximately 121 days" (see Zaplatílek, 2007, p. 71). The strategic petroleum and petroleum products reserves were stored in quantities which would last for more than 104 days according to the IEA methodology or respectively 119 days according to the EU methodology as of 31st December 2012 (that is state reserves, if the business's reserves are counted in, then it is 122 days) (see MIT, 2011, p. 11).

Tab. 9: Volume of Crude Oil and Oil Products Reserves Operated by AMSR as of 12/31/ 2010

Product	A	B	C	D	E	F	G
Crude Oil	1 014.53	-	-	-	-	-	-
Automotive and Aviation petrol	-	284.58	264.98	-	549.55	5.13	107.10
Jet Fuel	-	14.81	61.67	-	76.48	0.94	81.19
Kerosene, Gas Oil and Diesel	-	414.84	665.62	37.64	1 080.46	10.53	102.58
Heavy Heating Oil	-	34.49	75.91	-	110.4	0.76	144.69
Total	1 014.53	748.73	1 068.17	37.64	1 816.90	17.37	104.61

A – Crude oil and intermediate products supplies
B – Quantity of crude oil (A) in various products based on its content in refining in previous year.
C – End products reserves
D – Reserves in foreign countries
E – Products total (B+C+D)
F – Average daily consumption in previous year
G – Share in consumption in previous year
Note: according to IEA methodology, data in thousand metric tons, except for column G.
Source: Ministry of Industry and Trade of the Czech Republic, 2011, p. 10; edited by Vlček.

A recent topic of interest in the Czech oil sector in this context is the storage of part of the petroleum reserves in Germany at a warehouse in Krailing, belonging to the private company Viktoriagruppe AG, where up to one hundred thousand metric tons of oil will be stored. This is about 15 percent of existing state diesel reserves and 5 percent of total oil products. The state pays for the storage of ASMR's petroleum reserves and saves €1.5 million per year compared with storing the diesel reserves in the Czech Republic. Viktoriagruppe AG has committed itself on one hand to storing the state diesel reserves, and on the other hand to leasing the storage capacity for one hundred thousand metric tons of oil from the state (from MERO CR), which wants to use it for storing the oil for one of its customers, a shareholder of Ceska rafinerska (see Klímová, 2010). Viktoriagruppe AG also wants to start trading with oil in the Czech Republic. That came as a surprise to MERO CR, according to which "the storages were built to store state supplies, not those of private companies" (see "MfD: *Část státních*," 2010). Viktoriagruppe AG is also being criticized for not revealing its shareholder structure. It is said that the company might be owned by the Russian company OAO Lukoil. Transposition of Council Directive 2009/119/EC into Act No. 189/1999 Coll. which must be completed by 31st December 2012 steps up the conditions for defining the administrator of emergency reserves, its integrity and expertise.

The current project is a proposal to increase the emergency petroleum and petrole-

um products reserves. The document entitled "Analysis of the possible involvement of private business in the storage of emergency petroleum and petroleum products reserves in order to implement the required increase in petroleum and petroleum products reserves to a level equal to 120 days of consumption" based on the requirement of Government Resolution of 30th January 2008, which was submitted and approved by the National Security Council on 27th April 2009 and it was proposed to increase the petroleum and petroleum products reserves to 120 days of consumption. Therefore the petroleum and selected petroleum products reserves are to be maintained pursuant to Act No. 189/1999 Coll. on emergency petroleum reserves, as amended, at a level of at least 90 days of net imports. These reserves represent the mandatory reserves and are primarily intended to address an oil emergency, fulfillment of international obligations arising from membership in the IEA and the EU, and to address other emergency situations. Moreover, an additional type of reserves will be set up (i.e. strategic reserves), thereby increasing the total volume of reserves up to a level of 120 days of net imports (see Nowak & Hnilica, 2010, p. 9; Administration of State Material Reserves, 2009, MIT, 2010). The reserves will cover both emergency and are also to be used by businesses to cover their needs in the form of a loan from ASMR, without jeopardizing the mandatory level of reserves and the need to notify the EU about its decrease. The idea however has been criticized by players on the oil market who may be exposed to additional costs.

2.7 PAST CURTAILMENT OF OIL SUPPLY TO THE CZECH REPUBLIC

The Czech Republic has experienced several disruptions of oil supplies via the Druzhba pipeline. It happened due to disputes between Russia and Ukraine on the transportation fee for oil in 1990, 1991, 1994, 1995, 1996 and because of difficulties in license issuing and internal problems in the Soviet Union (in 1990), or due to technical issues. The oil supply through Belarus was cut off in 2007 because of disputes over the rate of duty between Russia and Belarus. Oil supplies via the Druzhba pipeline were curtailed on Czech territory by 50% in the summer of 2008. The Russians explained the situation as an issue in a complex chain of interconnected suppliers. However, the supplies were curtailed just the day after (9th July 2008) the Czech Republic signed the agreement on establishing a missile defense radar base in Brdy with the U.S. The situation was easily resolved however by increasing deliveries through the TAL/IKL pipeline system (except for the use of state petroleum reserves, additional supplies were secured from Iran, Norway and Saudi Arabia, all in one day). The July curtailment had much more unpleasant consequences for Russia than for the Czech Republic, since Germany and Great Britain questioned Moscow about the curtailment, and Russia's reputation as a reliable supplier was damaged. The risk of oil

supply disruption reappeared when Russia got into a dispute with Ukraine on transit fees once again in December 2009, but the situation was resolved by agreement between Moscow and Kiev on terms of new contract and no disruption occurred (see Nowak & Hnilica, 2010; "Rusko hrozí Evropě", 2009; Roškanin, 2008a, p. 9). The most recent problems in oil supply via Druzhba took place in April 2012. During the first ten days of the month oil supplies from the East to the Czech Republic fell by 31% in comparison with the amount logged by Russia. Transneft, which coordinates exports of Russian oil, announced on 9th April that Russian companies did not deliver any orders for the transfer of oil to the Czech Republic. However, the following day Transneft added that in the second quarter the supplies would be delivered according to the contract. The most likely reason for this decrease in oil supplies is the reorientation of Rosneft and Lukoil towards transporting oil through the BTS-2 pipeline system. This system was opened at the end of March 2012 and is expected to export Russian oil while bypassing transit countries. However, it is also likely that Russian companies used this opportunity to test how owners of Czech refineries (Unipetrol, Eni and Shell) would react to decreased oil supplies in the context of the newly-opened BTS-2 and how flexible they can be in accepting an increase in the oil price. It cannot be ruled out that this was also a signal of a possible renegotiation of supply conditions for other purchasers who receive supplies via the southern branch of the Druzhba pipeline.

Tab. 10: Oil Curtailment to the Czech Republic

Year	Reason of Curtailment
1990	Domestic problems in Soviet Union.
1991	Curtailment solved by additional supplies by IKL pipeline.
1994	Curtailment of oil supply due to a stop in license issuing.
1995	Dispute between Russia and Ukraine over the rate of oil transit fee.
1996	Dispute between Russia and Ukraine over the rate of oil transit fee.
2007	Dispute between Belarus and Russia over the rate of oil transit fee. Russia imposed export duty on oil exports to Belarus, which imposed countermeasures resulting in another curtailment of supply.
2008	Russia decreased oil supply to the Czech Republic to approximately 50% of volume. The reason for this might have been the signing of agreement between the Czech Republic and the U.S. on establishing a missile defense radar base in Brdy. Curtailment solved by additional supplies via IKL pipeline.
2009	The blackout in western Ukraine caused the curtailment of Russian oil to Europe. The risk of curtailment due to dispute between Russia and Ukraine over the rate of oil transit fee.

Source: "*Rusko hrozí Evropě*"; Nowak & Hnilica, 2010; edited by T. Vlček.

The state does not have the contracts to supply oil to the Czech Republic under con-

trol and does not have almost any way to regulate supply. Oil contracts are fully under the control of private enterprises in the Czech Republic. "Oil is not contractually guaranteed in long-term. In this situation, we are more dependent on the global oil situation to which we must respond by monitoring the overall situation, good diplomatic relations with several producers, extension of strategic reserves and by a savings program and by next generations of Biofuels" (see UVCR & NEK, 2008, p. 65). Due to its high utilization not even the IKL pipeline is a completely reliable insurance policy (see above).

In the context of oil supplies curtailment the Czech Republic negotiated two important agreements in the summer of 2008. The first is a memorandum between the carriers MERO CR and OAO AK Transněft' (ОАО АК Транснефть), which should secure a steady supply of resources to the Czech Republic. The Russians will inform the Czech side of their future intentions with the Druzhba pipeline and provide early warning of disruption on the basis of this memorandum. The Czech Republic has a similar contract with the other operators of Druzhba already, with Ukrainian ВАТ UkrTransNafta (ВАТ УкрТрансНафта) Belarusian RUP Gomeltransneft Druzhba (РУП Гомельтранснефть Дружба) and Slovak Transpetrol (see Roškanin, 2009, p. 6; MERO CR, 2010). The second contract, signed on 23rd November 2010, is a contract between MERO Germany AG, a subsidiary of MERO CR and the German Deutsche Transalpine Oelleitung GmbH,[14] which is one of three companies operating the TAL pipeline. This contract applies to the extension of the existing contract allowing the transport of more oil via the Western European TAL pipeline for Czech refineries at a time when there are problems with the Druzhba pipeline. MERO CR can use free shipping capacity of the TAL pipeline system beyond the usual long-term liabilities in this case, without any exorbitant extra cost. The new amendment to the contract is valid until 2015 (see "*Výpadky ropovodu Družba*," 2010; Jones, 2010).

The topic of switching the direction of oil flow in both pipelines has been discussed in the oil sector in the past. The Czech government stopped work on the preparation of the transit of oil via the Druzhba pipeline through Czech territory to Germany via the IKL pipeline in 2006 as it would undermine the route diversification achieved during the 1990s (see Roškanin, 2006, p. 6). Slovakia negotiated with the Czech Republic about the possibility of switching the oil flow of the Druzhba pipeline. Switching the direction of pipeline oil flow is technically possible at fairly limited costs – e.g. several millions euro, which would have to be provided by Slovak side (see

[14] In addition to Deutsche Transalpine Oelleitung GmbH the pipeline is operated by Austrian Transalpine Ölleitung in Österreich Ges.mbH and Italian Societá Italiana per l'Oleodotto Transalpine SpA (see *The Transalpine Pipeline Available on http://www.tal-oil.com/).*

Roškanin, 2008d, p. 7). This project nevertheless progressed no further.

The matter has several possible solutions, which Tomáš Hüner from the Ministry of Trade and Industry of the Czech Republic briefly summarized: "There are a number of solutions, from technology change solution in Litvinov and Pardubice refineries that would allow them to process light oil, through transport of Russian or similar crude oil via the IKL pipeline, to the transport of Russian oil via another pipeline in Ukraine up to that part of the Druzhba pipeline that goes through Slovakia to the Czech Republic" (see Roškanin, 2007d, p. 9). Czech refineries are now specialized, the oil refineries in Litvinov (Ceska rafinerska) and Pardubice (Paramo) process the Russian REB oil blend imported via the Druzhba pipeline, while the refinery in Kralupy nad Vltavou (Ceska rafinerska) focuses on the processing of sweet domestic and imported crude oil supplied via the IKL pipeline, and finally the refinery in Kolin (Paramo) uses resources from the Litvinov refinery.

Overall technological change is of course possible, but expensive and time consuming. The transfer of Druzhba oil pipeline capacity to the IKL pipeline is problematic due to its full capacity utilization (see above). The option of oil transport via the junction of Druzhba in Ukraine, i.e. via the Odessa-Brody pipeline (also called the Sarmatia pipeline) has been more discussed than operated for past ten years. The pipeline was originally supposed to be extended to the Polish city of Plock, but only the part from the city of Odessa to Brody has been constructed. The pipeline has also been used for completely different purposes than it was built for. Until 2010 it was used for transporting Russian oil from the Druzhba pipeline via Brody and via the Sarmatic pipeline to Odessa, where it was then shipped via tankers at the oil terminal in Odessa (Одеса) and Pivděnnyj (Південний). According to an agreement signed in the beginning of 2011, the Odessa-Brody pipeline was also used to transport Azeri crude oil (Azeri Light) to the Belarussian refinery in Mozyr. The amount supplied last year reached 1 Mt. However, since the beginning of 2012 the deal has not been continued. Infrastructure projects described above are also responses to reports about the possibility of curtailing or cutting off the Druzhba pipeline. Efforts to transfer the export of oil to oil tankers and the transition from the export of crude oil to the export of oil products are real aspects of Russia's energy strategy. A different question is, whether, and to what extent this declared strategy can pressure the importers so that they themselves use their resources more intensively to put political pressure on transit countries.

3. THE POLISH OIL SECTOR

Oil is still one of the most important energy resources in Poland. Since the 90s its share of TPES has grown due to the development of the Polish economy after the fall of communism. Its share was 12% in 1988; 20 years later in 2008 it had reached 25%. According to government estimates, this share in the medium-term should grow at only a moderate pace. For example, the Energy Policy of Poland until 2030 shows the share of crude oil and oil products of TPES as 26.24% in 2030 (Ministry of the Economy, 2009, *Prognoza Zapotrzebowania na paliwa i energie do 2030 roku*, p. 14).

Fig. 4: The Structure of Oil Transport Infrastructure in Poland

Source: IEA, 2011, Oil and Gas Security – Emergency Response of IEA Countries - Poland, p.8

The majority of oil on the Polish territory is currently imported through the Druzhba pipeline - specifically through its northern branch. It started deliveries to Polish territory in 1964. The diversification of imports of energy resources is a relatively sensitive long-term issue in Poland. The oil sector is viewed with less concern compared to gas. This is mainly due to the launch of Naftoport in Gdansk, which in its original form already was established in 1975. It underwent a major refurbishment in the beginning of 90's with the aim of increasing the volume of transshipment. The terminal loading capacity is 34 million metric tons. From the perspective of government strategic documents, much less attention is devoted to oil than gas. The government issued a statement concerning the relationship between energy security and the oil sector in 2002. In this document the high dependence on oil supplies from Russia was not perceived as a serious security threat compared to the previously mentioned gas sector. In the case of curtailment, the possibility of using Naftoport in Gdansk was emphasized (Ministry of Economy, 2002, *Informacja o stanie bezpecieństwa energetcznego państwa oraz działaniach podejmowanych przez rząd w tym zakresie*).

In a strategy document from 2005 (Energy Policy of Poland until 2025) the oil sector is not given much attention. A newer version of the strategic concept (Energy Policy of Poland until 2030)[15] has already paid more attention to the problem. The government calls for increased diversification of oil supplies on Polish territory due to the nature of this document. Diversification should regard both suppliers (mainly from the Caspian Sea) and transport routes (especially the support for linking Odessa – Brody- Adamów - Plock). Attention should be paid to building up strategic reserves for emergency situations (Ministry of the Economy, 2009, *Polityka energetyczna Polski do 2030 roku*).

3.1 PRODUCTION AND EXPORTS

Poland produced 0.66 Mt/year of crude oil, covering about 2.5% of Polish consumption in 2009. Oil deposits in Poland can be divided into four main areas - the Polish Lowlands (approximately 76.4% of stocks), the Baltic Sea area (about 18.6% of stocks), the foothills of the Carpathians and the Carpathian Mountains alone (1.6% and 1.5% of stocks). Total proven reserves (2009 data) are about 25.9 Mt. New deposits in the Baltic Sea and maybe even in the Carpathians are still expected to be discovered. Ac-

[15] The document of course is also an answer to the situation around the curtailment of oil supplies through Belarus in 2006. Increased emphasis on strengthening the security of the oil sector is also the result of the events around the Mažeikiai refinery. PKN Orlen bought a controlling interest in it from defaulting Jutus and from the Lithuanian government in 2006. But Rosneft stopped oil supplies to the refinery in the same year. PKN Orlen, which plans to become major regional player in this industry suffered a financial loss after this purchase.

cording to Polish State geological Institute, development of tight oil cannot be excluded. The license process takes place in a similar way as for example in the recently frequently mentioned shale gas production. The decisive authority granting the concession is the Ministry of the Environment, whose decision is based on current legislation and takes into account consultation with the Ministry of the Economy and local authorities. Most exploration licenses were held by six main companies in 2009.[16]

PGNiG had the largest share of production licenses (mainland production part) and LOTOS Petrobaltic (a subsidiary of LOTOS: it operates in the Baltic Sea). There were approximately 85 fields in operation in 2010, of which approximately 85% of the extracted oil came from the mainland - the Polish Lowland area and approximately 11% was from the Baltic Sea. Total oil production in Poland amounted to 679,000 metric tons of oil (figures from 2009). LOTOS Petrobaltic's share fluctuated around 175,000 metric tons and PGNiG extracted about 504,000 metric tons. It is interesting in this regard to mention PGNiG's target to increase the level of production to 1 Mt/y of oil annually by 2013. It would like to achieve this by development of production in western Poland in Lubiatów-Międzychód-Grotów (LMG) (*PGNiG, LOTOS Petrobaltic*).

Polish exports of oil products amounts to approximately 0.25 Mt/y and is directed mainly to neighboring countries – the Czech Republic, Denmark, and Germany (IEA, 2011, *Polityki Energetyczne Państw MAE, Polska 2011, Przegląd*, p. 127).

3.2 IMPORTS

Imports of oil products amount to 26.7 Mt/y. Imports in 2009 were mainly from Russia (94%), and on a smaller scale from Algeria (about 2%), Great Britain (about 1%) and Norway (approx. 1%). Imports of oil and oil products are carried out through long-term contracts primarily and go directly to refineries. For example, the largest refinery in the country, which is owned by PKN Orlen, purchases 85% of the volume through long-term contracts and the remaining 15% on the spot market. The second largest refinery, owned by LOTOS, buys about 70% of the volume through long-term contracts. Imports are practically all via the Druzhba pipeline (approx. 96%).

[16] The licenses for exploration of fields in Poland are held by e.g. FX Energy, RWE Dea AG, Lane Energy Poland, PKN Orlen.

3.3 USE OF OIL

The Polish refinery sector is dominated by PKN Orlen and LOTOS. There are seven refineries with a total capacity of 29 Mt in Poland. The small Trzebinia and Jedlicze refineries, which are only of regional importance, are owned by PKN Orlen. However, the PKN's biggest bargaining chip is the Plock refinery in the central part of the country, which is the largest in the country (13.8 Mt). The new refinery unit HON VII was launched in this refinery in November 2010. Its aim is to increase the production of light heating oil and diesel. At the same time unit V has undergone refurbishment - modifications to the steam boiler, etc. 90% of the oil processed in the refineries owned by PKN Orlen is REB (Russian Export Blend). The remaining oil is Brent Blend, Ekofisk, Statfjord and Polish paraffin base oils.

Tab. 11: Amount of Crude Oil Processed in PKN Orlen refineries in Poland (Mt)

	Trzebinia	Jedlicze	Plock	Total
2009	0.247	0.067	14.526	14.840
2010	0.250	0.440	14.452	14.745

Source: PKN Orlen, 2011, *PKN Orlen Annual Report 2010*, p. 28-34.

LOTOS, S.A, also has three refineries at its disposal, two smaller ones – Czechowice and Jasło, and the second largest refinery in Poland, Gdansk (10.5 Mt). The latter has undergone extensive refurbishment in recent years. The modernization labeled as 10+ increased the refining capacity of Gdansk refinery from 6 Mt/y up to 10.5 Mt/y and strengthened LOTOS' position at the same time. The goal of the company is to reduce dependence on imported diesel in particular. LOTOS refineries, as with the PKN Orlen refineries, process mainly REB oil, but a small volume is of other types: Troll, Volve and Aasgard (i.e. from offshore fields in the North Sea) (LOTOS S.A., LOTOS *Annual Report 2010*). The last and very small refinery, Glimar,[17] has been owned by the Canadian company Hudson Oil Corporation since May 2011. The new owners are restoring production at the plant, which went bankrupt in 2008.

The supply-consumption ratio shows clearly that current refinery capacity is not sufficient despite the investment in increased capacity and efficiency (it is necessary to import about 20% of diesel consumption).

[17] The Glimar refinery is one of the oldest in the world. It was established in 1885. It has been owned by the Hudson Oil Corp. since 2011, which wants to reopen it to produce gaseous fuels from natural gas and communal waste.

Tab. 12: Consumption of Oil in Poland by sector

Total Consumption	24.11	(100 %)
Transformation	2.38	(9.87 %)
Industry	4.13	(17.13 %)
Transport	14.24	(59.06 %)
- Petrol	4.15	
- Diesel oil	7.70	
- Aviation Fuels	0.44	
- Other	1.94	
Other Sectors	3.37	(13.98 %)

Note: 2007 data, in Mt.
Source: International Energy Agency, 2009g, p. III.390.

