CZECH UNIVERSITY OF LIFE SCIENCES

PRAGUE

FACULTY OF ECONOMICS AND MANAGEMENT

DIPLOMA THESIS

THE DEPENDENCY OF EU ON CRUDE OIL, CASE STUDY OF RUSSIAN OIL

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DECLARATION

I hereby declare that I have worked on my Diploma Thesis titled "The Dependency of EU on Crude Oil, Case Study of Russian Oil" solely and completely on my own and that I have marked all quotations in the text. The literature and other material I have used are mentioned in the Bibliography Section of the Thesis.

Prague,……

……

Signature of the student

SOUHRN

V globálních podmínkách přírodních zdrojů, nepřiměřeně vysokých cen energetických surovin a politické nestability, může být důležitost energetické bezpečnosti dnes zařazena hned vedle obranyschopnosti státu. S ohledem na extrémně nízkou úroveň rezerv energetických surovin v EU je problém jejich dodávek na denním programu členských států EU po dobu nejméně patnácti let.

Tato diplomová práce ukazuje praktický příklad takovéto závislosti EU na jednom ze svých hlavních dodavatelů ropy a zemního plynu - Ruské federaci. EU tradičně používá osm energetických vazeb, kterými jsou dodávány energetické suroviny z jejich zdrojů. Tři z nich - "Východní", "Rusko-Bosporský" a "Rusko-Baltský" tvoří "euro-asijský" energetický mega-uzel, který je pod kontrolou Ruské federace. Tento uzel dodává 30% dovozu ropy a 33% dovozu zemního plynu do EU.

Klíčová slova: ropa, závislost na ropě, trh s ropou, cena ropy, EU, Ruská federace.

SUMMARY

Under the conditions of natural resource exhaustiveness, incredibly high prices of those resources and political instability, energy security today can be ranked alongside security in the sphere of national defence. Taking into account the extremely low level of EU energy reserves, the problem of energy supply has been on the daily agenda for at least fifteen years.

This diploma thesis sets up a practical example of such EU dependency on one of its main crude oil and natural gas suppliers, the Russian Federation. Traditionally, the EU uses eight so-called energy connectors, throughout which it is supplied with energy resources. Three of them – "Eastern", "Russian-Bosporus" and "Russian-Baltic" – form the "Euro-Asian" energy mega connector which is under the control of the Russian Federation. This supplies 30% of EU crude oil and 33% of natural gas EU imports.

Keywords: Crude oil, oil dependency, oil market, oil price, EU, the Russian Federation.

CONTENTS

1. INTRODUCTION

Energy has become an increasingly important and defining policy issue as the growing competition for access to limited resources has altered the global economy.

Population increases, dynamic economic growth (particularly in China and India), and the spread of prosperity are stimulating a rising demand for energy. However, high energy prices and the lack of spare capacity, particularly in the oil market, have made the global economy sensitive to energy disruption. Energy security, in terms of supply and stability of price (two key factors for economic strength and growth in industrialised and industrialising countries), is intertwining with geopolitics and international relations.[28]

For the last time the situation with the EU energy market has not changed too much. Crude oil and natural gas are seemed to be vital for Europe to function. The European Union is considerably dependent on imported sources of energy. It is from 50 to 65% reliant on the import of oil and natural gas. In such case it is worth speaking about the issues of EU energy security. Being totally reliant on energy imports and at the same time without practically any energy endowments poses a threat for the EU future especially while taking into account the fact that EU energy imports are mainly represented by two market key players – the Russian Federation and the Middle East – which together account for 50% of energy supply.

Therefore it is very important to realise that the Russian Federation is at the same time energy consumer, producer and transit country. Possessing huge endowments of crude oil and natural gas the Russian Federation has confirmed the status of the key player on the world energy market for many times. Thus, Europe has to realise that the strategic partnership with Russia is the key step to its energy security and prosperity in future. But it is not all as easy as it sounds. A new era is at hand for energy and environment in the European Community. The current legislative and regulatory agenda for energy is arguably broader and more complex than it has ever been, with proposals

[28] Monaghan A.: EU – Russia energy relations: the need for active engagement.

now being debated on renewables, fuel quality, the internal market, emissions trading, and a host of related issues.[29]

Hereby, the European Union has realised that it significantly depends on crude oil and gas imports. And such the dependence, especially from the Russian Federation, will never bring a desired result and vice versa will probably worsen the situation. Thus it has to be reduced for the political and economic well being of the EU in the future.

[29] Panorama of energy: energy statistics to support EU policies and solutions.

2. MAIN OBJECTIVES OF THE DIPLOMA THESIS, HYPOTHESIS AND METHODOLOGICAL TOOLS

Objectives

The basic objective of the diploma thesis is to analyze the EU market for crude oil with a bias towards the Russian Federation. It will define whether there is a dependency on crude oil supplies from the Russian Federation. If so, it will develop the alternative ways of EU – Russia dialogue with the aim to decrease this energy dependence.

Hypothesis

The EU significantly depends on crude oil imports from the Russian Federation which needs to be reduced for the political and economic well being of the EU in the future.

Methodology

Methods used in the diploma thesis can be basically classified as statistical and economic. To develop the details, the method of literature resources overview was used in the theoretical part of the thesis. For the purpose of data processing and analysis in the analytical part of the diploma thesis the following methods have been used: statistical and retrospective analyses, deductive methods and graphing.

3. LITERATURE OVERVIEW

3.1 Crude Oil: Its Origin and Utilization

We live in an increasingly interdependent world. And central to this is the global energy system, something on which billions of people rely on daily, from both the social and economic perspective. It is an increasingly complex system, where the right decisions need to be made in a timely manner, as the relationships between the major facets of the industry become ever more intertwined.[8]

But this system is just a well-adjusted mechanism which has been on agenda in many countries and business circles for many years, and nowadays it is probably the most interesting and burning topic for discussion. The central notion of it is devoted to fossil fuels, coal, oil and natural gas, which are a non-renewable source of energy. And among them crude oil is probably the most interesting either for scientists or businesses. It is one of the world's treasures because of its importance in our lives.

Crude oil - complex mixture of hydrocarbons derived from the geologic transformation and decomposition of plants and animals that lived hundreds of millions of years ago.[9] It is a dark, sticky liquid which, scientifically speaking, is classified as a hydrocarbon. This means, it is a compound containing carbon and hydrogen, with or without non-metallic elements such as oxygen and sulfur. Crude oil is highly flammable and can be burned to create energy. Along with its sister hydrocarbon, natural gas, derivatives from crude oil make an excellent fuel.[12] Oil and natural gas are two major sources of hydrocarbons – organic compounds composed only of carbon and hydrogen. Hydrocarbons may be gaseous, liquid or solid. Naturally occurring petroleum is known as "crude oil" (it is not "refined"). Crude oil consists of a complex mixture containing between 50 and 95% hydrocarbon by weight. The remainder comprises organic and inorganic chemical compounds of nitrogen, oxygen, sulfur, and metals such as iron and sodium (as salt, or NaCl).[11]

[8] World Oil Outlook 2009, OPEC, Austria, 2009.
[9] Petroleum or crude oil definition.
[12] Crude oil, OPEC.
[11] Bluemle J.: The origin of oil.

Even though disagreement exists about the origin of oil, years of research by geologists has resulted in a reasonably clear understanding of how crude oil forms in the earth's crust, its composition, and how it occurs. Ideas about the origin of oil follow two different lines of thinking: organic theories and inorganic theories.

One of the earliest inorganic theories originated with Arab philosophers who, in about 850 A.D., suggested that water and air combined with fire to produce sulfur and mercury. The sulfur and mercury then combined with "earth" and, at great subterranean temperatures, yielded "naft" (naphtha) and "qir" (asphalt).

Two nineteenth-century scientists, Louis Joseph Gay-Lussac (1778-1850) and Alexander von Humboldt (1769-1859) proposed that oil formed as a result of impregnation of marine sediments by subaqueous hot springs. Another nineteenth-century idea was that oil formed when hot alkalis combined with carbon dioxide deep in the earth's interior. A Russian chemist, Dimitri Mendeleev (Mendeleev was also the "inventor" of the Periodic Table), believed that percolating water encountered iron carbide deep in the earth, generating hydrocarbons. Other scientists, noting that methane occurs in trace amounts in volcanic gases and in fluid inclusions in igneous rocks, assumed that it was "sweated" out of the earth's interior throughout geologic time, rose in the crust, changed into heavier hydrocarbons, and finally accumulated into the petroleum deposits we use today.