Tab. 13: Oil Refining in Poland

Total Refinery Intake	23.04	
Refinery Losses	1.38	
Total Refinery Output	21.67	(100 %)
- LPG and ethane	0.24	(1.10 %)
- Naphtha	1.40	(6.46 %)
- Kerosene	0.80	(3.69 %)
- Petrol	3.97	(18.32 %)
- Diesel oil	8.79	(40.57 %)
- Fuel oil	2.83	(13.06 %)
- Other Products	3.63	(16.75 %)

Note: Assessment of IEA for 2008, in Mt.
Source: International Energy Agency, 2009g, p. III. 390.

Increasing oil consumption in Poland reflects the increasing standard of living in the country and also the growth of the Polish economy. The increase can be observed in specific figures between 2000 and 2009 by 2.9% per annum (2000 - 19.1 Mt/y in 2009 - 24.5 Mt/y). The increase is mainly due to a sharp increase in diesel consumption (which increased in the period by 110% (from 5.1 Mt/y to 10.8 Mt/y). On the other hand, petrol consumption decreased by 14% (from 5.0 Mt/y to 4.3 Mt/y). LPG consumption reached its peak probably in 2008, when the price was sufficiently competitive. The biggest consumption by sector is in transport, which accounts for about 60% of total consumption (data 2009). In the industry and agriculture sector a decrease to about 5% of total volume can be observed in the past decade. According to the government document "Energy Policy of Poland until 2030" the consumption

of oil and oil products will increase to 31.1 Mt/y in 2030 (the already mentioned 26.24 % share of TPES) (IEA, 2011, *Polityki Energetyczne Państw MAE, Polska 2011, Przegląd*, p. 128.).

Tab. 14: Predicted Oil Consumption in Poland

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Consumption	26.75	27.25	26.25	26.5	27.55	28	28.4	28.85	29.25	29.7	30.15	30.6	30.9
% change	100	101.9	98.1	99.1	103.0	104.7	106.2	107.9	109.4	111.0	112.7	114.4	115.5

Note: consumption in Mt/y. Source: Business Monitor International, 2010, p. 16, 72. Data for 2020 are the author's estimate.

3.4 COMPANIES IN THE POLISH OIL MARKET

LOTOS, S.A.

LOTOS Group is a vertically oriented company focusing on production and oil processing. The company also focuses on the sale of oil products. It is structured as a joint-stock company whose shares are traded on the Warsaw Stock Exchange since June 2005. LOTOS Group is divided into several segments. It includes, for example, the already mentioned Gdansk refinery, as well as LOTOS Czechowice and LOTOS Jaslo (situated in southern Poland), LOTOS Petrobaltic (dealing with exploration and production in the Baltic Sea) and 14 other entities that use the label LOTOS. Two companies belonging to the group are also active abroad - LOTOS Baltija (Lithuania) and LOTOS Exploration and Production Norge AS (Norway). Both operate in the E & P segment.

Group sales amounted to 8.8 Mt in 2010, which represents a market share of 31.3%. Most of the company's shares are owned by the Ministry of the Treasury (53.19%) and the rest is freely traded on the Stock Exchange (46.81%). The privatization of company has been considered several times in Poland, and there have been both domestic (PGNiG) and foreign (TNK-BP, Rosneft and GazpromNeft,) applicants. The last attempt was a call to tender in which the government emphasized its openness to any foreign investor, but it is true that in the case of Russian investors it was cautious due to persistent energy dependence. The offer was extended to 20th December 2011. However, no investor willing to present a binding offer was found. Currently,

the sale of state shares through the stock market is being considered.
The company has been struggling with financial problems in the form of debt for the refurbishment of the refinery in Gdansk.[18] The debt ratio in the last quarter of 2011 reached €1.7 billion. This makes the further investment plans of the company significantly limited (*LOTOS S.A.*).

PKN Orlen, S.A.

This company is one of the largest in the region, focusing on oil refining. PKN Orlen owns a total of seven refineries. Three of them are located in Poland: Plock, Trzebinia and Jedlicze. PKN Orlen's foreign acquisitions include refineries in Kralupy nad Vltavou, Litvinov, Pardubice in the Czech Republic and the already mentioned Mažeikiai refinery in Lithuania. The total capacity of the company's refineries reached 31.7 Mt of oil per annum. The company also focuses on the retail network – it owns several brands of petrol stations (around 2,600 petrol stations in Central Europe). In Poland it is the ORLEN brand ("premium") and BLISKA ("economy"), in Germany STAR, and in the Czech Republic BENZINA and BENZINA Plus (again a premium brand). In Lithuania the brands Lietuva and Ventus represent Orlen. It seeks to promote the entire retail process through their own logistical infrastructure, including storage deposits.

Concerning foreign acquisitions, in the Czech Republic PKN Orlen is a 63% shareholder in Unipetrol a.s., which it directs by strategic decisions. In Germany, it owns the subsidiary ORLEN Deutschland. In Lithuania, the company wholly-owns ORLEN Lietuva (formerly AB Mazeikiu Nafta), which is one of the largest Lithuanian companies. An important part of this company is the Butinge oil terminal. ORLEN Lietuva has a dominant position in the local market, as the refinery in Mazeikiai is the only refinery in the Baltic region (LVA, LTU, EST).

PKN Orlen's shares are traded on the Warsaw Stock Exchange (WSE), where it is one of the largest companies. They are therefore part of the WIG and WIG20, as well as the fuel-WIG index. Czech assets of Orlen are traded on the Prague Stock Exchange (PSE). In 2010 for example the value of ORLEN shares increased by 35%. PKN Orlen is currently owned by the following entities: a 27.52% stake is held by the Ministry of National Property, 5.08% is held by Aviva OFE (Aviva Otwarty Fundusz Emerytalny Aviva BZ WBK), 5.01% by ING OFE and the remaining 62.4% is traded on the Stock

[18] The aim of the refurbishment was to reduce dependence on imported petroleum products. The most important innovation is ROSE (Residuum Oil Supercritical Extraction). This technology, which has been acquired from the U.S. thanks to interconnection with the purchase of F-16 fighter aircraft for the Polish armed forces. The technology makes it possible to get more valuable resources out of one barrel of crude oil - especially diesel.

Exchange. In terms of corporate management PKN Orlen made net profit of €0.34 billion in 4Q11. This result reflects both the amortization of foreign investment that decreased profits on the one hand, while on the other hand the sale of a minority stake in the Polkomtel telecommunications company at a price of €4.3 billion increased profits. Losses to the PKN Orlen group were caused by the petrochemical holding Unipetrol, which lost €0.11 billion. This loss (the worst in the history of the company) was due to fluctuating oil prices and declining margins, which fell by 80% annually (PKN Orlen).

3.4.1 Structure of Retailing

Poland, like the Czech Republic, has a dense network of petrol stations (in 2009 it was 6,700) operated by domestic companies such as LOTOS (it has about 5% of the total) and PKN Orlen (26% of the total) and by foreign entities (BP, Shell, Statoil and Lukoil). A relatively high share is held by private owners (47%). Given that the Polish media often refer to numerous cases of petrol stations closing down in recent years, it indicates that the market is saturated. The above comments imply that foreign companies in Poland are mainly operating in retail (IEA, 2011, *Oil and Gas Security – Emergency Response of IEA Countries*, p. 6).

3.5 TRANSPORT

3.5.1 Today's Infrastructure

3.5.1.1 Pipelines

Transport through Polish territory is mainly through the Druzhba pipeline and the Pomerania pipeline. These two pipelines distribute Russian oil to the two largest refineries in Plock and Gdansk, and to the German Schwedt refinery and Spergau as well.

The Polish part of the Druzhba pipeline (Przyjaźń in Polish) consists of two basic parts. (1) The eastern serves the area from Adamów (near the Belarusian border) to the refinery in Plock with a throughput of 43 Mt/y. The operator of the pipeline, PERN (a strategically important company, wholly owned by the Ministry of the Treasury, working in logistics) uses viscosity-reducing agents, which allow it to transport a larger capacity than the pipeline originally designed for. PERN plans to increase the throughput up to 50 Mt/y by the construction of the third line of the eastern part of Druzhba by the end of 2013. The western part of Druzhba connects Plock with the German Schwedt refinery, and its capacity is 27.25 Mt/y.

The Pomeranian pipeline is usable in both directions between Plock and Gdansk. The maximum volume towards Plock is 30 Mt/y, and towards Gdansk 22 Mt/y. It supplies the Gdansk refinery supply and also serves as an export pipeline to the oil terminal on the Baltic Sea shore – Gdansk's Naftoport. Due to the potential decline of Druzhba the importance of the Pomeranian pipeline will increase. For this reason, a project to build a second branch of this pipeline, which would increase transport volume, is being considered.

A part of the transport system in Poland is oil product pipelines mainly leading from refineries to storage capacities. A summary is provided in the following table.

Tab. 15: Oil Products Pipelines in Poland

Start of the oil product pipeline	End of the oil product pipeline	Throughput Mt/y
Plock	Nowa Wieś Wielka	2.1
Nowa Wieś Wielka	Rejowiec	1.4
Plock	Emilianów	1
Plock	Koluszki	3.8
Koluszki	Boronów	1
Plock	Ostrów Wielkopolski	2.7
Ostrów Wielkopolski	Wrocław	1

Source: IEA, 2011, Polityki Energetyczne Państw MAE, Polska 2011, Przegląd, p. 129.

3.5.1.2 Oil Terminals

There are three oil terminals currently operating in Poland. The largest and most important is Naftoport in Gdansk. The transshipment capacity is 34 Mt/y and 7.1 Mt was transshipped by it in 2009 (the sum of total intake and output of this terminal). The terminal is currently mainly used for the export of Russian oil. Naftoport transshipped 14 Mt in 2010 (the largest volume in history), of which about 2.3 Mt was Russian oil. Naftoport's income reached €9.5 million in 2010 (70% of this income is from transit) (Łakoma 2011).

The 2011 results were obviously not so good. There are two reasons for that, the first being that there was no transit of Kazakh oil. It is also highly likely that this reduction will not be replaced by supplies from Russia. The second reason is the opening of the Russian Ust Luga and BPS-2 in March 2012; these will apparently allow Russians to export more oil via its sea terminal and to reduce the volumes of oil trans-

ferred via transit countries. For example, Russian transport from Gdansk was reduced to 385,000 metric tons of oil in November 2011, which is less than half of what it was a month earlier. In contrast, the Primorsk oil port increased its exports to 6.3 Mt of oil at the same time (an increase of 0.7 Mt of oil compared to the previous month) (Rosja ogranicza tranzyt oil, 2011).

Naftoport partly relies on the fact that the Polish refineries repeatedly declare that they will increase their capacity (it is expected that they would actually import oil from Naftoport). LOTOS tried to import Arab oil from Kuwait at one point and oil was imported from Norway in 2010. LOTOS, also due to modernization of its refining capacity, might be the right impetus that should start the process of diversification of resources transported via Naftoport. The situation is complicated due to financial problems and the failed privatization of the company (see the section devoted to the company LOTOS) (*Naftoport ma coraz większe możliwości*, 2011). Naftoport management mentions its advantages as compared to newly developed projects: proximity to Rotterdam and an ice-free port compared to Primorsk.

Concerning ownership structure, 66.66% of shares of the oil terminal in Gdansk belong to state-owned PERN, the rest is owned by PKN Orlen (approximately 17.95% stake), LOTOS (8.97%) and minor shareholders. One of them is Port Polnocny (the port of Gdansk) with a 3.85% stake, followed by the Ministry of the Treasury with a 1.28% stake and 1.28% is owned by J&S (part of Maercuria, a Swiss-based international trading company). Therefore Naftoport's income is part of the state's income. Naftoport customers are PKN Orlen, LOTOS, and also German refineries. Naftoport has undergone refurbishment in recent years with the aim of improving transshipment, increasing volume, etc. The whole refurbishment is in conjunction with PERN plans to build storage facilities in Port Polnocny (*Naftoport Sp.z o.o.*). There are two small terminals aside from this one, which are used to import oil products. These are in Gdynia (3.5 Mt/y capacity) and Szczecin (1.5 Mt/y capacity).

3.5.2 The Proposed Projects

Pipeline Brody - Adamów — Plock

The support for linking Odessa - Brody - Plock is a result of the strategic documents of the government (such as Energy Policy of Poland Until 2030). Attempts to build this connection have lasted about 11 years. The aim of this extension should be the junction to the Plock refinery and then it should be connected with Gdansk via the Pomeranian pipeline. The whole project has had considerable support since its inception in the Polish political scene and is approved across the political spectrum. PERN

issued a statement in 2002 that the Plock – Adamow pipeline segment will be completed by the end of 2005 at an estimated financial cost of around €240 million. This pipeline segment was to be 240 km long, meeting the construction deadline was more than ambitious (including obtaining building permits, changes in land use plans and environmental impact assessment) even at the time when the statement was issued.

The history of this project is as follows. The Odessa-Brody pipeline was completed in 2002. It is 674 km long and has an annual capacity of 14 Mt. The signing of the agreement to extend the pipeline to Plock took place in 2003 between the Polish and the Ukrainian government in the presence of representatives of the European Commission. The company Sarmatia was founded based on the Intergovernmental Agreement in 2004. The main developer became the PERN on the Polish side and UkrTransNafta in Ukraine. In 2007 three new stakeholders joined the company: SOCAR, GOGC (the Georgian oil and gas corporation) and Klaipedos Nafta. The main concern of cooperation was agreement between UkrTransNafta and TNK-BP (Tyumenskaya Neftyanaya Kompaniya-British Petroleum), which signed an agreement on the reverse transport of Russian oil. The problem is also a lack of guaranteed resources which should fill the pipeline. The project is also complicated by the fact that neither of the Polish refineries is capable of handling light Caspian oil and given that complete refurbishment was finished recently this situation cannot be expected to change soon. The technology to blend oil from Russian territory with Caspian oil was mentioned several times in this context. However, this is a technology that has not yet been used.

A delay in project implementation (although the various Polish governments emphasize the need to finish the project periodically) is obviously causing complications in terms of securing funds for the project. In the framework of the Operational Programmes in Poland - particularly under the Programme Infrastructure and Environment - the sum of €119 million was secured for this project, but due to the delay in the implementation process the drawing of these funds is rather complicated.

3.6 STRATEGIC PETROLEUM RESERVES

Poland is obliged to the IEA to maintain at least 90 days reserves according to IEA regulations. In 2010 Poland had at its disposal reserves sufficient for approximately 129 days. Storage capacities are owned by companies - PKN Orlen S.A., LOTOS S.A.

and PERN.[19] The part of PERN group is OLPP - which focuses on storage services.

PKN Orlen is the owner of the largest storage capacity of former salt caverns through its subsidiary IKS Solino – it stores about 32.1 million barrels. These reserves are directly connected to Druzhba and are thus able to transport through the pipeline up to 5 Mt/y and are directly linked to refineries in Plock at the same time.

Among the planned projects in this part of the chain is a plan of PERN; it would like to increase its storage volume to 3.8 million cubic meters, especially by the construction of additional capacity in Plock, Gdansk and Adamów. OLPP has 22 facilities for the storage of oil products throughout Polish territory. Five of them, which are the most important, form a system with direct connection to the Plock refinery.[20] LOTOS and PERN are still considering building additional capacity in Western Pomerania (near Gdansk) – it should be about 38 million barrels (6 million cubic meters) (*LOTOS, PERN S.A*).

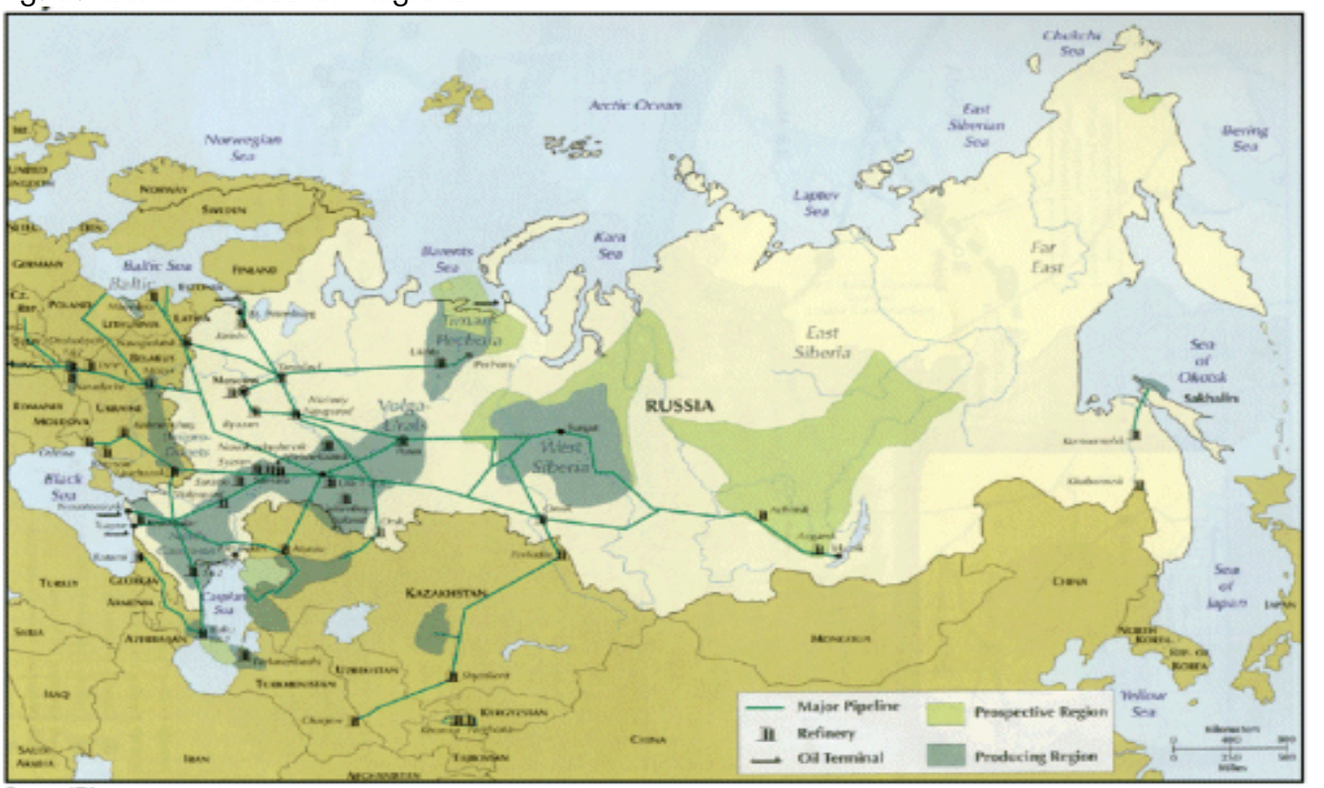
[19] PERN = Przedsiębiorstwo Eksploatacji Rurociągów Naftowych
[20] These five are located in Koluszki, Nowej Wieś Wielka, Boronów, Rejowiec Poznański and Emilianowo.

4. THE RUSSIAN OIL SECTOR

4.1 OIL RESERVES

Russia's oil reserves are the seventh largest in the world after Saudi Arabia, Iran, Iraq, Kuwait, the United Arab Emirates and Venezuela. According to the EIA the Russian proven reserves amounted to 8 billion metric tons at the beginning of 2010, and according to BP (late 2010) - 10.6 billion metric tons, which accounts for 5.6% of total world reserves (see BP, 2011; EIA , 2010).

Fig. 5: Russian Production Regions



Source: IEA

As for the largest oil deposits in progress, they are located mostly in Western Siberia: Examples include Priobskoje (the first half has been in production since 1988, the second from 1999, and total reserves are 2.5 billion metric tons), Ljantorskoje (discovered in 1965, oil reserves 2 billion metric tons, of which around 380 Mt have not yet been extracted), Mamontovskoje (production began in 1970, the original oil reserves 1.4 billion metric tons), Samotlor (discovered in 1965, reserves 2.7 billion metric

tons), etc. Western Siberia currently provides two thirds of total oil production, but reserves are gradually becoming depleted. There are promising fields in East Siberia, the Far East, the Russian part of the Caspian Sea, Sakhalin, and Yamal. The particular fields are Vankor (with 260 Mt reserves and a planned volume of production of 14 Mt/y in 2012), Trebsa and Titova, Verchnechonskoye and Talakanskoe field, Sakhalin shelf (total reserves of 394.4 Mt), also the Yamal peninsula is rich in hydrocarbons and others (see website of the Ministry of Energy of the Russian Federation).

4.2 PRODUCTION

Due to the complete collapse of the state economy, there was a sharp decline in oil production in Russia from the all-time record of 569 Mt/y in 1988 to 305 Mt/y in 1999. Significant growth in the period from 2000 to 2006 then stopped and production stabilized at a volume of 480-500 Mt/y annually (see "Doklad S.I. Shmatko po voprosu Generalnoj shemy razvitija neftjanoj otrasli na period do 2020 goda", 2010).