Oil and coal were linked by some naturalists as early as the sixteenth century. Abundant imprints of leaves, stems, and other evidence of vegetation left little doubt as to the origin of coal. Chemists discovered that small amounts of oil could be distilled from coal in the laboratory and postulated that this occurred in nature as well. Geologists had problems with this idea though, because the primary oil-producing strata lacked associated coals, and naturally-occurring oils were chemically different from the oils derived from the distillation of coal.

Other nineteenth-century workers believed that oil was derived from terrestrial vegetation, which was washed into the sea and deposited with the sediments containing the petroleum. Problems with this idea include the fact that some oil is produced from rocks containing only marine fossils, and also the high temperatures needed to convert wood into liquid organic matter are not geologically reasonable. By the late 1800's and

early 1900's, the prevailing view was that crude oil represents an accumulation of hydrocarbons that were originally produced by living organisms, both plants and animals and coal came from the accumulations of dead plants.

Other scientists tried to explain the origin of oil in other ways. The occurrence of hydrocarbons in meteorites has been well known to scientists since the mid-1800's. In the early 1930's, astronomers learned that methane is a major component of the large outer planets – Jupiter, Saturn, Uranus, and Neptune. Because it was believed that all the planets in our solar system were closely related in origin, some researchers concluded that the raw materials for hydrocarbons must have been present in the substances from which the primordial earth accreted 4.6 billion years ago. By the 1950's, such reasoning led astronomer Fred Hoyle to argue that the deep earth must contain vast untapped reserves of oil just awaiting our technological ability to find and exploit them. This idea is still favored by a small group of scientists.[11]

Nevertheless most geologists today believe that oil was formed millions of years ago from a combination of hydrocarbons synthesized by living organisms and hydrocarbons formed by thermal alteration of organic matter in sedimentary rocks. Ten to twenty percent of the oil in the earth's crust is thought to form from living organisms, whereas 80 to 90 percent is formed by thermal alteration. Marine plankton are the major components in both methods of natural crude oil formation.

Several lines of evidence support this contemporary view of the origin of petroleum:

1. Oil is rarely found in rocks that formed before life developed on the earth;
2. Oil contains compounds derived from the pigments of living organisms;
3. The ratio of carbon isotopes in oil is similar to that in organic matter;
4. Hydrocarbon compounds found in oil affect polarized light in the same way that hydrocarbons and other compounds synthesized by living organisms affect polarized light;
5. The structures of many oil compounds are similar to those of fats and waxes found in living organisms and, therefore, could be formed from them.

When organisms die, bacteria attack their remains. These bacteria require oxygen, and if oxygen is plentiful, destruction of the organic remains is complete.

Abundant remains of marine plankton, however, sometimes accumulate along with mud in stagnant underwater environments. The aerobic bacteria use up any dissolved oxygen quickly. Anaerobic bacteria, which obtain their oxygen from dissolved sulfur compounds and hydroxides in the pore waters of the mud, then take over. These bacteria consume most of the easily decomposable compounds in the organic matter, such as carbohydrates and proteins. As the muds are buried by an increasingly thicker cover of sediment, physical and low temperature chemical reactions continue to alter the chemical structure and composition of much of the organic matter. At even deeper burial depths, rising temperatures and pressures cause the organic debris to decompose further to form crude oil. The muds compact and become shale. Petroleum migrates from the shale (it is "squeezed" out) and travels through more porous and permeable strata until it encounters a trap like the Nesson Anticline in northwestern North Dakota, or the Lodgepole Waulsortian mounds near Dickinson. Recent ideas about the origin of oil are based on a long history of scientific investigation.

Some perceptive geologists intuitively reached the same conclusions over 100 years ago. For example, Henry Rogers, the first State Geologist of Pennsylvania (where oil was first discovered, in 1859), thought that Devonian black shales were the source of the oil found in the sandstones of Pennsylvania. He suggested that "...the greater portion of the oil and gas is derived from the marine [fossil organic matter in the] carbonaceous shales."