After a slight decline in 2008 oil production in Russia began to rise again in 2009, and has been constantly growing since then by two to three percent annually (according to BP the growth in 2009-2010 was 2.2%, while the Oil Market Report of December 2011 suggested that production in Russia this year was on average of 528 Mt/y, which is 2.8% more than in 2010) (see IAE, 2011a). Production increased especially due to Rosneft's Yuganskneftegaz, with production in the Vankor, Talakanskoje and Verchneconskoje fields (see IEA, 2011b). An influence on the growth of production and exports could have had the 'Arab Spring' in 2011, which limited the export of resources from the countries of North Africa and the Middle East.

Russia has a 12.9% share of global production today, and with production output over 500 Mt/y is one of the world's leading oil producers (see BP, 2011). The pace of oil production can be kept up by Russia for another 20 to 21 years according to BP. Much more positive forecasts are of course presented by the government office of the Russian Federation. According to energy minister Sergei Shmatko Russia is able to maintain the current pace of oil production for 40 years. The Russian government explains the difference between international and Russian statistics by saying that international research agencies have calculated the economic viability under current tax regimes. However, Russia is ready to prepare optimal taxation for oil fields to suit both investors and government. The government wants to compensate for the long-term decline in production in the traditional production regions such as the Volga-Urals region and the Khanty-Mansiysk District by increasing production in new fields in the Far East, in Eastern Siberia and in the Privolzhsky District. The increase

in production of these regions is mainly due to tax breaks according to Shmatko, otherwise the lack of infrastructure in remote regions and technological complications associated with geological and climatic conditions would make the site economically unviable (see "Doklad S.I. Shmatko po voprosu Generalnoj shemy razvitija neftjanoj otrasli na period do 2020 goda", 2010). However, it should be borne in mind that the Russian budget is highly dependent (about half) on income from the energy sector and it can afford tax relief only with rising prices of energy resources. Therefore, many tax breaks for individual fields were abolished in 2011 (for example Vankorskoje, Talakanskoje, Verchnechonskoje, Markovskoje, Alinskoje and others) because the high prices of resources should compensate investment by companies easily as was explained. In addition, the Khanty-Mansiysk regional government, the richest hydrocarbon region in Western Siberia, also announced in 2011 that it will likely limit the current tax benefits to local operators. This decision may significantly damage Lukoil and TNK-BP especially, which are actively involved in production in the region (see IEA, 2011a).

Analysis by the Russian experts Shafranik, Bushuev, Sajenko and Krjukov, on the basis of which the State Oil Sector Development Scheme till 2020 was formed, expects the growth of oil production in Russia. In 2015, Russia, as a result of constant growth in production, will be producing 514.9 Mt rising to 534.1 Mt in 2030 according to Shafranik et al. Regarding the volume of oil transported abroad by pipelines: growth is expected until 2030, and a decline in exports is expected afterwards (Shafranik, 2010, p. 34-41).

Tab. 16: Production, Refining and Export of Russian Crude Oil by Pipeline, in Mt/y

	2008	2009f	2010f	2011f	2012f	2013f	2014f	2015f	2020f	2025f	2030f
Production	488.0	494.60	498.50	502.30	506.20	510.0	512.40	514.90	527.0	533.50	534.10
Refining	236.10	235.10	235.80	236.60	237.30	238.10	240.40	242.80	254.50	277.10	299.70
Pipeline Export	240.40	249.60	252.20	255.20	258.0	264.80	267.80	270.90	271.20	266.90	257.20

Source: (Shafranik, 2010, p. 34-41).

The independent information provider Business Monitor International predicts that Russia's production, after peaking at 515 Mt/y in 2011-2012 will slowly begin to decline (see BMI, 2010). The IEA predicts a slight decline in production after 2012. The

IEA analysis, relying on data from MTOGM (*Medium-Term Oil & Gas Market*), predicts an overall decline in production in Russia from 522 Mt/y in 2010 to 516 Mt/y in 2016, while growth of production of gas condensate will be offset by falling crude oil production from 490 Mt/y to 475 Mt/y (see IEA, 2011a).

In the long-term the potential of Russia in the production of unconventional hydrocarbons cannot be neglected. Energy Strategy 2030 identifies the production of unconventional hydrocarbons as one of the priorities of scientific and technological development. According to the IEA, Russia has the third largest reserves of oil sands and heavy oil (after Canada and Venezuela) and the second largest reserves of oil shale after the USA (see "Perspektivy razvitija netradicionnyh uglevodorodov v Rossii", 2011). The share of the state in total oil production fell most rapidly in the 90s, after the first round of privatization. In 2003 the state share of production was less than 15%, but it rose gradually with acquisitions (Sibneft, Yuganskneftegaz and other Yukos assets), modernization of production technology and management improvement. As a result of this the state's share exceeded 30% of total production in just three years (see Li-Chen Sim, 2008, p. 131). In 2008 the state-owned companies extracted a total of 42% of Russian oil (see Treisman, 2010, p. 95).

Despite the relatively low share of state of the oil production, the government's almost unlimited control over external and domestic transport of energy resources provides important leverage for influencing the management of energy companies. Transneft (100% owned by the government), controls 93% of transport of oil extracted in Russia thanks to the "inheritance" of Soviet infrastructure that it controls. The remaining 7% is mostly transported by new infrastructure projects or ports: for example, Rosneft exported 1.40 Mt through the port of De-Kastri in the Far East in 2010, while Lukoil exported a total of 9 Mt outside the Transneft system in 2010 (via the Varandey terminal and Svetly port). The main disadvantage of exporting oil via Transneft infrastructure is that all the oil that is delivered into the pipeline is priced equally, although various types have a different quality and therefore a different value. A Transneft subsidiary - Transnefteprodukt is, for a change, a monopoly carrier of oil products. Generally, the attitude of the Russian government to the idea of the independent export of large quantities of energy resources was clearly indicated by its handling of Yukos, which once had ambitions to build its own export pipeline to China and the infrastructure to export oil through the port of Murmansk in the north.[21] So the key export lines remain under state control, and it is unlikely that

[21] Yukos proposed the construction of a privately financed oil pipeline from Angarsk (Eastern Siberia) to Chinese Daqing in the late 90s. Yukos intended to purchase a 50% stake in the project which would secure 50% of the pipeline's capacity for the company. Another project on independent export transportation of oil was discussed in 2002 when Yukos, together with the Russian oil majors, were

this situation will change soon.

The Russian government, relying on the advice of experts and taking into account the international predictions of a decline in production in Russia lowered its expectations of development of the oil sector. Russian Minister of Energy Sergey is expecting that Russia will produce an average of 501-505 Mt/y in 2010-2020. 230-240 Mt will be processed in Russian refineries and 260-270 Mt will be exported as crude oil (see "Doklad S.I. Shmatko po voprosu Generalnoj shemy razvitija neftjanoj otrasli na period do 2020 goda", 2010).

4.2.1 Druzhba Oil Sources

The Druzhba pipeline in fact originates in the Volga-Ural oil region. It is one of the oldest and most developed energy resource regions in the country. An overview of oil production in the country and its individual regions is provided by the following table.

Tab. 17: Production by Region (Mt/y)

Western Siberia	328.50
Volga-Ural	101.50
Northern Caucasus	40.0
Arkhangelsk	18.50
Sakhalin	15.50
Komi Republic	13.50
Krasnoyarsk	3.50
Yakutiya	3.0
Irkutsk	1.50
Kalinigrad	1.50

Source: EIA, 2010

Despite the Volga-Urals region being the second most productive in terms of production in Russia and providing around a quarter of total Russian production, the reserves are more than 70% depleted (see Bushujev, 2010, p. 44).

An issue for the region can be the size of new fields. Finding new, unique and gigantic oil fields is expected only in slightly explored regions - especially on the continental shelf and in the Eastern and Western Siberia. So although 464 new fields out

speculating about constructing a pipeline from Western Siberia to the port of Murmansk.

of 620 are located in the Volga-Urals region, 318 of them are so-called "dwarf" fields containing 1 Mt of oil supplies. Despite the unfavorable production conditions Russia still relies on Volga-Urals region in its long-term strategies. The increase in oil reserves should be 5 to 7.20 billion metric tons in the Urals region and around 1.40 billion metric tons in the Volga region in the years 2009-2030. This objective should be achieved by the Russian oil industry primarily by increasing the number of wells and their depth: an area of at least 22 million meters should be drilled in the Urals region and at least 9 million meters in the Volga region by 2030. Of course, increasing the volume of geological works will increase the costs. In the case of the Urals region, the costs of the geological exploration should nearly double. If the exploration costs in 2009 were €0.75 billion (exchange rate of 2008), the state plans to spend a total of €5.8 billion in 2010-2015, and total costs for geological exploration in 2009-2030 in the Ural region will be €23.1 billion. The investment in the Volga region will be substantially lower amounts - the total cost of the geological exploration will amount to €6.1 billion (see Bushujev, 2010, p. 42-51).

Nevertheless, the Russian government itself is expecting a decline of production in the Volga-Urals region. All of three scenarios (low, base and high) used in government strategies predict a decline in the volume of production in the region in 2010-2030. The region is currently the main resource supplying the Druzhba pipeline. According to even the most optimistic scenario, production in the Volga-Urals region will drop from 108.30 Mt in 2009 to 105.70 Mt in 2015 and 71.10 Mt in 2030. The worst case scenario is expects a decline to 105.20 Mt in 2015 and 66.10 Mt in 2030. As data shows, the Russian sources are convinced of the sustainability of production volumes in 2015, but then expect a sharp decline (see Bushujev, 2010, p. 70). The new Zapolyarnoye-Purpe-Samotlor pipeline offers some prospects for opening a new supply for the Druzhba pipeline. The project began in March 2010 and is being built more quickly than originally planned. The Purpe-Samotlor section is already complete but the major challenge is the connection to Zapoljarju, due to extremely adverse weather conditions. The Zapolyarnoye-Purpe-Samotlor pipeline will become the northernmost pipeline in Russia after completion in 2016 (see Sibnefteprovod, 2011). The aim of this project is the transport of oil from the Yamalo-Neneckogo autonomous district and also north of the Krasnoyarsk region, including the already mentioned Vankor field. The Purpe-Samotlor section has a capacity of 25 Mt/year (see Transneft, n.d.). Completion of the Zapolyarnoye-Purpe-Samotlor pipeline ensures access of oil from the new northern fields into the transport system of Russia, and thus also export of this oil through the Druzhba pipeline.

4.3 OIL REFINING IN RUSSIA

Oil refining capacity in Russia has remained stable for over last ten years and more. However, the rate of utilization of Russian refineries (with a total capacity of 280 Mt/y, 6.2% of global refining capacity) (see BP, 2010) increased from 65% in 2000 to 80% in 2005 (see Pleines, 2009, p. 80). Russian refining capacity in general is characterized by a high degree of abrasion, and the use of outdated, energy-intensive and non-environmentally friendly technology. 12 out of 27 major refineries in Russia were launched in 1950, and an additional 8 in 1960. As a result, 20 of 27 major refineries across Russia have been in service for 50-60 years. This also explains why the efficiency of refining and the proportion of light oil products in the total output of Russian refineries is very low. The average Nelson's index in Russian refineries in 2008 was only 4.45, compared to North America's 10.2, Europe's 7.8, and the worldwide average of 6.7. The largest processors of crude oil in Russia are Rosneft and Lukoil. 20 to 30 Mt of crude oil is processed by TNK-BP, GazpromNeft, Surgutneftegaz and Sistema-Invest annually. Concerning the geographical distribution of refineries in the country, around 40% of total capacity is located in the traditional producing region, Privolzsky Federal District. The largest refining volumes in 2008 were attained in refineries in Kirishi - Surgutneftegaz, in Omsk – GazpromNeft, in Nizhny Novgorod – Lukoil, and in Ryazan - TNK-BP (see Bushujev, 2010, p. 82-90).

According to the new Energy Strategy 2030, which sets out the sector's trends, the refinery capacity of Russia should grow by between 16 and 31% by 2030, which is a significant leap if we take into account the fact that the capacity has remained at the same level over the past ten years. Processing of resources should significantly grow, also according to Shafranik et al., from 236 Mt in 2008 to nearly 300 Mt in 2030. The Energy Strategy of Russia in 2030 predicts that the share of oil itself in Russia's energy mix will not rise as a consequence of gas subsidies and the interest of the state in increasing the share of coal and nuclear energy in consumption. However, in absolute values a rise in domestic oil and oil products demand in the country is predicted: consumption of oil and oil products in Russia is expected to grow from 130.6 Mt in 2008 to 144.2 Mt in 2015 and 229.1 Mt in 2030 (see Shafranik, 2010, p. 34-41). So in the case of keeping the production of resources at the level of 500 Mt Russia could experience difficulties in meeting the growing demand for oil on world markets. [22]

[22] The growth in world consumption was 3.2% in 2010 according to the IEA, the preliminary estimate for 2011 is 1.4% and the prediction for 2012 is a 1.8% growth of oil consumption (see IEA, 2011a).

4.4 OTHER ELEMENTS ADVERSELY AFFECTING OIL PRODUCTION IN RUSSIA

The state must especially address the issue of the urgent need to invest in this technologically outdated sector. The pace of introducing new technologies and innovations is too slow at present. The share of hard to access resources (heavy oil, natural asphalt) in the overall structure of resources of Russia is constantly growing. In addition, a great challenge is posed by fields on the continental shelf or the need to increase the depth of existing wells in already relatively depleted fields. New oil fields are also located in the most remote regions, where the transport, social and industrial infrastructure is absent. A total of 40-50% of Russian resources are located in fields which are already in production (see Bushujev, 2010, p 43). The actual quality of Russian reserves is declining as a result of the selective extraction of more easily accessible and higher quality (lighter) resources. According to the IEA the Russian oil sector will need investment of €243 billion in the period 2001-2030 (Locatelli, 2006, p. 1076). The state, which accounts for a major part of Russian oil production is not ready for such expenses, and so Russia counts mainly on private investment. However the problem is that less than transparent privatization, which took place in the 90s, raises questions over the ownership rights of private companies. Therefore, there is actually a constant risk of state interference in business management. In addition, the unfortunate fates of Yukos and its rival Sibneft support the concerns of investors. The politicization of energy markets and access to resources in Russia and the state share in the sector and its development also raises some concerns. Thus from 2008 only the companies in which the state owns at least a 50% stake have been able to take part in exploration or production in offshore fields (with the exception of the Caspian Sea). In addition, a further condition of participation, five years experience in similar projects, is required for the offshore projects. As a result, only Rosneft and Gazprom are now able to acquire offshore fields. Foreign investors are also discouraged by administrative delays, which are an integral part of any administrative decisions in Russia. Legislation also remains a problem (such as division of responsibility between the state and regions on the allocation of exploration and production licenses), and independence of judicial proceedings. Consequently, attracting investments is becoming increasingly challenging.

The Russian energy giants themselves have focused more on the expansion of their assets or acquisition of refineries abroad at the end of the 20th century and in the 21st century, and investment in geological exploration was underestimated. Thus, in 1993-2009 the average reserve-replacement ratio amounted to only 62%, which means that for 100 Mt of oil produced only 62 Mt of new reserves were discovered (see Bushuev, Krjukov, 2010, p. 7). However, the 21st century has been slightly more favorable in

terms of reserve-replacement. In 2000-2009 an amount of 406.2 Mt of oil produced was not replaced by new reserves. 2003-2005 was critical in terms of resource depletion, due to the rapid growth of production volume and constant pace of geological exploration conducted and in the end only the 2006-2009 period saw full reserves replacement. The Volga-Ural oil region - the source of resources for Druzhba – is currently exhibiting the best reserve-replacement ratio. However, it should be borne in mind that the best possibility for Russia to increase its reserve-replacement ratio is to reassess already exploited fields, e.g. by using modern drilling technologies (see Bushujev, 2010, p. 20).

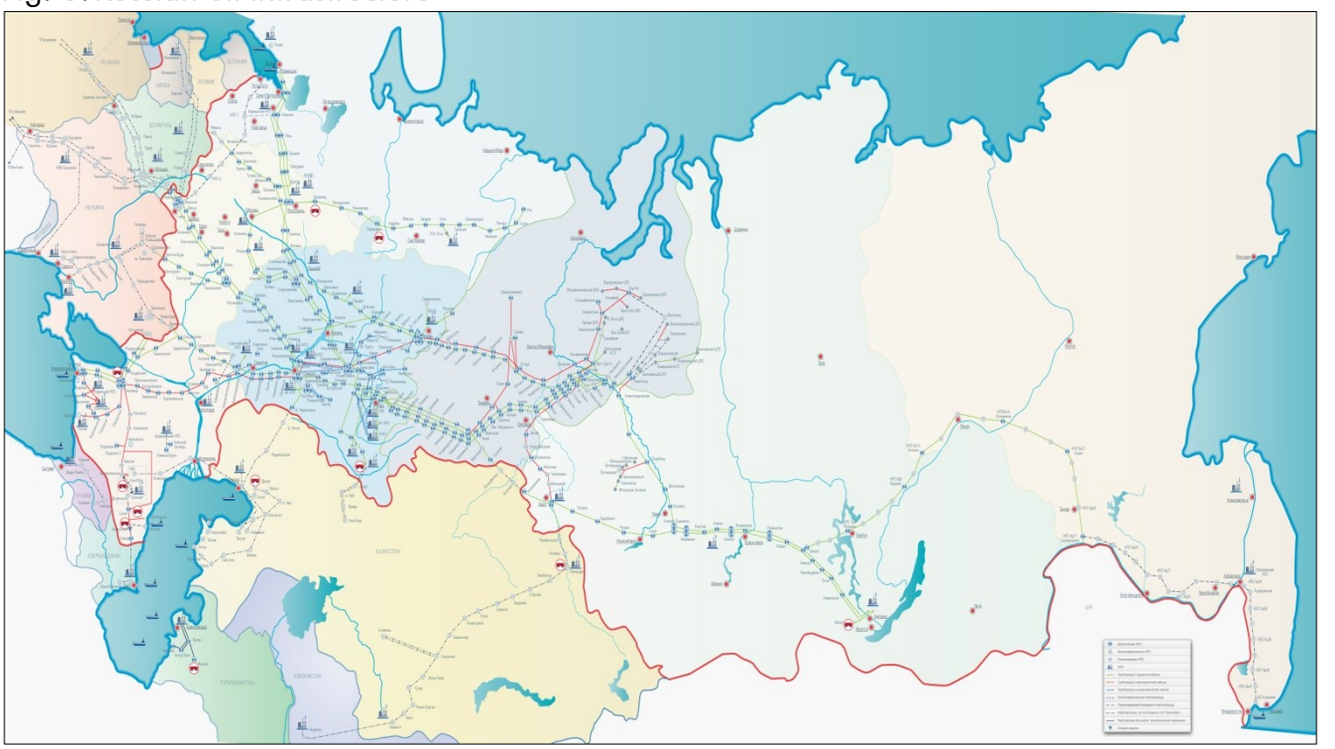
The government's response to these problems should be an emphasis on investment, in addition to the already mentioned flexible fiscal policy: between 609 and 625 billion dollars should be invested into exploration and the production of oil by 2030. Ministry of Finance announced, shortly after the release of the Energy Strategy 2030, that the Treasury can finance only 10-15% of the planned investments in the energy sector, so the rest should come from private investors.

5. RUSSIAN PRIORITIES

The Russian Federation's priorities in the oil sector can be divided into three areas: transport preferences, the preferred direction of resources exports and the planned share of crude oil in the state's total energy resources exports.

5.1 TRANSPORT PREFERENCES

Fig. 6: Russian oil infrastructure



Source: Transneft

Russian transport preferences were clearly defined in Energy Strategy 2030. The strategy has established tasks to be accomplished, among them "reduction in dependence of Russia on the transit of oil and oil products through the territories of neighboring countries" (see Energy Strategy of Russia for the Period up to 2030, 2010, p. 71). In other words Moscow strongly supports the idea of maximum possible independence of transit countries. That could lead to an increasing share of tanker transportation and active utilization of alternative oil routes (for example Baltic Pipeline System 1 – BPS 1 going from the European part of Russia to the port of Primorsk and

Baltic Pipeline System 2 – BPS 2 going from Unecha to the port of Ust-Luga), which are not through neighboring countries. That would mean that Russia is planning to rely less on the Druzhba pipeline after the construction of an alternative route independent of transit countries. Druzhba is not expressly mentioned in the Strategy, but there is a sentence about BPS' importance for Russian oil exports: "The development of export infrastructure for oil transportation will enable Russia to diversify destinations of export deliveries and reduce transit risks in the western direction. Construction of Russian sea oil terminals and port infrastructure for oil export will provide the country with comprehensive export infrastructure (from well to port) and reduce dependence on other countries in this issue" (see Energy Strategy of Russia for the Period up to 2030, 2010, p. 74). The policy of eliminating transit countries' influence on Russia is nothing new but rather a long-term strategy. The success of the projects BPS 1, BPS 2, and the ongoing expansion of the export capacities of Russian oil terminals in the Black Sea demonstrates the importance of the diversification policy to the state.