Given that so much was known correctly so long ago, why the appeal for so many other, sometimes fantastic, hypotheses about the origin of crude oil? The reason may be that the inorganic hypotheses were based on laboratory experiments by chemists and, therefore, seemed to offer both scientific validity and the reassurance of an inexhaustible supply of oil. An inexhaustible supply was also implied by the cosmic hypotheses. The organic theory, on the other hand, infers that a limited quantity of oil is available to us. [11] That's why many scientists support especially organic theory, which infers on limited availability of crude oil stocks.

Oil has been known and used since the most ancient times and has been mentioned by most ancient historians since the time of Herodotus. It was used chiefly as a liniment or medicine, not as a fuel. The Bible refers to pitch being used for building

purposes – cementing walls – in Babylon. Oil flows from natural springs in many localities. It was obtained from such springs in what is now Western Pennsylvania by the Seneca Indians, who used it for medicinal purposes. The first oil well was drilled in that region by Edwin Drake in 1859.

Crude oil is measured in barrels. When crude oil first came into large-scale commercial use in the United States in the 19th century, it was stored in wooden barrels. One barrel equals 42 US gallons, or 159 litres. In some cases crude oil is also measured in tons. The number of barrels contained in each ton varies depending on the type and specific gravity of each crude; however the average number considered would be around 7.33 barrels per each ton.

World proven crude oil reserves are estimated at almost 1.3 trillion barrels, of which OPEC Member Countries hold approximately 80 per cent. OPEC's Members in 2009 produced around 28.9 million barrels per day of crude oil, or 41.9 per cent of the world total output, which stood at about 69.0 million barrels per day. At the rate of production in 2009, OPEC crude oil reserves are sufficient to last more than 100 years.

Burning crude oil itself is of limited use. To extract the maximum value from crude, it first needs to be refined into petroleum products. The best-known of these is gasoline, or petrol. However, there are many other products that can be obtained when a barrel of crude oil is refined. These include:[12]

Gasoline

 According to the Energy Information Administration, the most common refined product is gasoline, the bulk of which is used to fuel internal combustion engines, such as those found in automobiles.

Diesel

 A slightly heavier product, diesel fuel is also used in certain types of internal combustion engines, and is superior to gasoline in its fuel economy and its ease of combustion, as well as, if properly refined, its emissions.

Solvents

 Crude oil can also be refined into many industrial solvents – like benzene, toluene and xylene--used for the cleaning of machine parts.

[12] Crude oil, OPEC.

Kerosene

 Kerosene has many uses, including heating, lighting and the propulsion of jets. Although different than standard jet fuel, it is superior in several ways, including its higher freeze point. It can also be easily blended into diesel fuel.

Heating Oil

 Heating oil is a low-viscosity fuel commonly used in boilers and furnaces. According to the Energy Information Administration, about one-quarter of all crude oil is converted to heating oil.

Liquified Petroleum Gas

 Various kinds of liquefied petroleum gas--like propane and butane – are commonly used as fuels in outdoor grills and other portable appliances. They can also be used to manufacture other petrochemicals.

Residual Fuels

 Some of the heaviest fuels, which remain after most other fuels have been distilled, are residual fuels. These viscous fuels are used to power heavy machinery in boats, power plants and factories.

Coke

 Coke is a reside left after all the usual fuels have been distilled from the crude. It can be used as a form of charcoal briquette or in the manufacture of electrodes and dry cells.

Asphalt

 Asphalt, a byproduct of crude oil, is a black, molasses-like substance used primarily in the construction of roads, where is acts as a binding agent for hard particles.

Lubricants

 Also known as mineral oils, lubricants are high-viscosity derivatives of crude used to reduce the friction between moving parts. There are a number of different types of petroleum-based lubricants, organized into three different categories based on their base chemical-paraffinic, naphthenic and aromatic.[13]

Furthermore, several of the products listed above which are derived from crude oil, such as naphtha, gasoil, LPG and ethane, can themselves be used as inputs or

[13] Wolfe M.: Uses of crude oil products.

feedstocks in the production of petrochemicals. There are more than 4,000 different petrochemical products, but those which are considered as basic products include ethylene, propylene, butadiene, benzene, ammonia and methanol. The main groups of petrochemical end-products are plastics, synthetic fibres, synthetic rubbers, detergents and chemical fertilisers.