Another current example of Russian transport preferences is that of an important actor in the Czech energy market, Shell Czech Republic, whichalmost stopped using Druzhba to transport Russian crude oil to refineries in Kralupy nad Vltavou and Litvinov in the beginning of 2011. The company started to buy Russian crude oil from the TAL and IKL pipeline because the discount of several dollars on Druzhba oil that usually made it cheaper than crude oil from other sources had been withdrawn (see "Shell uz v Cesku temer nevyuziva ropovod Druzba, IKL je levnejsi", 2010). In other words Russia showed once again that it would no longer support its exports via the Druzhba pipeline at the expense of tanker transport.

BPS 1 completion was followed by rerouting of crude oil from the Latvian terminal Ventspils (8 Mt/y) to the brand new terminal in Primorsk in 2003. This example makes Central European countries dependent on Druzhba worried about the consequences of BPS 2 completion. The pipeline was completed at the end of 2011 but its launch was postponed by several months.

Skepticism about Druzhba's future operation is widespread. The Polish think-tank the Center for Social and Economic Research claims that "there is a clear trend of increasing use of the Primorsk terminal, and declining volumes transported by the Druzhba system . . . " (see the Center for Social and Economic Research, 2008). Use of another seaport terminal in Novorossijsk is complicated by the crowded Turkish Straits, so Primorsk and Ust-Luga are becoming the main outlets for Russian crude exports in a western direction. Olexandr Shevchenko – deputy director for external

relations of the Ukrainian oil transport company UkrTransNafta – is also convinced that BPS 2 will take over the volumes of the Northern branch of the Druzhba pipeline. The main argument of Shevchenko is that the new pipeline system will need crude oil and as there is no additional oil in western Russia, the operators will have to decrease the volume of crude transported by Druzhba to deliver oil through the new alternative BPS 2 system. Nevertheless, Shevchenko does not expect a complete cut-off of the Northern Druzhba, as for the time being this pipeline serves as a tool of Russian political influence on Belarus (see Shevchenko, 2011).

The Business Monitor International survey's authors are also convinced that "Once the BPS-2 pipeline becomes operational, Russia is likely to reduce supplies through the Druzhba oil pipeline"(see BMI, 2011, p. 57). At another point in the survey they also claim that the BPS 2 pipeline system will provide an alternative export route to the northern Druzhba branch going through Belarus to Poland and Germany (see BMI, 2011, s. 82). So the northern branch of Druzhba will become "the main victim" of BPS 2.

Nevertheless, the president of Transneft, Nikolai Tokarev, announced at the press conference after the inauguration ceremony of increasing the CPC (Caspian Pipeline Consortium) capacity, that the first line of BPS 2 will not use any amount of oil from the Southern or Northern branch of the Druzhba pipeline. The first line of BPS 2 will transport 30 Mt of oil from Unecha to Ust-Luga. Tokarev confirmed that this pipeline would be filled with crude exported from the terminals in Yuzhnyj (Pivdennyj), Odessa and Gdansk. Another 5-7 Mt will be redirected from BPS 1, from Primorsk, which is overloaded. Tokarev also said that export volumes eastwards are increasing; there is a surplus of export volume in the western direction (see Borisov, 2011). This surplus could mean Druzhba decreasing its exploitation as it is the less economically viable route. Besides which Tokarev said nothing about the second line of BPS 2 that will increase the capacity of BPS 2 to 38 Mt/y. This 38 Mt/y could be redirected from Druzhba.

Another of Transneft's top managers, Anatoly Demin, answered questions about Druzhba utilization raised by the completion of BPS 2 construction. In an interview with the magazine "Truboprovodnyy transport nefti", Demin said that Transneft will continue to use the Druzhba pipeline regardless of BPS 2 construction. His argument was that the volumes transported by Druzhba are too big to be redirected to BPS (see Transneft prodolzhit ekspluataciju nefteprovoda Druzhba nezavisimo ot stroitelstva BPS-2, 2011). BPS 2 begins in Unecha, the same point through which the Druzhba pipeline passes. Druzhba in Unecha is not yet divided on into southern and northern

branches, so the capacity of crude coming through the pipeline in Unecha is some 80 Mt/y. The capacity of the Unecha-Ust-Luga pipeline is 30 Mt/y in the first phase, and 38 Mt/y upon completion of the second phase (which presumably will be finished by 2013). BPS 1 is already overloaded with oil, so it cannot be counted on. To sum up, BPS 2 is not capable of transporting the current volumes of Druzhba. Some crude though could be rerouted to the Novorossijsk terminal, Russia will have to fill the ESPO pipeline supplying Asian customers with a capacity of 80 Mt/y, and besides the future of Russian oil production is uncertain. However, Demin did not mention the option of decreasing the volume of crude transported by Druzhba.

Transneft's determination to use Druzhba for exports is affirmed by new investments in the pipeline. For example, Demin noted that construction of completely new sections of the Druzhba pipeline in the west of Russia will commence in May-June 2011 (see Transneft prodolzhit ekspluataciju nefteprovoda Druzhba nezavisimo ot stroitelstva BPS-2, 2011). Still it is questionable whether Transneft is concerned about the Druzhba pipeline's condition or the future of BPS 2 as the sections they are currently building are situated in Orel and Penza. Those are two Russian cities located to the east of Unecha where the pipeline BPS 2 begins, so modernizing those parts of the internal transport corridor would positively influence the flow of crude in both Druzhba and BPS 2.

Transneft's vision of the Druzhba pipeline's future was presented during an interview with the company's vice-president Michail V. Barkov in May 2011. First of all the interviewer was interested in the technical condition of the pipeline. Barkov's answer was that despite the fact that the condition of some parts of Druzhba is questionable, the Russian part of the pipeline is under the total control of Transneft. The company is monitoring the situation, regularly changes outdated sections of the pipes and makes all the necessary repairs. Barkov also claimed that Russia will neither constrain nor temporarily or permanently cut off Druzhba. BPS 2 will just improve the logistics and energy security of Europe. In other words, BPS 2 makes Russia independent of transit countries. Barkov also added that transporting crude by BPS 2 is more financially viable than by Druzhba. But he hastened to qualify his answer with the statement that utilization of BPS 2 should not be perceived as a risk for Druzhba supply stability (see Nefteprovod Nobelja prorabotal bolshe sta let, 2011).

BPS 1 and BPS 2 are not the only alternatives for Russian crude exports. Expanding the capacity of terminal in Novorossijsk presents the opportunity to increase Russian and Kazakh oil exports. The enlargement of Novorossijsk seaport is a part of the Caspian Pipeline Consortium's plan to expand the Tengiz-Novorossijsk pipeline,

bringing Kazakh and Russian crude to the Black Sea. Expansion from current maximum capacity of 35 Mt/y to 76 Mt/y should be accomplished by 2015. However, the information about volumes of Russian oil transported by the expanded pipeline has not yet been announced.

For more than a decade, the possibility of constructing an alternative route has been discussed. The Burgas-Alexandropolis project (Trans-Balkan Pipeline) was launched by the governments of Bulgaria, Greece and Russia in the 90s. The priority goal of the project was to ensure an alternative westward route for Russian crude avoiding the crowded Bosphorus and Dardanelles straits. Crude coming from Russia and Caspian producers would be shipped through Russian Black Sea terminals and shipped by tankers to Bulgarian Burgas. From there onwards, the Burgas-Alexandropolis pipeline would assure transportation of fuel to Greece. The capacity of the planned pipeline would be 35 Mt/y in the first stage, with a further increase to 50 Mt/y (see Trans-Balkan Pipeline). The project progressed until the new right-wing government of Boyko Borisov came to power in Bulgaria in summer 2009. Since then the Trans-Balkan Pipeline project has been de facto frozen. In 2012 Bulgaria officially dropped the project. Potential environmental risks are officially described as the main reason for project delays, but experts and even officials mostly agree that this move was politically motivated (see Tsarikis, 2011). To cut a long story short, Russia is no longer relying on this project.

5.1.2 Samsun-Ceyhan pipeline project

Instead of resolving the dispute with the antagonistic Bulgarian government, Russia has shifted its attempts to another project going through the Turkish Straits – the Samsun-Ceyhan pipeline (SCP) with 60-70 Mt/y capacity.

The Memorandum of Understanding between the Russian, Turkish and Italian governments was signed in October 2009. Despite the fact that the project had been developed by Turkey all along to ease tensions in one of the world's major bottlenecks, lasting more than a decade already, the producers - Russia and Kazakhstan, were not providing guarantees of its utilization. That's why Russian participation was confirmed only after the Burgas-Alexandropolis project had been condemned, which was crucial for the commencement of actual preparation work. One of the main reasons why Russia preferred the Burgas-Alexandropolis project to Samsun-Ceyhan was that Russia had a weaker position in the latter. The Burgas-Alexandropolis pipeline project partners of Russia were easier to manipulate. Saban Kardas claims that Russia decided to change its preferences only after Moscow and Ankara agreed to develop a multi-dimensional energy partnership in oil, natural gas and nuclear power. Finally,

the partners supported eachother's main energy projects - Turkey agreed with the construction of the South Stream gas pipeline in the Turkish exclusive economic zone in the Black Sea, and the Russian part of the deal was that it committed itself to the SCP project (see Kardas, 2011).

After completion, it is estimated that SCP will reduce tanker traffic through the Straits by up to fifty percent. That's why Ankara is eager to build the SCP project to make the Straits more secure. Another important reason for the Turkish government is ensuring the status of a world energy hub in Ceyhan and generally securing an important geopolitical position for Turkey in the region. Moreover Turkey would profit from transportation of crude through SCP instead of bearing risks without revenues for tanker transport in the Bosphorus and Dardanelles.

The SCP project is owned and operated by the Trans-Anatolian Pipeline Company (TAPCO), a joint venture of Italy's Eni and Turkey's Çalýk Enerji. The two Russian state oil companies Rosneft and Transneft are expected to own a 25% stake of the TAPCO joint-venture each, by proclamation of Igor Sechin, Russia's Deputy Prime Minister and former Chairman of Rosneft (see Tsarikis, 2011).

Nevertheless, in the fall of 2011, Transneft announced a halt in the negotiations on the Samsun-Ceyhan pipeline due to its low profitability. "According to research, one ton of oil supplied under the project will cost €14 - €15, whereas transportation costs through the Turkish Straits make up €4.4 - €6 per ton"(see Center for Economic and Social Development, 2011). The third partner, Italy, is still optimistic about the project. Eni's Chief Executive Paolo Scaroni claimed in November 2011 that the Samsun-Ceyhan project is still "up and running". Scaroni added that "We need to find economic viability for the project. From the technical point of view, we are almost at the end of the studies which we needed" (see Butler, 2011). To summarize, the future of the project is unclear.

It is questionable whether Russia actually needs those two outlets for export of its crude. As it has been mentioned in the chapter about Russian production and export perspectives, Russia will not have enough oil to fill all the proposed projects, and those under construction, completely (including the 80 Mt capacity Eastern Siberia Pacific Ocean Pipeline and the recently completed BPS 2) (see Vatansever, 2010, s. 3-25).

For Russia, the importance of alternative routes from Black Sea oil terminals lies not only in diversification of its fuel exports or the attempt to bind importers by long-

term contracts but also in the possibility of dominating the Kazakh oil exports which are presumed to grow significantly in the coming decades. Russia definitely does not want to lose its status of transporter of some 80% of Kazakh oil in a time when such gigantic oilfields as Kashagan and others are coming onstream (see Socor, 2009).

5.2 PREFERENCES OF MARKETS: THE NEW DIRECTION OF RUSSIAN OIL EXPORTS – CHINA AND OTHER ASIAN CUSTOMERS

Despite the unsteady stabilization of the world economy since 2009, and the fact that predictions of its future development remain quite pessimistic, the world demand for energy resources in 2010 grew by 5%. Mainly developing countries (non-OECD members) are responsible for this growth. This trend will continue even in the future and IEA therefore predicts a 90% share of non-OECD countries on the increase of demand in the period 2010-2035. Among the states with the largest growth of energy consumption are India, Indonesia, Brazil, Middle Eastern states, and China of course (see IEA, 2011).

All the growth in demand for oil occurs in the transport sector of the rapidly developing economies, as economic growth goes hand in hand with rising demand for individual means of transport. Despite significant advances in fuel-saving in the transportation sector, world consumption will rise from 87 mb/d (4350 Mt/y) in 2010 to 99 mb/d (4950 Mt/y) in 2035 according to IEA. At the same time, the volumes and sales of automobile production will rise in the developing countries. As a result, the Asian countries (non-OECD members) will import 4/5 of their oil consumption in 2035 (it was slightly more than half in 2010). Therefore the changing of Russian energy export destination priorities is not surprising.

The Russian drive to increase exports to Asian countries can make an unsettling impression on European consumers. If in 2008 the share of the eastern direction in the total volume of Russian oil exports and production was 8%, then in the period 2013-2015 this figure should grow to 10-11%, in the period 2020-2022 Asian consumers should have a 14-15% share of Russian exports and by 2030 this percentage is to rise to a level of 22-25% according to Energy Strategy by 2030 (see the Energy Strategy of Russia for the Period up to 2030, 2010, Appendix 3)

The strategic objectives of Russia are also somewhat backed by the IEA predictions. According to the IEA, the share of China in total Russian export revenues of fossil fuels will increase from 2% in 2010 to 20% in 2035, while the EU share will drop from 61% to 48% (see IEA, 2011).

5.3 PREFERENCES FOR THE STRUCTURE OF ENERGY EXPORTS: THE SHARE OF CRUDE IN OVERALL RUSSIAN ENERGY EXPORTS

According to the new Energy Strategy 2030, which maps out the direction for oil sector development, the refining capacities of Russia should increase by 16% to 31% by 2030. That would be a significant improvement given that oil-refining capacity in Russia has remained stable for more than ten years. In particularly the refining of oil into oil products should start increasing after 2020.

Tab. 18: The forecast of phase-by-phase oil production and refining development for the period up to 2030

	2005	2008	2013-2015	2020-2022	2030
Oil production (Mt)	470,2	487,6	486-495	505-525	530-535
In (%)	100	103,7	103-105	107-112	113-114
Refining (Mt)	208	237	232-239	249-260	275-311
In (%)	100	113,8	112-115	120-125	132-150

Source: Energy Strategy of Russia for the Period up to 2030, 2010, Appendix 4.

Although the production of oil will increase according to the authors of Energy Strategy 2030 as we can see in the table above, the increase in crude oil refining is much greater. If we suppose that the Russian refineries are going to primarily refine Russian crude (note that smaller quantities of Kazakh oil are currently refined in Orenburg), the volume of crude left for export will decrease significantly.

6. TRANSIT COUNTRIES

6.1 BELARUS

Unlike other countries in the region, Belarus did not have its foreign policy strategy defined even long after achieving independence. The Foreign Policy Concept of 1993 declaring the goal of returning Belarus to Europe has not been fulfilled because of their autocratic president, Alexander Lukashenko, coming to power a year later, although he seemed to be seeking balanced relations with both Europe and Russia (expressed in the document Strategy for Belarus in 1997). The result of Lukashenko's foreign policy of the second half of the 1990s was a one-sided orientation toward Russia represented by a series of bilateral agreements,[23] culminating in the creation of the Union State in 1999. Although the agreement does not specify the practical details of the unification of the two countries into a United State, Belarus managed to gain huge profits from the related economic integration with a total worth of approximately 11-14% GDP. Through this "Belarusian economic miracle" Lukashenko's regime managed to maintain its legitimacy over a long period based on economic growth, low unemployment and stable wages paid (see Boss, Korosteleva-Polglase, 2009 p. 154-155).

Belarus under President Lukashenko's rule altered its unilateral orientation on Russia twice. For the first time in the first half of 1999, when Lukashenko, in terms of declared intentions at least, attempted to deepen cooperation with the EU and openly criticized the dominant direction of his own foreign policy. These efforts, however, ended soon after signing the Treaty on the Creation of a United State in December 1999. The second rapprochement of Belarus with the EU dates to the years 2008-2010, and ended definitely in the fall of 2010, when Lukashenko bluntly suppressed opposition protests against the process of past presidential elections, terminating Belarusian cooperation with the EU under the Eastern Partnership (see Bosse, Korosteleva-Polglase, 2009 p 154-155).

With the change in president office in Russia, also came a change in the relations.

[23] Agreements signed e.g.: the Treaty of Friendship, Good-Neighborliness and Cooperation with Russia (21st February 1995); the Treaty on a Community of Sovereign Republics (2nd April 1996); the Russia–Belarus Union Chapter (23rd May 1997); the Treaty on Equal Rights of Russian and Belarusian Citizens (25th December 1998) and the Treaty on the Creation of the United State (8th December 1999).

Unlike Boris Yeltsin, Vladimir Putin was not willing to tolerate a vague form of integration of both countries that suited Russia substantially less than Belarus. With Putin came a greater emphasis on the economic level of cooperation at the expense of the (geo)political.[24] During the first decade of the 21st century, Russian goals in Belarus were to assert control of the local economic space and energy infrastructure[25]. As the importance of energy policy in the Russian foreign policy and for Russia's state revenues was rising and Russian willingness to tolerate an asymmetric distribution of benefits from economic integration was declining, the relationship began to deteriorate.

In January 1995, Yeltsin and Lukashenko signed an agreement on a customs union that allowed Belarus to pay the Russian domestic price for energy. At the same time, negotiations on the construction of the Yamal gas pipeline were ongoing, so the Belarusian debt for gas of €317 million played a much less significant role in relations than the €148 million debt from 2004, which was together with the Belarusian negative approach to signing a new contract for 2004, the main cause for the gas crisis in February of the same year (see Bruce, 2009, p. 9). In 1996, Belarus had to decide between immediate repayment of debt for gas, or wiping off the debt in exchange for financial compensation for plutonium taken from Belarusian territory along with Soviet missiles; for damages caused by Chernobyl and in particular for providing for Russian troop units stationed in Belarus for free.

In 2001, Belarus unilaterally terminated the 1995 agreement, according to which both countries share the revenues from the sale of Belarusian oil products to Europe. Belarus benefited from cheap imports of Russian oil in contrast to the high prices of oil products on European markets. According to Vladimir Putin, the income of the Belarusian energy deals with Russia amounted to about €4.4 billion in 2007. Thus Russia participated in Belarusian budget of roughly €10.4 billion to the extent of 40% (see Boss, Korosteleva-Polglase, 2009, p. 155). It was the turn of 2006 and 2007 that was a turning point in relations. The second gas crisis demonstrated the authoritarian approach of Russia led by the belief that generous energy deals are no longer needed to maintain the political proximity of Belarus. The solution to this crisis meant the first step towards the objective set in 1993 - Gazprom has bought half of the Belarusian gas pipeline company Beltransgaz. However, as soon as the gas crisis was solved, a dispute in the oil sector followed. In late 2006, Russia refused to further subsidize the

[24] While during Boris Yeltsin's term, the Russian perception of bilateral relations was based on the premises such as historical proximity of both nations, an opportunity for restoring the Soviet sphere of power, or the role of Belarus as a buffer zone in front of Moscow, Vladimir Putin sees Russia's geopolitical power as composed of two equal and interrelated levels - economic and political.
[25] This trend, although not in such a significant manner, can be perceived since 1993.

Belarusian refineries and introduced export duty of €133 per metric ton of oil in relation to Belarus. Belarusians answered with the introduction of a special transit tax of €33.3 per ton, which was supposed to offset the impending loss. Russia refused to pay this tax and cut off the oil supply to Belarus on 8th January 2007, which in turn siphoned off oil designated for European customers. After four days agreement was reached, under which Belarus would match their duty on exports to the new Russian duty level and Russia on the other hand would reduce its duty in relation to Belarus (see Sherov, 2007, p. 123).

The existence of duties between Russia and Belarus was in conflict with the customs union signed three years later by Belarus, Kazakhstan and Russia. The Russians agreed to the abolition of the duty between the two countries, but only in relation to the volume consumed by Belarus itself. Volumes designated for refining and sale abroad were to remain subject to duty. Belarus, which until the presidential elections in 2010 tried to position itself in a better bargaining position with Russia, for example by ensuring alternative oil supplies from Venezuela, or a rapprochement with the EU, did not accept this option and proposed the complete elimination of tariffs in accordance with the rules of a customs union. It backed up its argument by mentioning the impending blackout in the Kaliningrad area, which is supplied with electricity via Belarus by Russia. The final agreement confirmed the Russian demands, so in 2010 Belarus imported 6.3 Mt of oil duty-free and about another 15 Mt, which were subject to duty. The economic loss suffered by Belarus was partially compensated for by an 11% increase in transit fees on the Belarusian part of Druzhba (see "*Russia, Belarus sign*" 2010). Practically the same situation was repeated at the end of 2010. This time, Belarus exchanged complete abolition of customs duties for the transfer of revenues of export custom duties on petroleum products to Moscow and for Russia's consent to completing the agreement on the single economic space between Belarus, Kazakhstan and Russia (see "*Russia-Belarus oil*", 2010).

In the second half of 2011, the economic crisis forced Belarus to negotiate the sale of the remaining stake in Beltransgaz to Gazprom. In November 2011 Gazprom became sole owner of the Belarusian gas pipeline infrastructure for an additional €1.85 billion and a one-year discount on gas at €86 per thousand cubic meters (thus Belarus paid €121.5 instead of €207 per tcm in 2011) (see "Gazprom acquires", 2011). At the same time it was decided on the allocation of Russian oil exports to transit via Belarus and to the newly-completed BPS II pipeline ending in the port of Ust-Luga. Compared to the previously expected 30 Mt/y to be exported by BPS II in 2012, only 10 Mt/y will actually be exported (see "Russia cuts", 2011). Therefore, the transit position of Belarus in 2012 would not change much.

6.2 UKRAINE

Ukraine is a much more important partner for Russia than Belarus. Helen Yakovlev Golani quotes Yeltsin in this context: "It is impossible to imagine Russia without Ukraine." and Brzezinski: "Russia with Ukraine is automatically an empire" (see Yakovlev Golani, 2011, p. 39). As in the case of Belarus, relations between Ukraine and Russia can be divided into several stages. During the early Yeltsin era, Russia had supported pro-Western Ukrainian politicians in the belief that it is only a temporary matter and Ukraine would soon return to the traditional alliance with Russia. Although this belief was rather a misconception than a reliable assessment of the situation,[26] Yeltsin managed, with a few gestures of friendship (solving the Black Sea Fleet problem and recognition of Ukraine's sovereignty), to ensure the denuclearization of Ukraine, to mitigate its centrifugal tendencies and secure agreement on its neutrality[27]. The long-term ambition of the Yeltsin policy towards Ukraine was integration through the platform of the Commonwealth of Independent States. During Putin's term, Russia changed its strategy and shifted from CIS, the integration potential of which expired in 90s, to bilateral cooperation among several Russian-controlled organizations. This approach, in the Ukrainian case, manifested itself through the Single Economic Space Organization (SES), which was created in 2003 specifically for Ukraine, as the other participating countries (Belarus, Kazakhstan, and Russia) were already members of other international organizations. This approach proved more effective, but only during the rule of Leonid Kuchma. The presidential election of 2004, the so-called Orange Revolution and Viktor Yushchenko's election to office marked the onset of a fundamental change in relations. Russia feared that, as Belarus became a model case of geopolitical control by Russia, Ukraine was becoming a perfect example of the fall of post-Soviet elites, including possible alteration of the international-political orientation. Concerns were raised not only of the possibility of Ukraine turning away from Russia, but also the possibility of replication of the Orange revolution scenario in Russia itself. Almost immediately after his election, president Yushchenko began intensive negotiations on Ukraine's accession to NATO. The Russian approach, with a new perception of Ukraine as a threat, also due to these circumstances became more pragmatic, more driven by national interest and less tolerant of any power ambitions of Ukraine such as the GUAM organization (Organiza-

[26] Ukraine in contrast to Belarus perceived independence not just as sovereignty but as independence of Russia as well.

[27] Article 6 of the Treaty of Friendship and Cooperation between the Russian Federation and Ukraine signed in May 1997 states that neither of the contracting parties will do anything that might threaten the security interest of the other party. Ukraine's possible accession to NATO would thus nullify the Treaty along with Russia's obligation to respect Ukraine's sovereignty and territorial integrity. (see Yakovlev Golani, 2011, p. 41).

tion for Democracy and Economic Development) (see Yakovlev Golani, 2011, pp. 44-45).

However, Energy questions were reflected in relationships, regardless of who held the key offices on both sides. The first sign of Russia's energy diplomacy took place in 1993. Russia curtailed gas supplies to Ukraine by a quarter a week before the meeting of both presidents. Officially due to the debt for gas consumed. However at the summit, Russia suggested the sale of the Ukrainian part of the Black Sea Fleet, Sevastopol's lease and the transfer of Ukrainian nuclear weapons to Russia in exchange for a discount on the said debt. Two years later, Russia proposed the accession of the Ukraine to the customs union within the CIS. It increased the price of gas for Ukraine above the level of world prices at the same time. In 1997, two more years later, Ukrainian gas debt reaching €0.74 billion had been written off in exchange for a 20-year lease of Sevastopol naval base (see Yakovlev Golani, 2011, pp. 45-46). Energy diplomacy became, in addition to the aforementioned "additional motivation to make the right decision in foreign policy matters," a powerful economic tool in the hands of Moscow after the inauguration of President Putin and President Yushchenko. The basic idea is that some states' dependence on Russian energy resources can influence their political decisions, as seen in the example of Sevastopol, so why should it not, on the principle of monopoly, bring additional income to Russian state budget too? The result of this change was the intensification of the energy crisis caused by disputes over the price of resources, or the amount of transit fees. The two gas crisis of 2006 and 2009 are well known .

However, Russian political pressure was not limited to natural gas. In May 2005, the visit of Viktor Yushchenko to the U.S. Congress moved Ukraine closer to negotiations on NATO membership (see Kuzio, 2005). The day after, oil supplies were cut off to one of two Ukrainian government-owned[28] refineries in Ukraine (see Socor, 2005). Perhaps the best indicator of relations affecting the oil sector is the Odessa-Brody pipeline.

The Odessa-Brody pipeline was proposed by the Ukrainian government in the late 1990s. Its purpose was to enable the participation of Ukraine in the transit of rising Caspian exports towards European and world markets. The pipeline was completed in 2001 and was filled with Kazakh oil early in 2002. However, it remained virtually inoperative until 2004, due to inability to interest the suppliers in the new route. Azeri producers concentrated on the Baku-Tbilisi-Ceyhan pipeline (planned and constructed between 1999 and 2005) and Kazakh exporters were convinced through

[28] The other four refineries were Russian-owned at that time.

preferential relations to support the Atyrau-Samara pipeline, which led Kazakh oil to the newly-finished Baltic Primorsk terminal. In 2001, the Kazakh quota in the Atyrau-Samara route was increased from 5 to 15 Mt/y (see "Oil Exports", n.d.). The contract ship-or-pay in 2002 mentions 17 MTY Atyrau to Samara, and only 2 MTY for the route for the Caspian Pipeline Consortium bound for the Black Sea Novorossiysk terminal (see "Oil Transit Agreement", 2002).

In July 2004, just days after the Polish-Ukrainian joint venture Sarmatia focused on the construction of an extension of the Brody-Plock pipeline, Prime Minister Viktor Yanukovych signed an agreement on reverse flow and exports of Russian oil coming from TNK-BP's Odessa terminal through the Black Sea and Turkish Straits. This despite the fact that in February of the same year, the government had clearly declared its goal to transport Caspian oil in the originally intended direction. Aside from the obvious need to put the pipeline into operation and to begin to repay the costs incurred, the upcoming October elections, in which Moscow's support for Yanukovych would come in handy, played a role here, as well as a certain need to placate the Russian side after Russian entities were excluded from the privatization of Ukraine's largest steelworks at Kryvorizhstal. However, Russia conditioned its support on a new 15-year contract on transit of oil in particular, and the contract was expected from late 2003 (see Kuzio, 2004).
In 2010, Russia rerouted part of exports of the southern branch of the Druzhba pipeline to the newly completed pipeline to the Baltic ports. Ukraine had an opportunity to reverse the flow of the pipeline once again. Belarus sought at least demonstrative diversification of oil supplies at the same time. The result was an agreement between Belarus and Venezuela on the import of 10 Mt/y in the period 2011-2013 (see *"Venezuela to Supply",* 2010), but in the first year less than a tenth of that volume was imported, and the same is expected in 2012 (see "*Belarus to continue*", 2010). Oil is delivered to Belarus through the Odessa-Brody pipeline ultimately by Azerbaijan, through a swap mechanism with Venezuela. In this context, an increase in the share of Azeri oil on the Ukrainian domestic market is also expected.

However, for Ukraine, the Odessa-Brody pipeline is mainly a transit pipeline. Poland's interest to complete the Brody-Plock extension still stands, although it is not a necessary component of the pipeline system.[29] A preliminary agreement to build the extension was also signed in 2008 by Georgia and Lithuania, in addition to Azerbaijan, Poland and Ukraine (see "*Eastern European Agreement*", 2008). Negotiations on supplying Caspian oil to Kralupy nad Vltavou, in the Czech Republic, are underway with

[29] Oil can be transported to Poland from Ukraine by the Brody-Mozyr-Adamowo pipeline (by reversing the flow in the southern branch of Druzhba, and then by its northern branch).

Unipetrol (see "*Czech Refinery*", 2011). The Central European region is currently the subject of intense interest of UkrTransNafta, according to which the combination of the Odessa-Brody pipeline and the southern branch of Druzhba is economically the most advantageous alternative for the transport of Caspian oil to Austria, the Czech Republic, Hungary, and Slovakia (assuming completion of the Bratislava-Schwechat extension). UkrTransNafta sees the Odessa-Brody pipeline as a competitive project to current routes such as TAL-IKL, TAL-AWP or Adria. Although total imports to the four countries account for about 40 Mt/y, for historical reasons their refineries, with the exception of the Czech refinery in Kralupy nad Vltavou, are set to processing Russian REB crude oil. The potential for imports of light and sweet Caspian oil is therefore very limited. According to UkrTransNafta the Odessa-Brody pipeline should compete for around 6-7 Mt/y with the above-mentioned routes.

Tab. 19: Regional refineries' potential intake of Caspian crude (Mt/y)

Bratislava	1.0
Kralupy	1.5-2.0
Litvinov	0.5
Schwechat	2.0
Szazhalombatta	1.0-1.5
Total	6.0-7.0
Total oil import of region	40.0

In the context of threats to curtail supplies via the Druzhba pipeline, the low spare capacity of the Odessa-Brody-Uzhhorod pipeline in the early stages of operation might ironically pose a problem. The Ukrainian southern branch has a maximum transport capacity of up to 20 Mt/y (see the Energy Charter, 2007, p. 25), while the current utilization is around 17.5 Mt/y. According to some estimates, investments of €192.6 million would allow the expansion of the southern branch of Druzhba and installation of *batching* technology[30], so this route might supply the entire volume transported by the Odessa-Brody pipeline beyond its current capacity. However, other sources (see DG Energy, 2010, p. 20), indicate the capacity of the Ukrainian branch of Druzhba to be 27 Mt/y, which would be sufficient for current and potential transit of Caspian oil via Odessa-Brody simultaneously. Under certain circumstances, the absence of batching technology might not be a problem, since both the Ukrainian and Slovak parts of Druzhba consist of two parallel lines (720 and 530 mm diameter in Ukraine, respectively 700 and 500 mm in Slovakia, see the Energy Charter, 2007, p.

[30] Batching is a technology of transporting various types of oil at the same time, by same pipeline, without mixing them.

25; Transpetrol, n.d.). Therefore, it would be possible to allocate a smaller line for Caspian oil, in the same way as the Ukrainians are supplying Belarus now, and to transport it to the Czech Republic. Batching technology has been implemented in the Czech part of Druzhba – it is used to transport Moravian oil for processing.

A matter of dispute, hindering the possibility of establishing this competing pipeline route to Central Europe, is the stance of Slovakia. Test transport had been planned since 2008. The latest news is that the first 300,000 metric ton test should take place at the end of 2011, possibly in the first months of 2012. As of 10th February 2012 nothing had happened yet. The meeting of Czech, Slovak and Ukrainian representatives of the state and private sector should take place on February 15th, which should resolve the final problems of the issue of Caspian oil in Druzhba as the Czech Ministry of Industry and Trade hopes (see "*Ukraine, Czech Republic*", 2011). The greatest pressure on performing the transport test was apparent in 2008 at the end of President Yushchenko's political career. The governments of Slovakia (at that time owning 51% of Transpetrol, but lacking managerial rights), the Czech Republic and Ukraine, as well as operators of pipeline systems were taking part in negotiations at that time. The hesitancy of Transpetrol can be viewed in different ways - Yukos, a minority shareholder with managerial rights, was preventing the penetration non-Russian oil to Central European markets. However against this argument is the fact that Yukos intended to sell its stake at the time and there is no doubt that a successful transit test would increase its value. Another reason might have been pressure from Slovnaft, respectively MOL. According to some indications, Transpetrol did not want to decide on the matter without the consent of its major customers. These are Ceska rafinerska, which, of course, would not oppose its own project and Slovnaft owned by Hungarian MOL, which opposes the connection of Bratislava-Schwechat, since it would allow its competition (Austria's OMV operates the Schwechat refinery) direct access to potentially cheaper oil and transport routes. The combination of connecting Bratislava and Schwechat and a choice from two types of oil delivered via a new competitive route for OMV would probably be the least preferred option for MOL.

Furthermore, Transneft announced it would not guarantee uninterrupted flow and quality of oil supply through Southern Druzhba if the batch trial was carried out.

Tab. 20: Russia's relations with Belarus and Ukraine

	Belarus	Ukraine
Politics	Culturally most alike out of former Soviet states Most probable target of Russian power/territorial expansion Convenient (isolationist) regime	Geopolitically-sensitive region (Russian buffer zone in front of Moscow) Access route to traditional sphere of influence (Balkans, Central Europe) Russian Black flee anchors in Ukraine, Sevastopol Numerous Russian speaking minority, support for Russia
Past oil contracts affected by:	Price and transit of natural gas Sale of infrastructure Export of oil products EU-Belarusian relations Integration with Russia (customs union) Supplying of Kaliningrad region with electricity	Price and transit of natural gas Ukraine's relations with EU and USA Preferential relations with Kazakhstan and Russia Ukrainian presidential elections Success of Russian entities in Ukrainian privatization

7. DRUZHBA: ROLE AND POSITION OF THE EUROPEAN UNION

The aim of this section of the study is to answer the question of to what extent the EU can influence the situation around the Druzhba pipeline. We are going to assess whether the EU can (and wants) to play an active role in relation to this pipeline, or whether we can leave the EU as a major player out of further debate on Druzhba.

This section is divided into several parts. The role and importance of oil itself in Europe, respectively in the European Union, is presented to place the issue in context. There follows a definition of how the EU sees itself in relation to the management of the oil sector in Europe - here we use interviews with representatives of the DG of the European Commission, the formal documents, the overall impression that these documents express, and the evaluation of experts on this issue. Then we will analyze in detail the legal and financial instruments the EU uses in the oil sector. Subsequently, we try to determine to what extent they are relevant in the case of the Druzhba pipeline. Finally, we evaluate the information and emphasize the general trends that it implies.[31]

7.1 THE POSITION OF OIL IN THE EU'S ENERGY SECTOR

"If climate, transport and energy efficiency policies remain as they stand today, oil would be expected to represent 30% of primary energy, and a significant part of transport fuels are likely to remain oil-based in 2030" (see the European Commission, 2010, p.7). As is evident from this quote from "Energy Infrastructure Priorities for 2020 and beyond", despite the growing attention given to natural gas and renewable energy sources, oil remains a key source of energy for the European Union. With a 37% share of energy consumption it is used more than any other source, and is also absolutely indispensable in road transport. Although the degree of dependence of individual EU countries on imported oil varies (see the chart below), with the excep-

[31] This section is not dealing with the external (diplomatic) dimension of EU activities. This follows the logic of the study, which focuses primarily on the possibility of solution of the impact of any oil supply curtailment on EU soil. Although the European Union, of course, with the Russian Federation as a supplier and with Ukraine and Belarus maintains busy diplomatic contacts and has some limited tools to intervene in local decision-making, we see its potential in the case of Druzhba to be very limited. The EU can help in the short-term, politically motivated cut off or curtailment of deliveries, the chance to convince these countries on long-term use of a given transport channel advantageous for European countries is unreal.

tion of two countries (Denmark and partly the UK), it is always relatively high. With declining production within the EU, the reliance on oil imports from third countries is increasing, while roughly a third of imports come from Russia. It is therefore apparent that the occasionally mentioned end of the oil era and its replacement by natural gas will still take some time.

However, it is not correct to look for direct link between the significance of oil for EU countries and the level of activity of the EU in the oil sector of these countries. In contrast, as we will see in the following pages, oil and oil security is a rather marginal topic in the EU.

Tab. 21: Energy dependency of the EU and its members (%)

	1999	2005	2006	2007	2008	2009
EU 27	72.9	82.3	83.5	82.4	84.1	83.5
Belgium	96.6	100.8	100.8	97.4	98.8	95.0
Bulgaria	94.0	101.9	98.6	100.0	98.7	101.3
Czech Republic	95.0	97.5	96.8	96.2	97.4	96.5
Denmark	-47.0	-103.8	-86.5	-66.4	-49.5	-55.2
Germany	93.9	97.0	95.3	94.1	95.3	95.2
Estonia	80.5	69.4	75.2	73.0	64.1	64.3
Ireland	101.0	99.7	101.1	97.0	99.7	99.2
Greece	95.3	97.7	101.2	100.9	101.2	96.8
Spain	100.2	101.2	100.8	99.7	100.4	98.9
France	96.5	99.4	98.5	97.8	97.6	97.6
Italy	94.8	91.7	92.6	92.4	91.1	91.6
Cyprus	103.9	102.3	104.2	98.6	100.1	99.9
Latvia	83.5	102.4	102.4	98.6	100.1	99.9
Lithuania	86.3	92.0	97.0	94.4	92.5	90.1
Luxembourg	97.8	99.4	101.0	98.8	100.2	100.1
Hungary	75.3	81.3	78.9	82.3	80.7	78.0
Malta	109.5	100.0	100.0	100.0	100.0	101.8
Netherlands	90.1	97.1	95.7	92.4	97.6	97.1
Austria	91.0	91.6	94.6	91.4	92.9	90.6
Poland	95.4	97.4	99.5	104.4	95.9	98.0
Portugal	101.7	102.3	97.9	98.8	102.1	98.3

Romania	34.6	38.1	43.7	51.2	51.5	51.6
Slovenia	97.5	101.3	97.8	98.9	101.7	98.3
Slovakia	95.9	88.4	94.6	90.4	90.9	88.0
Finland	94.5	98.8	99.8	97.8	100.6	98.6
Sweden	94.8	103.8	99.4	99.1	102.6	101.7
United Kingdom	-65.6	-3.0	8.6	0.7	8.7	8.6

Source: Eurostat, n.d. on-line: http://epp.eurostat.ec.europa.eu/portal/page/portal/energy/data/main_tables

7.2 THE EU'S PERCEPTION OF THE OIL SECTOR AND OIL SECURITY

The way the EU sees the oil sector, is implied by the following characteristics:

The oil market can be described as flexible, globalized and relatively competitive. A large number of suppliers operate in it, transit is provided substantially by oil tanker transport, which is able to supply the resource to any port in the world due to minimal transport costs. Due to these facts (security) risks related to problems in suppliers or transit countries are suppressed and there is the possibility of alternative supplies for consumer countries.[32]

The oil supply chain consists of a limited number of players, especially on the consumer side. There are only a few refineries, set on a particular oil blend, which they process long-term. This severely limits debate on the liberalization of the market on the principle of third party access, as can be seen in the natural gas sector. The adaptation of refineries to an alternative source means increased costs (and decreased competitiveness), so the idea of producers competing with their supplies for sale to refineries then makes no sense.

From the EU's perspective the oil sector in principle operates satisfactorily. Security issues are addressed by the market itself, which is able to provide an alternative supply in the case of protracted disruption. Oil does not become an issue even in relation to the building of a common energy market, as it is not too meaningful to insist on competition in the case of crude oil, which has different characteristics from blend to blend and is not simply interchangeable. It is, of course, different with the

[32] However, there are certain aspects of the oil market that contradict this perception. The conversion of processing plant is not common, fast or low-cost thus the supplies are steady (though on the basis of short term contracts). Fuel market is also not flexible and it does not react to price spikes (not at all in the short term). Alternative supplies are possible but for landlocked countries such as the Czech Republic or Slovakia it might be very difficult to secure them.

standard oil products, where maximum competition is desirable. However, this is covered by the rules of the EU common market.

The clearly expressed opinion of an unnamed representative of the Commission during an interview during research on the issue at EU level was: *"... there is no systematic error in oil requiring attention. And hence there is no reason for the EU to intervene."*

However, despite the above information, there are some areas in which the EU intervenes in EU oil issues. These are primarily legislative and financial instruments.