Considering the vast number of products that are derived from it, crude oil is a very versatile substance. Life as we know it today would be extremely difficult without crude oil and its by-products.[12]

3.2 World History of Crude Oil Extraction and Reserves

Exploration for hydrocarbons (oil, gas, and condensate) is commonly acknowledged to have begun with the discovery at Oil Creek, Pennsylvania, by "Colonel" Edwin Drake in 1859. However, this was only the start of the modern global era of technology-driven advances in exploration. Traditionally, oil exploration was conducted by recognizing seeps of hydrocarbons at the surface. The Chinese, for example, used oil (mostly bitumen) obtained from seeps in medication, waterproofing, and warfare several thousand years ago. They frequently dug shallow pits or horizontal tunnels at seep locations but also, as early as 200 B.C., drilled down as much as 3,500 ft (1,067 m) using rudimentary bamboo poles (making Drake's 69.5 ft [21.2 m] over 2,000 years later seem puny by comparison). In Baku, Azerbaijan, there are still gas and oil seeps that are permanently on fire and have been used to light caravanserai since the times of Marco Polo and the Silk Route. Similarly, seeps were recognized and exploited in the Caucasus (Groznyy region of Chechnya), Ploesti in Romania, Digboi in Assam, Sanga Sanga in eastern Borneo and Talara in Peru.[14]

Even Drake's well, the first to intentionally look for oil in the subsurface, was based on direct identification of seeped hydrocarbons at the surface. Initially, the oil produced was used to provide kerosene for lamps, but the later invention of automobiles drove up demand and ushered in modern methods of oil exploration. In fact, most oil until the turn of the twentieth century was in one form or another related to seep

[14] Taylor A.: A history of the petroleum industry and the origins of crude oil.

identification. However, one theory developed during this time was to have a profound impact on exploration. In the mid 1800s, William Logan, first Director of the Geological Survey of Canada, recognized oil seeps associated with the crests of convex-upward folded rocks and employed a geologist, Thomas Hunt, to formalize his "anticlinal theory." This idea, however, was only recognized as a viable tool for exploration when Spindletop was discovered on the Gulf Coast of Texas in 1901. For the next 30 years, the anticlinal theory dominated exploration, to the extent that many believed that there were no other types of hydrocarbon accumulation. As a result, geologists became critical to understand the structural configurations of rock sequences which, when combined with seep occurrences, proved to be the keys to discovering the main oil producing provinces of the United States, Mexico, and Venezuela. For a period of time before World War I, Oklahoma, Texas, and California were the World's leading production areas.

Around the turn of the century and up until the 1950s, the main exploration tool used for finding oil was the use of intensive and detailed geological mapping. This was frequently in terrain that was remote and inhospitable. The early pioneers working their way through the jungles of Burmah, India (Burmah oil company, now part of British Petroleum), and Borneo (Shell), the deserts of Iraq or the mountains of Iran (the Anglo-Persian Oil Company that became British Petroleum), would conduct detailed evaluations of the nature and distribution of rock units. These rock units represented potential reservoirs, seals, and source units, as well as frequency, orientation, and geological history of folds or faults that could act as traps for the migrating hydrocarbons.[14]

It took until the 1920s for explorers to realize that hydrocarbons could occur in situations where no anticline was preserved. For example, it was noted as far back as 1880 that oil was trapped in the Venango Sands of Pennsylvania, not in the form of an anticlinal structure, but by the lithologies occurring in a moving palaeoshoreline. In fact, oil trapped by stratigraphy was discovered more often by chance rather than design even until the 1970s. By the 1920s, mapping of surface features was complimented by the development of seismic refraction, gravity, and magnetic geophysical methods. In particular, gravity and seismic methods proved effective in locating oil trapped against

buried salt domes in the onshore Gulf of Mexico. At this time, another significant advance in exploration of the subsurface took place with the application of geophysical techniques by the Schlumberger brothers to measuring properties of rocks and fluids encountered whilst drilling for hydrocarbons. In France in 1927, they initially measured the resistivity of the rocks in shallow wells (drilled primarily for water distribution), but later went on to add other electric, sonic, and radioactive logging tools. It is now even possible to log porosity, permeability, mineralogy, and fluids and image the structures and rock types downhole. Ultimately, these developments have been one of the main reasons why Schlumberger has become one of the largest electronics companies in the world.