7.3 LEGISLATIVE INSTRUMENTS

7.3.1 Strategic Oil Reserves

The European Union has required member states to maintain reserves of crude oil and petroleum products in the form of strategic reserves since 1968. This requirement, gradually harmonized with the rules and set up of the IEA system of oil reserves, is considered the most effective tool for ensuring the strategic dimension of oil security.

The main legislative act regulating this obligation is Council Directive 2006/67/EC, which, however, will be replaced by Directive 2009/119/EC from 31st December 2012. It clarifies the rules regarding the use of the crisis mechanism of these reserves, the method of its storage and record-keeping, stresses the cooperation of several member countries to maintain these reserves, and defines the central stockholding entity (CSE). States continue to provide a total level of oil stocks corresponding to 90 days of average daily net imports or 61 days of average daily inland consumption, whichever of the two quantities is greater.

Tab. 22: Strategic oil reserves

	EU25		The Czech Rep.		Poland	
	Days	1000 t	Days	1000 t	Days	1000 t
Motor spirit and aviation fuel of gasoline type	124	282,850	112	525	129	1,416
Gasoil, diesel oil, kerosene and jet fuel	106	877,430	106	1,145	114	3,974
Fuel oils	306	184,820	164	97	397	473
Total	120	1,345,100	110	1,767	124	5,863

From the perspective of the Czech Republic and Poland both countries are very well secured. However, some differences can be observed in the way in which Prague and

Warsaw manages their oil reserves.

The Czech Republic, until recently, exerted direct control over the strategic reserves, including the financing of these reserves. The Administration of State Material Reserves was in charge and it ensured storage or reserves at MERO (oil) and CEPRO (oil products). Only in 2011, did the government make an attempt to modify this system - in future the reserves are to be divided into two categories. The first (referred to as "required reserves"), arising from EU legislation on mandatory reserves for 90 days, will continue to be financed from the state budget, while the second part of the stocks, designated as "strategic reserves" will be made only of oil products (today the ratio of oil and oil products in stock is 50-50%) and its creation will be financed by additional taxation of oil products. The costs will be thus covered directly by the end customer in the form of increased prices of petrol, diesel and so on. The fee will be 0.56 euro cents per liter of fuel, effective from the beginning of 2013 and reserves should be amassed until 2022 (see "*Česko zvýší*", 2011).

In Poland on the other hand, the state, respectively the State Material Reserves Agency, directly provides only 14 days of reserves, and companies, although mostly owned by the state, are obliged to provide for the rest. A similar practice is common in countries like Austria, Greece, Italy and Switzerland, where the companies are even obliged[33] to hold the mandatory reserves in full (see *"Zvýšení strategických zásob,* 2011).

Another difference between the two countries is the rate of cross-border cooperation. The Czech Republic has concluded bilateral agreements on the possible storage of oil and oil products with Germany (in terms of storage of Czech products in Germany) and with Slovakia (in terms of storage of Slovak products). Poland, in contrast, directly restricts the physical possession of strategic oil reserves outside its territory.

From the perspective of European Union, the strategic oil reserves are a key element of energy (oil) security of members. Due to a functioning and liberalized oil market, where long-term disruption of supplies is not expected, reserves have a significant stabilizing role and provide member states with an effective defense against short-term disruption. It is obvious that this area will continue to be emphasized and favored by Brussels.

[33] In contrast, only in the Czech Republic and Slovakia, the state manages all the reserves. See Proposal for a Directive of the Council imposing an obligation on member states to maintain minimum stocks of crude oil and/or petroleum products.

7.3.2 Oil Licensing

In the context of creating a common EU energy market and in order to liberalize the EU energy sector, the legislation also regulates the licensing process. In order to establish common rules, " ...which guarantee non-discriminatory access to the activities of prospecting, exploration and the production of hydrocarbons." (See Europa Summaries of legislation, n.d.).

A key legislative act is The Hydrocarbons Licensing Directive (94/22/EC), the primary goal of which is to make the licensing process more transparent, more open to competition and publicly controllable. However, it must be mentioned that the essential emphasis on the possibility of foreign entities entering into competition is subject to the principle of reciprocity. Consequently, in order for a company to be able to enter competitive bidding for a license in any EU member state, its home country has to do the same in return.

However, from the perspective of our research questions, this part of the EU's activities related to oil does not have much significance, so it will not be explored further.

7.3.3 Offshore Oil (and Gas) Platform Standards

"Today, most oil and gas in Europe is produced offshore, often in harsh geographical and geological conditions. Given our growing energy demand, we will need all the oil and gas from beneath our seas. But we need to prevent accidents like Deepwater Horizon in the Gulf of Mexico from happening. Securing best industry practices in all our offshore operations is an undisputable must. Today's proposal is a crucial step forward towards safer offshore activities to the benefit of our citizens and our environment." in this way, the new draft EU legislation treating the safety of offshore oil and gas installations was presented by Energy Commissioner Gunther Oettinger.

He emphasized the fact that roughly 60% of gas and 90% of oil production in the EU (including Norway) comes from offshore production. It impacts thirteen member countries (486 offshore installations are in the UK, 181 in the Netherlands, 123 in Italy, 61 in Denmark, 7 in Romania, 4 in Spain, 2 in Germany, 2 in Ireland, 2 in Greece, 1 in Bulgaria), and Poland, in whose waters there are three oil installations. The above legislation is largely based on the Deepwater Horizon accident in the Gulf of Mexico and follows the long-term trend of increasing environmental and other production safety in the EU.

The proposal for regulation of safety of offshore oil and gas prospecting, exploration

and production activities aims at the revision and EU-wide standardization of production licensing, preparation of emergency plans, inspections and monitoring of these plans, etc. In the event of its successful adoption by the Council and Parliament it will come into force in 2014 for existing production installations and there will be a one-year transition period for planned installations (see *"Commission proposes"*, 2001).

However, from the perspective of our research on Druzhba pipeline issues, not even this part of the EU's activities related to oil has much significance, so it will not be explored further.

7.3.4 The Role of Legislative Instruments in the EU's Oil Sector

This brief insight into the EU's powers in the oil sector clearly shows what the priorities of the EU are. In terms of security of supply, the key tool is maintaining strategic oil reserves, which serve as a buffer against short-term supply disruption, whether due to natural causes, technical difficulties, military-security issues or political decisions. The remaining activities are then concentrated more on unifying the standards of individual countries in areas such as safety, environmental protection, the promotion of the principles of a common (energy) market, public awareness and public scrutiny.

At the same time, there we are no indications suggesting, that the range of powers could be extended. Although the EU has initiated and adopted a regulation in the gas sector, directly requiring security of supply to protected customers, and thus putting pressure on the construction of gas pipelines, ensuring reverse flows, reservoirs, etc., a similar scenario in the oil sector cannot be counted on. There is a lack of political will not only among officials in Brussels, but also between the member states to at least debate a similar step (with a few exceptions, especially Poland).

7.4 FINANCIAL INSTRUMENTS

In addition to legislative instruments, of course, the European Union also has financial instruments, e.g. directed to energy infrastructure, or to necessary funding for research and development projects. The Czech Republic and Poland as well have benefited from these funds, although mainly in infrastructure construction for natural gas or electricity. The question therefore is to what extent EU funds can be obtained for projects related to the Druzhba pipeline.

The following lines introduce and summarize the basic financial instruments by

which the EU supports the energy sector.

7.4.1 Trans-European Energy Networks (TEN-E)

TEN-E has been in formation since the 90s; in 2006 it received an additional impetus in the context of Decision 1364/2006/EC. Even after the related adjustments, it operated with a relatively limited budget of about €22 million annually, with a total of €155 million for the period 2007-2013 (see *Report from the Commission*, 2010, p. 4).

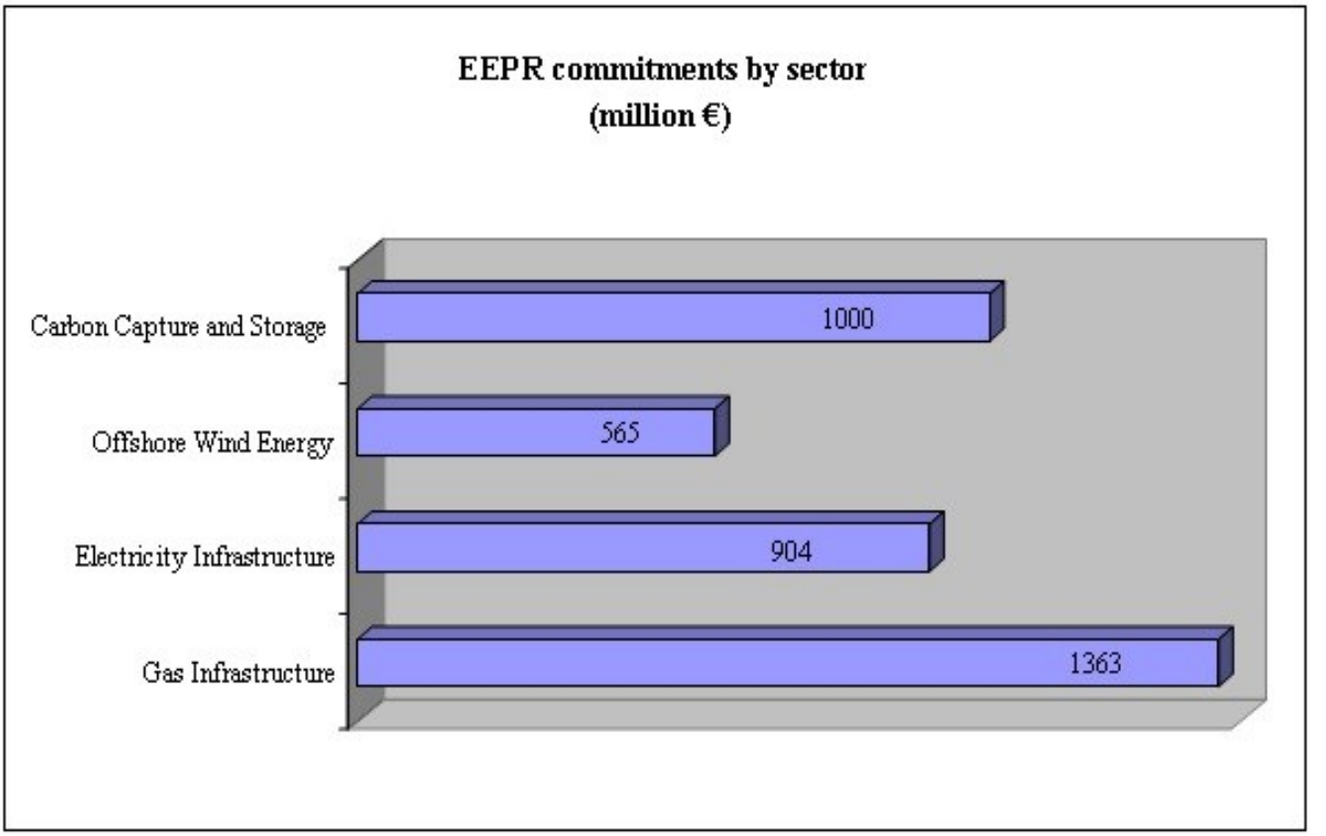
However, there are several obstacles to be overcome in order for this tool to really be an effective support for the stated goals. First of all, there is the already mentioned limited budget, fragmented into a huge number of projects. The Commission Evaluation Report of 2010 mentions 550 projects placed in one of three priority levels of TEN-E. Realistically, of course, the financial support was awarded only to some of them, but even so, we see too many candidates for too small an amount of funding. It should also be noted that support is directed mainly to feasibility studies and other studies related to the project (up to 50% of costs), while the project itself can be supported only up to an extent of ten percent. While in most cases not even this limit is anywhere near being reached. The last weakness in the context of this section is that although the rules of TEN-E, in principle, enable involvement of oil transport projects, TEN-E supported only the natural gas and electricity sectors.

In any case, it should be noted that the inclusion of this or that project in TEN-E means an improvement of the chance to gain resources from other EU instruments. These include the European Investment Bank, which supported projects to the tune of €2.561 billion in the gas sector and €3.407 billion in the electricity sector in the period 2007-2009 (see *Report from the Commission*, 2010, p. 5). Similarly, it increases the chance to use Structural Funds, Instruments of Pre-accession Assistance (IPA) and European Neighbourhood Policy, RTD Framework Program. Of these, the most promising are Structural Funds, which supported TEN-E projects with almost €700 million in the period 2007-2009.

7.4.2 The European Energy Programme for Recovery (EEPR)

This tool was created in 2009 as a response to the current financial crisis; it was established by Regulation 663/2009. The aim was to co-finance a selected portfolio of energy projects in energy infrastructure, offshore wind energy and carbon capture storage. Due to the urgent form of this program it was possible to allocate 96.3% (€3.8 billion) of the funds by the end of 2010 in the form of commitments to 59 selected projects.

Fig. 7: EEPR Commitments by sector



Source: Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the implementation of the Trans-European Energy Networks in the period 2007-2009.

It is obvious that even this program supports projects unrelated to oil, in addition its time-limited nature, which excludes its application in relation to Druzhba.

7.4.3 Multiannual Financial Framework 2014 – 2020

In terms of the Financial Perspective for 2007-2013 coming to an end and the up-coming Multiannual Financial Framework 2014 – 2020, the topic of financial support for the energy sector has returned to the spotlight. This is for obvious reasons, since the current systematic promotion through TEN-E has proved very ineffective and the EEPR had only a limited character. In connection with the increase in importance of energy sector itself, intensive discussions were held on how the new financial perspective should support this sector.

The first specific indication of where this support is going and of what nature it will be was the issue of the communication "Energy 2020 - A Strategy for Competitive, Sustainable and Secure Energy" (Energy 2020) on 10th November 2010. It determines priorities for the next 10 years on a general basis and calls for their implementation

in legislative initiatives.

Energy 2020 states that it is necessary to invest approximately €1 trillion in the EU's energy sector in the coming years – mainly in production and infrastructure. The text itself then mentions five priority areas that should be addressed:

1) Achieving an energy-efficient Europe
2) Building a truly pan-European integrated energy market
3) Empowering consumers and achieving the highest level of safety and security
4) Extending Europe's leadership in energy technology and innovation
5) Strengthening the external dimension of the EU energy market

The most interesting point for the purpose of this study is priority area two, focused on the construction of pipelines and transmission networks. Here there is a distinct emphasis on natural gas and electricity, without much mention of oil pipelines. In any case, here the European Commission highlights two areas in which more significant activity of the EU needed – simplification and speeding up of procedures for the construction of projects of European interest as well as setting up long-term support and a financial framework. In both cases, the Commission has announced issuing of legislation addressing these issues.

This comes in the form of two brand-new documents. Mainly it is the plan called "Connecting Europe Facility" allocating €50 billion in the following financial perspective 2014 – 2020 to strengthen the European network, which has €9.12 billion at disposal for energy projects. Secondly, it is the Proposal for a Regulation on "Guidelines for trans-European energy infrastructure," which deals more with the formal aspect of the matter: the selection of projects to support, defining priorities, etc.

7.4.3.1 Connecting Europe Facility

The European Commission published a plan to invest €50 billion in enhancement of transport, the energy sector and digital networks on 19th October 2011, out of which only the amount of €9.12 billion is devoted to energy sector. The entirety of projects supported in this way is to be known as the European infrastructure package. The document notes that several priority areas/projects will be defined, which will be provided with financial assistance and assistance in the form of streamlining of permit granting procedures.

The specific financial instrument arising from Connecting Europe Facility should be the Common Infrastructure Funding Instrument. That is an instrument with central

management, a common committee, flexibility between sector budgets and coordinated annual work programs. The "Facility" will cooperate with other funds and institutions such as the EIB, Cohesion and Structural Funds and others.

In functional terms of funds allocation, "Facility" emphasizes the effort to attract private funds to complement those of the EU. There are two means of support:

Equity participation in equity funds which provide risk capital to actions contributing to projects of common interest,

Loans and/or guarantees to projects of common interest facilitated by risk-sharing instruments, including an enhancement mechanism for long-term bank lending and for project bonds issued by project companies (see *"Communication from the Commission,* 2011, p. 7).

The draft of the Directive itself, which sets up "Facility", specifies some pre-identified projects afterwards. Projects in the energy sector are as follows:

Tab. 23: Connecting Europe Facility: List of Infrastructure Priority Corridors and Areas in the Field of Energy

	Objective	Member states concerned
1. Northern Seas offshore grid ("**NSOG**")	Developing an integrated offshore electricity grid in the North Sea, the Irish Sea, the English Channel, the Baltic Sea and neighboring waters to transport electricity from renewable offshore energy sources to centers of consumption and storage and to increase cross-border electricity exchange	Belgium, Denmark, France, Germany, Ireland, Luxemburg, the Netherlands, Sweden, the United Kingdom
2. North-South electricity interconnections in South-Western Europe ("**NSI West Electricity**")	Developing interconnections between member states of the region and with Mediterranean third countries, notably to integrate electricity from renewable energy sources	Belgium, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Malta, Portugal, Spain, the United Kingdom
3. North-South gas interconnections in Western Europe ("**NSI West Gas**"):	Increasing interconnection capacities for North-South gas flows in Western Europe to further diversify routes of supply and increase short-term gas deliverability	Belgium, Ireland, Luxembourg, France, Germany, Italy, Malta, the Netherlands, Portugal, Spain, the United Kingdom
4. North-South electricity interconnections in Central Eastern and South Eastern Europe ("**NSI East Electricity**"):	Strengthening interconnections and internal lines in North-South and East-West directions to complete the internal market and integrate generation from renewable energy sources	Austria, Bulgaria, Czech Republic, Cyprus, Germany, Greece, Hungary, Italy, Poland, Romania, Slovakia, Slovenia
5. North-South gas interconnections in Central Eastern and South Eastern Europe ("**NSI East Gas**"):	Strengthening regional gas connections between the Baltic Sea region, the Adriatic and Aegean Seas and the Black Sea, notably to enhance diversification and security of gas supply	Austria, Bulgaria, Czech Republic, Cyprus, Germany, Greece, Hungary, Italy, Poland, Romania, Slovakia, Slovenia
6. Baltic Energy Market Interconnection Plan in electricity ("**BEMIP Electricity**"):	Developing interconnections between member states in the Baltic region and reinforcing internal grid infrastructures accordingly, to end isolation of the Baltic States and to foster market integration in the region	Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, Sweden
7. Baltic Energy Market Interconnection Plan in gas ("**BEMIP Gas**"):	Ending the isolation of the three Baltic States and Finland by ending single supplier dependency and increasing diversification of supplies in the Baltic Sea region	Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, Sweden
8. Southern Gas Corridor ("**SGC**"):	Transmission of gas from the Caspian Basin, Central Asia, the Middle East and the East Mediterranean Basin to the Union to enhance diversification of gas supply	Austria, Bulgaria, Czech Republic, Cyprus, France, Germany, Greece, Hungary, Italy, Poland, Romania, Slovakia, Slovenia

Source: Proposal for a Regulation of the European Parliament and of the Council establishing the Connecting Europe Facility.

Again, the emphasis on renewable energy and electricity transmission and also on natural gas is very strong.

7.4.3.2 Guidelines for trans-European energy infrastructure

Based on the above mentioned strategy Energy 2020, on 19th October 2011 the European Commission issued a draft regulation "Guidelines for trans-European energy infrastructure." The regulation should ensure that 12 defined energy corridors and priority areas, which it mentions, will be put into operation by 2020. It also specifies "projects of common interests" (PCIs) for the construction of buildings contributing to those corridors. PCIs should have the opportunity of EU funding and streamlining permit granting procedures.

From a financial perspective, the draft refers to the already mentioned Facility, but it rather addresses the definition of those priority areas and projects.

The European Commission estimates, with reference to the "report to the June 2011 Energy Council", that the total needed investment in projects of European Importance in 2020 is about €200 billion - about €140 billion in electricity transmission systems, storage and smart grids, €70 billion on high pressure gas transmission pipelines, storage, liquefied/compressed natural gas terminals and reverse flow infrastructure, and €2.5 billion for carbon dioxide transport infrastructure (see *"The Commission's Energy* " n.d.).

The draft therefore sets rules for how to identify Projects of common interests (PCIs), which are necessary to implement these priorities, among the 12 mentioned areas. The selection process is then based on regional expert groups and the advisory role of the Agency for the Cooperation of Energy Regulators (ACER) in electricity and gas, and a final decision should be adopted by the EC afterwards. The draft also establishes a regime of common interest for PCIs, giving particular responsibilities to one national competent authority within each member state to coordinate and oversee the permit granting process for PCIs (a 'one stop shop' that integrates and coordinates all permit granting procedures). PCIs can be implemented under certain conditions for reasons of "overriding public interest" as defined in Directive 92/43/EC and 2000/60/EC. Also, they should be given "priority status" at national level.

PCIs should be able to obtain financial assistance for studies and, under certain conditions, grants in the form of innovative financial instruments. (However, the proposal mentions only gas, electricity and carbon dioxide, see "Proposal", 2011b, p. 14). The amount of financial assistance may reach up to 50% for studies and work, and 80%

in exceptional and valid cases.

The Directive proposes the following priorities in the oil sector:

Oil supply connections in Central Eastern Europe ("OSC"): interoperability of the oil pipeline network in Central Eastern Europe to increase security of supply and reduce environmental risks (member states concerned: Austria, Czech Republic, Germany, Hungary, Poland, and Slovakia). The following types of project can receive financial assistance: pipelines used to transport crude oil; pumping stations and storage facilities necessary for the operation of crude oil pipelines; any equipment or installation essential for the system in question to operate properly, securely and efficiently, including protection, monitoring and control systems and reverse-flow devices (See *"Proposal"*, 2011b, p. 36-37).

The conditions for applying for financial assistance are as follows: (projects) should display economic, social and environmental viability and involve at least two member states. Additional sector-specific criteria will ensure that projects notably strengthen security of supply, enable market integration, foster competition, ensure system flexibility, and allow transmission of renewable generation to consumption centers and storage sites (see *"The Commission's Infrastructure"*, 2011).

However, in terms of translating the draft into practice, the problem is the opposition of number of member states to the provision of streamlining permit granting. The current issue in the debate is whether and to what extent the three-year period, within which, for example, all the public objections to the current project have to be judged, is sufficient. After the period expires, an authority created by the EC (in the media referred to as an Energy Czar) will have the power to promptly implement the PCIs against the objections and legislation of member states. It is this provision, which now appears to be the main cause of the unwillingness of member states (e.g. the Czech Republic opposes this provision quite strongly) to agree to legislation (see "*Oettinger Pleads*", 2011).

7.4.3.3 North - South Interconnections in Central Eastern Europe

In connection with the above mentioned activities related to energy infrastructure, the Visegrad Group (V4, consisting of the Czech Republic, Hungary, Poland, Slovakia) also started its own initiative. V4 has aggressively focused on energy issues in recent years, e.g. Declaration of the Visegrad 4 + of February 2010 (the so-called Budapest Declaration, focused mainly on natural gas) or the Bratislava Declaration of January 2011. These meetings resulted in the creation of the High Level Group for North-

South Interconnections, directly referring to one of the priorities of the Energy infrastructure package. The group consists of representatives of Bulgaria, the Czech Republic, Hungary, Poland, Romania and Slovakia, other countries were also invited - Croatia, Germany and Austria, and it is chaired by the EC. Three working groups (for gas, electricity and oil) prepared an Action Plan during 2011, highlighting some of the necessary projects and in accordance with the above-mentioned Package and the Union's overall objectives in infrastructure, as described above.

The Action Plan in the oil sector proposes a number of pipelines, connecting the northern and southern part of Druzhba, as well as strengthening the connection between the Adriatic Sea and southern Druzhba:

Tab. 24: Projects proposed in Action Plan For North-South Energy Interconnections In Central-Eastern Europe

Litvinov and Spergau	Construction of the pipeline between Litvinov and Spergau. This link would close the loop between the Northern and the Southern branch of the Druzhba is the West. The capacity increase of the existing TAL pipeline in an important precondition of this project.	CZ, DE
Adamowo and Brody	Construction of the new pipeline between Adamowo and Brody - the Polish section. This link would close the loop between the Northern and the Southern branch of the Druzhba pipeline in the East.	PL
Pomeranian pipeline, second line	Construction of the second line of the Pomeranian pipeline from Gdansk to Plock. This line would secure the supplies from the Baltic Sea to Poland, Germany and, once the Litvinov Spergau link is built, further to Czech Republic and Slovakia.	PL
JANAF/Adria pipeline	Reconstruction and capacity increase of the existing JANAF and Adria pipelines (incl. the Sahy - Szazhalombatta section) linking the Croatian Omisalj seaport to the Southern Druzhba. This oil pipeline route has already been operating for 20 years and grants an alternative supply route for HU and partially for SK. The reconstruction and upgrade would ensure full backup route to SK as well (and potentially can be used by the Czech Republic, too) in the South-North direction; and to Croatia in the North-South direction.	HR, HU, SK
Bratislava - Schwechat Pipeline	Construction of new pipeline between Bratislava - Schwechat: This line would give access to the Schwechat refinery to Russian crude oil via the South Druzhba. In case of disruption in Slovakia, the supply direction of the pipeline could be reversed, thus giving a back-up route to the Bratislava refinery. The existing pipeline capacities from Trieste would make quantities available to Bratislava refinery.	AT, SK

Source: Action Plan for North-South Energy Interconnections in Central-Eastern Europe.

This action plan also calls for the regulation of certain permit procedures and other arrangements.

Overall, the document is a very interesting input for the EU debate on the need for and promotion of cross-border energy infrastructure. It expresses the strong interest

in several member states of a region, acting in close union, where the risk of issues of energy supply disruption or curtailment is significant. It directly fits into initiatives such as the Energy 2020 or Facility Connecting Europe, while it also refers to the Union's call for regional initiatives. And what is most important from our perspective is the fact, that it is virtually the only document tackling the issue of oil infrastructure in detail. However, it is necessary to critically evaluate its possible effects. As the document itself confirms, "... list of identified regional priority projects (in Action Plan) does not prejudge the result of the selection process of the above-mentioned regulation (meaning the Energy Infrastructure Package)" - See "*Action Plan*" 2011, p. 2. It is indeed a preliminary indication of priorities. However, given the format in which the document was created, they have a chance to be reflected in the final decision of the EC.

In terms of the oil projects described above, the biggest question is whether they can actually obtain support from EU funds. It seems from the overall tone of the European Commission, which is apparent from the documents already described and is confirmed by interviews conducted by the authors of this study with representatives of the EC, that oil projects are not desirable. It is obvious that the emphasis will be on gas and electricity, and any efforts to obtain EU funding for oil pipelines is to be met with Brussels' highly skeptical attitude.

However there is even one more significant issue related to these projects, and that is the willingness of the companies to take part in the above-mentioned construction. A good example would be linking of Litvinov - Spergau, which is supported by the Czech MERO on the one hand, but where France's TOTAL, operating in Germany, is against the project, mainly due to a possible weakening of its position in the market. A similar case is the project of connecting of Slovakia and Austria, where OMV is facing opposition from Slovnaft, owned by the Hungarian company MOL. In other words, the question is to what extent are the proposed projects in accord with the investment plans of individual companies, for which the increase in pipeline transport options often means the possibility of new competition entering into the already highly exposed market of refining capacity.

8. ECONOMIC CONSEQUENCES IF POTENTIAL CURTAILMENT OF OIL SUPPLY TO THE CZECH REPUBLIC AND POLAND

8.1 POSSIBILITIES OF DRUZHBA CURTAILMENT

8.1.1 Structure Overview

It is necessary to recap the basic economic context of the Czech and Polish oil markets, before we proceed to explain the mechanisms of disruption or curtailment of supply via the Druzhba pipeline. Both states have sufficient transport capacity to replace all the oil supplied by Druzhba in the event of its disruption. Therefore, disruption of Druzhba is not security risk a priori. It cannot be assumed that disruption of Druzhba will result in an inability to supply the Czech Republic or Poland with oil. One should rather look for consequences of such event at the economic level.

In a nutshell, the system of purchasing and processing crude oil in the Czech Republic is as follows. Foreign shareholders own Ceska rafinerska, operator of the two biggest local refineries, through subsidiaries. Crude oil is purchased from foreign suppliers, which is transported for a fee to refineries. Processing of crude oil is done by refineries as an individual service to its shareholders. This is called a processing regime and it is applied as the only viable compromise among the shareholders, allowing each of them to order specific production and then receive oil products.

There are two consequences of this system. (1) Oil is solely the property of shareholders of Ceska rafinerska, and it does not belong to state or processing plants at any time. Oil products are sold or distributed directly or by independent distributors after processing. (2) Oil is bought by entities operating outside the country and is only processed in the Czech Republic through subsidiaries. Supply disruption is thus a violation of contractual obligations between the foreign supplier and foreign customer. The Czech state owns and operates a system of pipelines on its territory. In addition, it stores oil reserves amounting from 90 to 100 days of consumption level in the same period last year. It retains the power to declare a state of lack of oil and oil products, and apply a range of restrictions on consumption.

In Poland, the situation is similar with the only difference being that the market is larger in general and companies processing oil are controlled by the state. What

makes both markets communicating vessels is the fact that the said foreign investor with a majority share in the Czech processing industry is the state-owned Polish company PKN Orlen. As we shall see, this affects the bargaining position with suppliers – Russian oil companies.

The contemporary crude oil market is generally a supplier's market, and therefore there is an excess of demand over supply. In this setting, the suppliers are generally in a better position than customers. Customers and suppliers are limited to a certain extent by supply routes.

8.1.2 How does disruption of the pipeline happen?

Moving away from politics and focusing more on the economic dimension of the oil deals it can be stated that they are a manifestation or implementation of trade agreements between suppliers and consumers. Oil in the pipeline does not flow in some limbo but represents the fulfillment of contracts, and the disruption of this flow is not at the beginning, but rather at the other end of the chain of events associated with commercial negotiations between the parties.[34]

The actual disruption may therefore be the result of four different situations, at least theoretically. It can be carried out under or outside the contract. Its cause may be that the oil supplier cannot sell and deliver oil or is not willing to. This leaves us with four options of disruption: each of them will be addressed by different means and will lead to different consequences. To predict the economic consequences of supply disruption via the Druzhba pipeline, it is necessary to project the course of disruption and possible reactions of various actors.

Tab. 25: Supply Disruption Scenarios Matrix

	Under contract	Outside contract
Unintended	1	2
Intended	3	4

Therefore, an analysis of all four scenarios sorted according to the table follows:
If the contractor unintentionally curtails the supply, we can assume that it will strive for the fastest possible restoration. Without knowing the exact content of contracts, payments certainly occur only for oil supplied. It would also be in the best interests of the supplier to inform all parties concerned and find the optimal solution in col-

[34] Political will, of course, would prevail in a time of extreme international conflict or even war. However, in a regular situation, it is eminently commercial, and therefore *an economic issue*.

laboration with them.[35] If disruption is of a significant nature threatening to affect the processing industry adversely compensation will be provided using state petroleum reserves. It cannot be assumed that a similar crisis will not be resolved within 100 days.

The course is basically the same in this case, only the supplier is less willing and restoration of supply slower. If the supplier is no longer able or willing to restore the pre-crisis supply level, the Czech refineries' shareholders would need to actively negotiate new contracts to ensure economic operation of their plants. Acute shortages of oil could be covered by emergency reserves managed by the state. New contracts, which will undoubtedly be secured in this case, will have different conditions, especially on price and quantity. This alternative would result in longer-term price increases or a reduced amount of oil supplied. At best, the pre-crisis situation would be restored.

Curtailment of supply can also occur when renegotiating contracts. If the suppliers were unwilling to supply the current quantity of oil at the current price, consumers would be forced to accept a change in conditions as in the previous case. They would therefore balance the more expensive supplies with the lower operation economy caused by insufficient supplies. The price is fluctuating more or less constantly because of the ongoing negotiation of contracts.

The worst-case scenario would be an intentional disruption where the supplier would not feel bound by concluded agreements. In fact, this would affect the supplier's credit and reputation in a disastrous manner. Depending on the size of disruption the state petroleum reserves would be used. Immediate effects would therefore not be disastrous. A specific feature of this scenario is that suppliers would be keen on keeping the new lower rate of supply in the long-term. Reaction of the Czech refinery industry would necessarily have to be two-fold: first, it would have to try to negotiate the best possible conditions in the new contract[36] and if it failed to recover the full level of supply, it would have to adjust production according to new operational economics, as in previous scenarios.

As shown by these four scenarios, it is necessary to further distinguish between long and short-term disruptions on the one hand, and willingness to negotiate on the oth-

[35] The gas crisis in 2009 had a similar course, when Russia as a supplier informed the European Commission in advance and cooperated on the restoration of supplies and on their reinforcement by transport routes as well.

[36] Scenarios 3 and 4 are, of course, the same in this matter. Renegotiation of the contract would be part of all scenarios according to the authors of this study.

er. With regard to duration, short-term disruption - especially unpredictable accidents, natural disasters, or terrorism and similar intentional threats - even of the order of tens of percent of supply would not entail any direct or physical impact on the refinery industry. State petroleum reserves should work as a buffer in this case, which will cover a temporary drop in supply.[37] In case of significant disruption it cannot be assumed that all actors would be idle all the time during which the reduced supply was substituted by state petroleum reserves.

It is in the interest of the Czech authorities not to prolong usage of the state petroleum reserves in the case of long-term disruption and to mobilize shareholders of refineries to adjust sale price and quantity purchased in order to preserve their own operational economics. Given the very low elasticity of demand for fuels and oil products in general[38], we expect that the price would increase by more than the decrease in the volume of oil processed. In other words, it would be in the best interests of the refining industry to ensure the largest possible oil supplies with the new contracts - consequently minimizing the decrease from pre-crisis levels – at the price of an increase in the prices of their products.

8.2 TWO DIMENSIONS OF RESPONSE

8.2.1 Infrastructure and Technical Capabilities

This leads us to distinguish two specific dimensions of the oil trade and processing. The first is the technical side of the issue, the diversification of transport routes and infrastructure options. We must first answer the question of what means of response are possible within the given technical infrastructure. The limiting factors are capacity of transport routes and the type of crude oil processed.

The Czech Republic and Poland total import about 34 Mt/y of oil (7.5 Mt resp. 26.5 Mt) for refining. Of this, more than 30 Mt is REB, medium-sulfur crude oil, which local refineries are adapted to refining. The only exception is the Czech refinery in Kralupy nad Vltavou, processing only light sweet blends flowing through the IKL pipeline.

According to these numbers, more than 88% of refining capacity in both countries is

[37] As in the case of second oil shock or during Gulf war.
[38] Price elasticity shows how the price change affects the change in quantity demanded. For fuel, alcohol and tobacco it is traditionally very low, and therefore consumption does not show large fluctuations despite rising prices. In other words, these products are in demand even if the price rises. Goods with low price elasticity are often subject to excise taxes.

set to REB flowing in the Druzhba pipeline. This is for economic and historical reasons. Historically, because the local refining industry was set up at the time of the CMEA, and economically because the transportation cost and convenience of Druzhba supply is still more advantageous than any other option, and because any change in the processed mixture entails adaption costs.

Capacities and specifications of Czech pipeline system are sufficient for replacement of Druzhba - see the section on the Oil sector in the Czech Republic. According to Ceska rafinerska it would be optimal if REB was transported either by sea or another type of oil blend with similar properties was obtained through the connection via IKL/TAL to the Litvinov refinery. In the worst case, the Litvinov refinery would also be able to refine light (non REB) oil, but at the expense of operational economics.[39]

The Polish position on the northern branch of Druzhba is similar, just with a smaller redundant pipeline reserve. There is spare capacity of 34 Mt/y on the route from the terminal in Gdansk to the Plock refinery and further into the Druzhba system. This route could be used to supply the both Polish refineries. However, this would probably mean that capacity of transit to the Eastern German Schwedt (which is co-owned by Russian Rosneft) and Spergau refineries would be compromised. With a change of refined blend the same problem would arose as in the Czech Republic, hence the need to further buy REB preferably, or similar blends.

Therefore, technically, it would be possible to substitute for disruption of both branches of Druzhba, as the alternative transport capacity exists. The question is how this change would affect the cost indicators. In the case of Poland it would be necessary to divert more than 90% of oil imported to tanker transport. That does not have to be necessarily much more expensive than the pipeline, but if we consider that suddenly it would be necessary to transport 26 Mt/y, it could raise the price of shipping. On the Czech side the bottleneck would be the TAL pipeline. If a capacity of 4 Mt/y was found, then the import of crude oil to the Litvinov refinery would only be a matter of logistics.

Due to technical infrastructure capabilities we can therefore pass over scenarios of unintended disruption out of the matrix. Such scenarios would be covered from state

[39] Oil blends have specific physical properties to which refineries are adapted in a way to extract the greatest volume of products possible, which have a higher price than oil alone. It does not mean that the refinery is unable to process another blend, but if it is not optimally adapted, the result is worse economic parameters. The transition from REB blend to a blend with lower sulfur content is easier, because the oil is desulfurized. On the other hand, transition to heavier oil would mean necessary investment in desulfurization units.

petroleum reserves and in addition would require the good will of both sides to agree. Therefore, we can further focus on scenarios of intentional disruption, which are fueled by commercial interests.

8.3 BUSINESS OR STRATEGY?

The second area is business negotiations and their dynamics and motives. At this point, we encounter the sensitive issue of political influence on oil exports and its use as "economic weapon" by Russia. Concerning this, let it just be said that the Russian oil sector is, due to its strategic importance, under the strong influence of government and is even personally interconnected with top level bureaucrats. It cannot be expected of course that the state, with this kind of relationship, will not exploit the options that are provided by the oil industry. Russia indeed does this, and oil revenues form a substantial part of Russian state revenues. However, this is to a great extent a double-edged sword. The higher the percentage of revenues generated from oil, the faster the addiction to it grows.

Let us return to oil blends once again. It is important to note that while the setup of the Czech and Polish oil refineries for heavy REB is a partially limiting factor, the same restrictions apply to producers. If Russia wanted to change their customers it would have to find a use for its specific heavy oil in other facilities able to refine it. It is of course not impossible, but it carries with it again significant transaction costs in the form of finding new outlets, compatible refining capacity and willing buyers able to pay. The type of oil blend supplied therefore does not bind only to the consumer to the supplier, but partly also vice versa. This reduces the proclaimed flexibility of the particular oil market.

The oil industry of the Russian Federation may be perceived as a state tool, but it depends on what purpose it serves. In fact, it can work in two ways, which may overlap. First is the source of income. Apparently this is just the greatest benefit of the current state and it is in the interest of Russia to maintain this state, all the more, the larger the share of government revenues generated by it. Another way could be to use "oil as a weapon", mainly as an extortion policy by curtailing supply. In practice this would mean the creation of a preferential system excluding the “inconvenient” customer. This option has a catch, firstly the consumer country would have to be dependent on transport (from Russia) which, as we have seen, is not the case of the Czech Republic or Poland, and also the loss of income would have to be either insignificant, or compensated for by other transactions realized.

For these reasons, we believe that intentional disruption of oil supplies to Central and Eastern Europe in the form of an embargo or economic pressure is not on the agenda, because it would entail transaction costs on both sides, which currently are not sufficiently balanced by political profit. In other words, Russia's interest is to sell as much oil as it can at the highest possible price and the Russian oil industry has served this purpose well so far. Therefore, we will assume that whether or not there are geopolitical factors behind the Russian oil industry, the interest of the Russian Federation in any case is to act rationally from economic point of view, so that it raises the maximum income at the lowest direct and indirect costs. Last but not least, oil-related issues are just a part of complex international economic relations. That is why any intentional disruption of oil flow would evoke a response in other commodities, services or goods flows in the opposite direction.

How does the business position of Poland and the Czech Republic look? Oil supply is at the beginning of the production chain, but the supply stretches around the world and it should be taken in this context. The Czech Republic and Poland as consumers are an insignificant part of global consumption. However their position in Central and Eastern Europe is strong. This geographical area, of which we speak, currently consumes about 31 Mt/y of Russian oil. The total volume of Russian exports by pipelines alone is 240 Mt/y. If we add transit to Germany on the northern branch of Druzhba and supplies to Slovakia and Hungary via its southern branch, we get the current flow of 64 Mt/y with a refining capacity of over 80 Mt/y (DG Energy, 2010: pp. 17-20).

Comparison of these figures reveals the nature and importance of Central Europe. The Druzhba system allows Russian companies to export more than a quarter of its oil exports to eight[40] refineries owned and co-owned by many entities, including dozens of multinational oil companies and states. While this sum is a relatively large share of Russia's revenues, the specific trades are made in smaller volumes, and every buyer is acting for himself. The Polish and Czech share represents 12.5% of total Russian exports and is mostly purchased by two companies: PKN Orlen and LOTOS.

Although it may not be the largest exported volume, for the Russian counterparts it is a significant enough share, at market prices and with good payment discipline. Representatives of Czech companies praise the good communications and cooperation with Russian companies, and trade relations have been historically correct. In

[40] There are 10 refineries in the region. Gdańsk and Plock (PL); Leuna and Schwedt (DE); Litvinov and Pardubice (CZ); Bratislava (SK); Szazhalombatta (HU). The refinery in Kralupy nad Vltavou (CZ) refines light oil from the IKL pipeline, Mazeikiai (LT) was disconnected from Druzhba and is supplied with oil from the nearby Butinge sea terminal.

this context, the motivation of Russia as a supplier to curtail supplies would have to extend either to a specific part of Druzhba, due to problems with Ukraine and Belarus, or to customers in Central Europe as a whole.