Aerial remote sensing for features favored for hydrocarbon accumulation became an important and effective technique, particularly in areas of sparse vegetation cover following World War II when low-cost, rapid reconnaissance of large areas became feasible. Large-scale features such as faults and folds could be identified and targeted for detailed seismic acquisition. In the 1970s, this capability was improved dramatically by the use of satellite remote sensing technologies (LANDSAT).

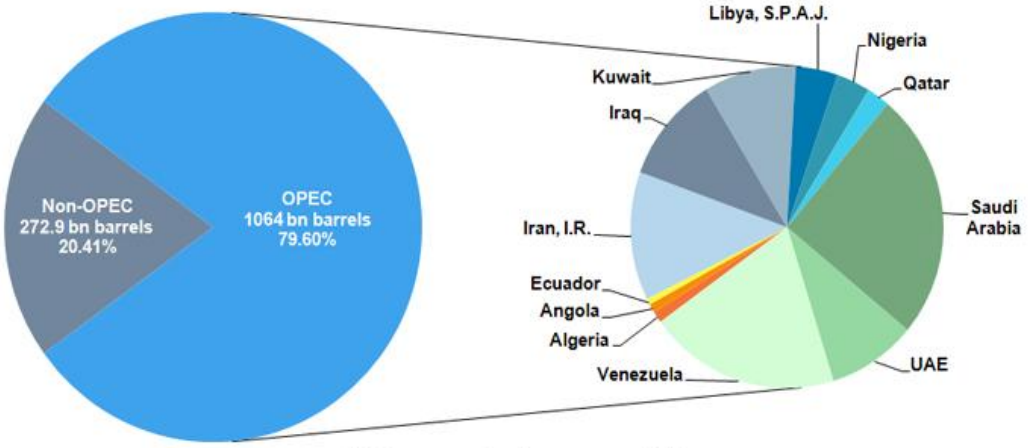
From the 1940s to the 1960s, there were important developments in the understanding of the controls on lateral and vertical variations within reservoir sequences. In particular, the new discipline of sedimentology used modern depositional analogues from around the world to understand the nature, distribution and controls over ancient reservoir sequences. There was also much interest generated over the discovery of carbonate oil-bearing reservoirs in West Texas and Canada (Leduc Reef), and recognition that modern inter-tidal carbonate-evaporite sequences in the UAE had equivalents in ancient reservoirs. These developments lead to the discovery of many super giant carbonate oil fields in the United States (Yates Field), Mexico (Posa Rica), Middle East (Kirkuk), and Russia (a number of Siberian oil fields). [14]

Other tools such as geochemistry, developed during this period, have helped to quantify the level of maturity and the nature and distribution of source potential in a region. Micropalaeontology was developed in Tertiary Basins such as Trinidad and the Caucasus for horizon identification and correlation using planktonic foraminefera, but spread rapidly to the United States Gulf Coast. Now, geochemistry and biostratigraphy,

including palynology (the study of spores and other organic matter), have become standard tools in the explorationist's armory.

Also beginning in the 1970s, there was a significant advance in the power and reduction in size and cost of computers that has lead directly to a dramatic increase in the ability of geophysicists to acquire, process, and interpret large quantities of seismic data. Initially, this was in the form of 2-D reflection seismic onshore, but this trend has continued to the present day and now oil companies regularly undertake, mostly offshore, 3-D seismic surveys and even 4-D field surveys. Three-dimensional surveys are repeated over the same area every few years to monitor fluid movement within reservoirs and thereby optimally manage hydrocarbon recovery. Highly complex three-dimensional models of the subsurface can be displayed on sophisticated workstations or in the form of a fully enclosed room where staff can be totally immersed in the data using special glasses and can "walk through" the reservoirs to, for example, choose the optimal location and direction of wells.