Either way, if Russia had no further interest in transport its volumes via Druzhba, it would have to negotiate new contracts. If the aim of avoiding Druzhba is not an attempt to exclude the Central European states from consumption, the format of business would remain the same as it is now, except that the oil purchased would have to be contracted by another type of transportation, e.g. via tankers. It would bring a change in costs and immediate technical issues caused by transition to the new transit routes. If Russia did not want to further supply customers in Central Europe - and here again it should be mentioned, not directly to the Czech Republic or Poland - or not to supply oil even by other means than Druzhba, it would mean similar complications for them, such as supplying oil with similar properties from elsewhere or supplying a different blend.

8.4 ECONOMIC VIABILITY AND ITS EFFECT ON OIL SECTOR ACTORS

Before we get to the final evaluation of the impact of the exclusion of Druzhba from the Russian oil export system, we have to deconstruct the oil industry and economic status of its individual levels even further. Only then will we be able to determine the effects, at least generally. As described elsewhere, the oil industry has four levels - production, transport, processing and distribution. There are specific industry enterprises on each level, e.g. drilling rigs, refineries, pipelines, etc., given by the oil refining technologies usually operating as separate legal entities. They are more or less vertically integrated according to their ownership. The industry is then most affected by the structure of these groups and the general technological capabilities of industry.

The structure and relationships of entities in the oil industry determine the options of how the physical infrastructure will be used. The ability to analyze and forecast the sector largely depends on the precise description of this structure. The system of relations and factors that influence the decision-making and viability of oil companies is complex and extensive, and therefore hard to predict. In other words, to estimate the economic consequences of this or that scenario, it is necessary to accurately depict the system, to find and describe its most important relationships, and for this particular constellation then to try to formulate the expected consequences of the scenarios presented.

To do so, we must first introduce all relevant levels of actors, their conditions, goals, motivation and opportunities and relationships. The first level, production, can be omitted due to the small share of domestic production in total consumption. Their existence is an external element for us, we cannot affect it in any way and it is an outside independent variable for other actors. The producers' income is the sale price of crude oil. An equally neglected quasi-level consists of traders and speculators who trade in surplus oil and products that do not fit into direct contracts between the individual levels.

The second level - transportation of crude oil – is more interesting for us. The aim of the carrier is to maximize profit through the provision of transport capacity. Its customers are both producers and processors. Given that most oil flows through pipelines to the Czech Republic and Poland, the second level consists mainly of owners and operators of the pipeline system. Their specific features are relatively low operating costs, high capital intensity and low flexibility of services. This means that the pipeline transportation of crude oil is by far the cheapest and at the same time completely dependent on the structure once built. The income of carriers is the transit fee for the use of their pipelines.

Refineries, representing the third level, process the incoming crude oil into oil products and their income is the profit margin, the difference between the price of crude oil and the price of oil products. The interest of the processing industry – or its shareholders in the case of a processing refinery – is to maximize this difference, which can happen in several ways. The first is cost reduction - however the refinery industry, due to competition, is very well optimized. The second way is the best possible sale of products on the market. Refineries produce fuels, but they also stand at the beginning of the further industrial chain - the petrochemicals industry. Their importance for the national economy thus lies not only in the supplying of the transport sector, but also in the entire follow-up industry.

The fourth and last level is the distribution of oil products, including its transportation, and wholesale and retail sales, thus activities of purely business nature. Profit margin is also income for retailers, but unlike refineries, the main problems here are logistics and retailing. Distributors have to cope with several crucial issues - mainly with the need for a continuous flow of the products, so they cannot stop selling but are forced to maintain the business even if the margin falls into the red. This also explains relatively stable LPG and middle range distillates exports from the Czech Republic.

Each of the actors sees the industry from a different perspective and is under pressure from other circumstances. What they have in common is their dependence on the system. As a separate element they lack a raison d'être, which forces them to act in such a cooperative manner as to prevent the collapse of the industry. This relationship across the market begins and ends with producers and retailers. Liberty of the contracts between the levels increases with the number and willingness of suitable business partners and the physical possibilities of transport.

According to the representatives of Czech refineries and pipelines, Czech companies are prepared to change routes and even oil blends. But no one can answer the key question of whether it is economically doable. Many factors come in play that are part of corporate cost analysis and their impact is unpredictable.

Carriers would be impacted according to the degree of supply curtailment. However even if the Russian pipeline ran dry, it would still be part of the infrastructure used to supply the refineries and reservoirs. Disruption would therefore affect only part of the transit pipelines, and only when not used for the reverse flow, as might happen between the Czech Republic and Slovakia in the case of disruption of supplies to Slovakia. Therefore the economic fate of the carriers should not be compromised. The real danger for them would be closure of refineries, not a change in direction and origins of supply.

Refineries, and ultimately their shareholders, face a greater risk - their economic success is affected by many factors, with difficult-to-predict results. Their margin is dependent on the price of crude oil, transportation costs, and difficulty of processing due to sulfur content and other properties of the oil blend. The outcome of the transition to new transportation routes and suppliers would depend on the change in these three components of operating costs. If the transition were successful, there would be a greater or lesser change in prices of oil products depending on how the refineries adjust their selling price to the new level of input prices. If not, it could mean long-term problems for refineries, ultimately leading to their possible closure. Simply put, the refinery will be profitable as long as they can increase product prices. However prices can grow only to the point where it becomes viable to import at that price. The refinery will then become uncompetitive and will be forced to reduce or completely close down its production.

For the consumer market it would not necessarily mean a complete loss of oil products, thanks to the last level - distributors. If the refinery changed the price of its output, distributors would only adjust their prices according to this refinery price

shift. Closure of one or more refineries would represent an opportunity for distributors in the form of imports of oil products from other refineries still in operation. Due to the nature of market demand, there would be a gap in the supply from processors, which the final consumers would not be willing to omit from their consumption. The consequence for the oil product market would be an increase in prices, at first probably primarily driven by panic, and later the price difference would set at the level of increased transport costs.

Curtailment of the Druzhba oil supply, in Poland and the Czech Republic at any rate, can be overcome technically. The economic consequences of such disruption would impact refineries' shareholders most and their degree of adaptation would affect the impact on the carrier and distributor. If they could manage the situation and negotiate and secure new economically acceptable contracts for crude oil, the cut-off of Druzhba would impact oil products prices accordingly within the parameters of the new agreements. If local refineries were unable to operate economically under new conditions, they would have to partially or completely suspend operation. The same fate would befall the carriers of crude oil. Final product prices would rise by as much as would be required for transportation of oil products to ensure meeting demand in both countries. Possible closure of refineries would represent a major problem for the national economy, because aside from fuel, the petrochemicals and in fact all other industry would be cut off as well.

9. CONCLUSION

The issue of curtailing or disrupting Druzhba pipeline operation has two dimensions - technical condition of the pipeline sections that have not undergone refurbishment (mainly in Russia and Ukraine) and economic-political factors affecting the distribution of Russian oil exports between transportation alternatives. Because the technical condition of the pipeline is mirrored by interest in its further use, the economic-political dimension seems to be what will determine the future of the Druzhba pipeline. Economic-political relations associated with Druzhba are determined by both Russian export options (volume and route), as well as relations with transit states and finally the attractiveness of the target markets (the Czech and Polish). The subsequent impacts on these markets are as important as the assumptions and the context of a possible curtailment or disruption of the pipeline operation.

First, it is necessary to understand the limited source potential of the Russian Federation, which is in contrast with the sharp increase in export options between 2000 and 2012. An increase in worldwide as well as Russian domestic consumption is expected in coming years, with which Russian production will at best keep pace. However, most experts tend to the opinion that Russian production will decline. There is no doubt, not even in optimistic Russian scenarios for the sector's development, that oil production will decrease in the key source for Druzhba – the Volga-Urals and Western Siberia regions. Other sources for the Druzhba pipeline have not yet been secured.

Russian export policy will be significantly affected by the state's preferences in terms of choice of transport corridors, the direction of export and its composition. There was a sharp increase in prices of energy resources during the term of President Vladimir Putin. At the same time, Russian understanding of energy policy and energy diplomacy is changing. While in the 90s the approach taken was subsidizing compliant regimes in Belarus and Ukraine and making economic concessions for political gains, the economic level of the cross-border energy relationship was fully emancipated and in many cases became the determining factor in the formation of new agreements during the first decade of 21st century. Russia is starting to use previously neglected elements of the disintegration of the Soviet Union, namely the emergence of new nation states, which it can ask to pay market prices for energy. With the increasing price of energy the stakes in the game are increasing. More than be-

fore, Russia is starting to ask what it gets for its energy subsidies. The logical consequence of this situation was a series of energy conflicts between Russia, Belarus and Ukraine between 2004 and 2009 that resulted in disruptions to European customers.

Russia, under its current pragmatic policy, is maintaining its earlier approach where the energy relations are part of a broader politico-economic (but today rather economic-political) complex of bilateral relations. Its ultimate aim is to move from interdependence to dependence of Ukraine and Belarus on Russia. In practice this is to be done by marginalizing their transit position, that is through diversification of exports. Druzhba, which runs through Belarus and Ukraine, will therefore not be the preferred alternative. An increase can be expected rather in tanker transport. The significant growth in demand for oil east of Russia's border will also have negative consequences for the utilization of Druzhba. In addition, the Russian government is likely to continue its policy of promoting exports of goods with higher added value - increasing the share of oil products at the expense of crude oil. All these factors will lead to the Druzhba in future probably facing a shortage of supply.

What does this situation mean for target markets? In the Czech Republic, there is strong know-how and experience that comes from the more than century-long history of the oil industry. The oil market is dynamic, i.e. including a growing number of petrol stations. On the one hand this indicates market viability, increasing the demand for refining and distribution, but ultimately it also increases the volume of imports from abroad (from Russia) and thus increases the country's dependence. This dependence may not necessarily have security implications, even though refineries are set to a specific blend of oil. The various blends of oil may be transported from different directions (e.g. Russian REB from the west via TAL/IKL) and refineries are in principle able to process any blend of oil, but the more the blend differs from that which refineries were set to during their construction, the lower the yield and the higher the unit costs. When processing a significantly different blend of oil, a refinery's operation would be economically unsustainable. Refineries, when substituting for reduced supply via the Druzhba pipeline, would not seek Russian oil in the western pipelines, but instead oil as similar to it as possible, i.e. a heavy, high sulfur content blend. Crude oil from Iran appears suitable. In this context it should be noted that the country's diversification of oil supply is sufficient. During supply disruption in the summer of 2008 it turned out that the Czech Republic is nowhere near as dependent on the Druzhba pipeline as has been said, and the situation could be resolved without any impact on the business sector.

Available capacity in the TAL pipeline may be a bottleneck in the steady flow of oil

into the Czech Republic during long-term disruption of supply by Druzhba.[41] For this reason, it is appropriate to support efforts to purchase ownership in the TAL pipeline, or other diversification projects, which only diversify supply routes of oil and not the source of oil. Energy security of the Czech Republic in the oil sector will be significantly enhanced by acquiring a stake in the TAL pipeline due to the right to a permanent and preferred share of TAL pipeline capacity.

The Czech Republic is geographically relatively isolated from other markets. Mountain ranges on the borders and the lack of oil products pipeline connections (except with Slovakia) limit the import of products from abroad because it makes it more expensive. Thus retail prices of products are somewhat higher in the Czech Republic than abroad - according to unofficial information, approximately by €7.4 per barrel of oil, which has a positive impact on the competitiveness of Czech refineries. Connection to product pipelines from abroad (e.g. Germany) would translate into significant access of foreign products to the Czech market, which would lead to the positive effect of a reduction in fuel prices and other products by about the €7.4 mentioned above. On the other hand, this could lead to the bankruptcy of refineries and failure of whole refinery sector in the Czech Republic. Czech refineries are exploiting this situation and seek to limit their activities to simplify cross-border transportation of products. The only real competitor to the Czech refineries is the Slovak company Slovnaft as it is connected to the CEPRO oil products network via the pipeline from Bratislava. The Czech Republic imports approximately two-thirds of total fuel imports from the Slovak oil products network of Slovnaft.

In Poland oil is also one of the most important energy sources. As in the case of the Czech Republic, production on Poland's own territory represents a rather marginal share of consumption and it is expected that this trend will continue, despite the fact that development of production in the Carpathians and the Norwegian shelf is being considered. It is therefore logical that Polish consumption is heavily dependent on oil imports (but in part also on imports of oil products). Poland's characteristic is differentiation in perception between import dependence of gas and oil. While Poland's dependence on gas supplies from the East, especially from the Russian Federation, is perceived as a potential security risk requiring the utmost care, oil is not approached in similar manner.

Unlike the Czech Republic, in Poland only one main transport route for imports is

[41] In this context it is worth noting that the strategic reserves of oil and oil products in storage of MERO CR, and CEPRO, reach far beyond the level set by the IEA and EU. The Czech Republic met the requirements of the EU before the set deadline of 31st December 2012.

used, through the northern branch of the Druzhba pipeline with a major Russian supplier. The question of the viability and future of the pipeline in Poland is not discussed a priori in terms of the acute threat to oil supplies, but attention is drawn primarily to the economic connotations of the situation. The existence of Gdansk Naftoport, which was extended in 90s, plays an important role in Polish perceptions of the whole issue. It will assume the position of the main import route over time and it is ready in terms of volume. The change of direction of supply will then, of course, be followed by a change in the national infrastructure, where a crucial role will be played by the Pomeranian pipeline connecting the Gdansk and Plock refineries. It can therefore be concluded that Poland, like the Czech Republic, is not inevitably dependent on Druzhba.

Economic aspects of change/diversification of transport routes on the side of Russian producers have the two most prominent impacts in the Polish environment. A decrease in the volume of oil supplies through Druzhba and restrictions on further transportation to Germany represent a real increase in pressure in negotiations with the producer for Poland. The objective of this pressure is obvious - increased prices of resources supplied already "adjusted" to benefit the position of the transit state. The higher resource purchase price will mainly impact Polish end-consumers. A significant source of income in recent years, the export of Russian oil by tankers through Naftoport, has recently declined, though the Polish side was trying to argue for it by its proximity to the Rotterdam import terminal and in particular that, in contrast to Primorsk, Gdansk is ice-free.

The Polish market is relatively well organized, largely due to tradition and an overall cautious approach to Poland's energy sector. The dominant players in the oil market in Poland are PKN Orlen and LOTOS. The first of these has been trying to become a regional leader in the last few years, either by purchasing a majority stake in the main players on the Czech market, or by a strategic entry to the Baltic market. However, acquiring this position is not without problems. In this context, for example, the disputes with the Russian supplier regarding Mazeikiai refinery, PKN Orlen's image issue in the Czech Republic due to the controversial privatization or the significant financial losses of Unipetrol in 2011, can be mentioned. LOTOS has focused its attention on strengthening its refining capacity and introducing new technologies (such as the Gdansk project 10+) in recent years. The primary aim is to reduce Polish imports of oil products. However, this ambitious and expensive project faces the general problem of the current state of the refining industry in Europe, which has resulted in a significant slowdown in investment return.

The state sector is undoubtedly among the actors in the Polish oil market. As with other energy sectors in Poland, the Ministry of the Economy and the government play a significant role in the oil sector. The state apparatus is engaged either in taking strategic decisions e.g. on support for diversification projects, or in decision-making within state-owned companies (see PERN) or companies with a significant state stake (see LOTOS and PKN Orlen). A certain inertia in decisions and actions of the Polish state on issues of privatization is the subject of criticism, while the small flow of foreign investment into the sector at the same time has drawn attention. Negative feedback also has a role of state in promoting the issue of diversification of producing areas. A constant theme in this context has primarily been the Odessa - Brody – Plock project in recent years, whose implementation faces many difficulties ranging from a lack of secured resources, difficulties in negotiations between the Ukrainian and Polish partners, to threats of the termination of financial support for the project from EU Structural Funds.

Brody-Plock connection illustrates well the potential role of the EU in the issue of the Druzhba pipeline. In terms of real instruments European institutions are rather helpless on the issue of Druzhba. Strategic oil reserves, a key safety feature, are being continuously improved. Another external security of supply tools are neither recognized nor planned. Other legislative measures are completely unrelated to Druzhba.

More important, the will to interfere and try to manage the issues discussed is missing. Brussels considers the oil sector to be a structurally functioning one, where problems are solved either by the market or by member states. Even here we can encounter difficulties, but they do not have the character of a systemic and EU-wide problem that might be perceived as urgent by the majority of the EU, and they should not and cannot be solved at EU level. This attitude is reflected in the allocation of funds, where we see a significant suppression (up to the point of complete elimination) of oil issues. Funds can rather be obtained by the Czech Republic and Poland by more appropriate setting and use of EU cohesion funds, than on the basis of EU energy financial instruments.

In fact, the only substantial EU involvement can be expected when environmental issues are encountered. This was clear in the debate on new legislation regarding offshore installations, however, the issue of Druzhba was also joined in this debate in this context. During the preparation and publication of the latest study concerning the issue of disruption of the supply of oil by pipeline *(Study on the Technical Aspects of Variable Use of Oil Pipelines-Coming into the EU from Third Countries, prepared in 2010 for DG Energy)* the increase in transportation of missing oil through the Turkish

Straits, with the possible risk of environmental disaster, was marked as one of the most contentious points.

The potential and will of the EU to intervene in this or that problem associated with Druzhba are therefore very limited. Although there are some "windows of opportunity", typically in the form of financial support to related infrastructure projects, the chances of obtaining it is complicated by the EU's tendency to disregard the oil sector as a whole.

The above-mentioned information, inter alia, implies that we can reject disruption of Druzhba as significant security risk. The only country on the pipeline route that still cannot fully satisfy domestic demand through alternative infrastructure is Slovakia. If the Bratislava-Schwechat connection is completed, or reverse flow of the Czech and Slovak Druzhba part is built, the whole situation changes and Central Europe will be de facto independent of Druzhba. The issue of its eventual disruption is shifting from security to economic sector interests of the states using Druzhba. However in the case of any disruption in the southern branch of Druzhba, the connection of the Austrian refinery to the pipeline may create competition between Czech refineries and the refinery in Schwechat for access to oil.

The economic consequences of curtailment or disruption are difficult to quantify. We can anticipate, however, the chain of events which would result from such curtailment. To be able to find the consequences, we must begin with the very disruption and knowledge of it. The Druzhba pipeline is to be understood not primarily as a component of international political relations, but as one possible way of the implementing business relationships. The business and ensuing economic relations are an area which affects the dynamics of using or not using the pipeline.

The reliability of Druzhba should be seen in this light. Not as an initiator of political implications and as a trigger of political events - even if those would be initiated in this case - but as a consequence of the economic behavior of suppliers and customers. In other words, Druzhba, just like any other pipeline, primarily carries out trade contracts and can become a tool of international politics only secondarily. The idea of "turning off the tap" is not fully in place. The argument in support of this claim is a physical aspect of oil infrastructure in the Czech Republic and Poland. Both countries have backup transport capacity, which is able to import the entire quantity of oil consumed without the use of the Druzhba pipeline. If we then consider other than economically motivated pipeline disruption, the result would be a reorientation of imports to new routes and where necessary to other oil blends, which bears with it

certain, however limited, costs.

The Druzhba pipeline will cease to operate when it is no longer a profitable transport route for either Russian suppliers or Central European recipients. When and if this happens, local consumers will shoulder the change in cost of oil imports. Here a lot of parameters come into play, such as transportation fees of other pipelines, tanker transport prices and the price impact on its demand to determine the final change (increase or decrease) in the total cost per barrel of oil imported into one of the Czech or Polish refineries. The consequences for Czech and Polish industry and the overall economy will further depend on this change. The refinery is facing the need to adjust its own prices of production to the final price of oil. If the imported resource were to become more expensive because of new import route, the price of oil products would have to increase as well. It may increase due to the high inelasticity of demand; however it can increase only to the point where it will be more profitable to import oil products from abroad.

Therefore higher oil prices impact on the refineries' shareholders immediately. Prices of oil products, particularly fuel, will increase indirectly. However fuel makes up only about two thirds of production, and the remaining capacity is used as intermediates for the chemical industry. Their price is lower than the price of fuel. Therefore, the need to import them due to the economic inefficiency of refineries would mean a large increase in costs in the following industry, which we can include among those, who next to refineries and consumers bear most of oil price increase.

Finally, the question of whether Russia as a majority supplier of oil to Central Europe has an interest in curtailing supplies or not, needs to be answered. Czech and Polish imports account for the considerable share of 12.5% of total Russian exports. In addition, just as Polish and Czech refineries are partially limited by their being set to process Russian oil, so too is Russia limited, and would have to sell a volume of 30 Mt/y elsewhere. This suggests that the shift from Druzhba would be motivated more by a preference for other routes rather than an intent not to supply the Central European market.

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