The up-to-date and more detailed information concerning oil stocks nowadays is presented on the following graphs:



OPEC proven crude oil reserves , end 2009
(billion barrels)

Saudi Arabia	264.59	24.9%	Iraq	115.00	10.8%	Libya, S.P.A.J	46.42	4.4%	Algeria	12.20	1.1%
Venezuela	211.17	19.8%	Kuwait	101.50	9.5%	Nigeria	37.20	3.5%	Angola	9.50	0.9%
Iran, I.R.	137.01	12.9%	UAE	97.80	9.2%	Qatar	25.38	2.4%	Ecuador	6.51	0.6%

Figure 3.1: OPEC Share of World Crude Oil Reserves

Source: OPEC Annual Statistical Bulletin 2009

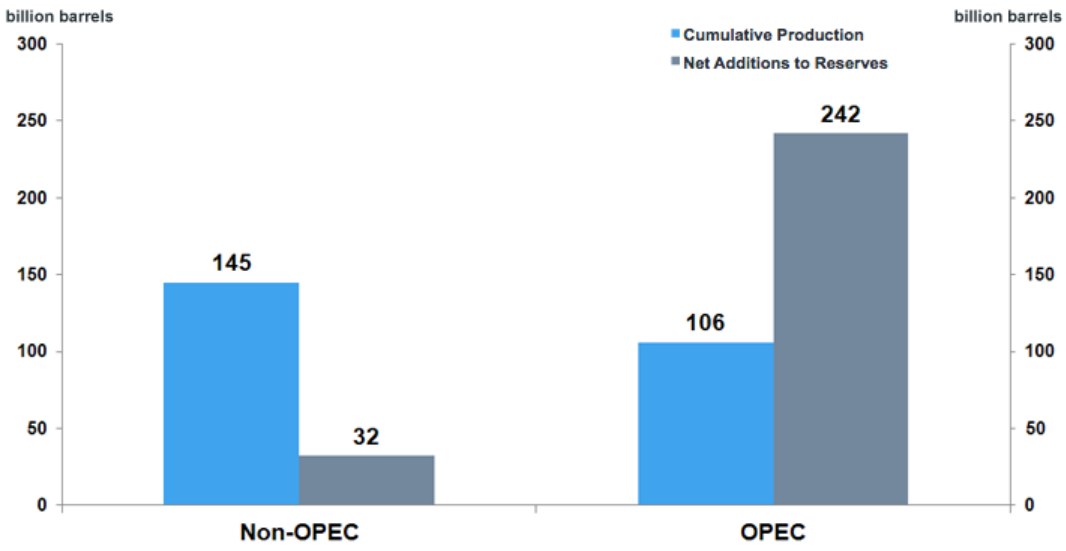


Figure 3.2: World Crude Oil Reserves: Cumulative Production Versus Net Additions (2000 – 2009)

Source: OPEC Annual Statistical Bulletin 2009

Exploration for oil and gas has progressed dramatically in the last 30 years, driven forward by the ever-increasing power and capabilities of the computer. As a result, it now takes only a fraction of the time required 20 years ago to find and develop oil fields. However, technology in itself does not find oil or gas fields; it frequently requires a flash of inspiration that is the mark of a true explorer to discover some of the major new exploration plays in such areas as Equatorial Guinea, Angola, Nigeria, Trinidad, the Gulf of Mexico, and the northern Canadian Rockies. [14]

3.3 World Crude Oil Market Analysis

The world oil market includes global oil producers, refiners and of course the price of oil, traded daily. It controls the price you pay for gas at your neighbourhood gas station. Taxes, gas station profits, and oil-refinery profits also take their toll, but when you see the price of gas go up twenty cents in one week, that's the world oil market in action.[5]

[5] Stoft S.: Carbonomics: how to fix the climate and charge it to OPEC.

But for more detailed review of this market it is vital to make the analysis of absolute and relative trends in world oil (all liquids) supply, consumption, net exports and net imports between 1980 and 2009. In this analysis the world has been split into 5 economic groups, OECD (30 developed countries), OPEC (current 12 countries), FSU (Former Soviet Union; 15 countries), China and India and ROW (Rest Of World).

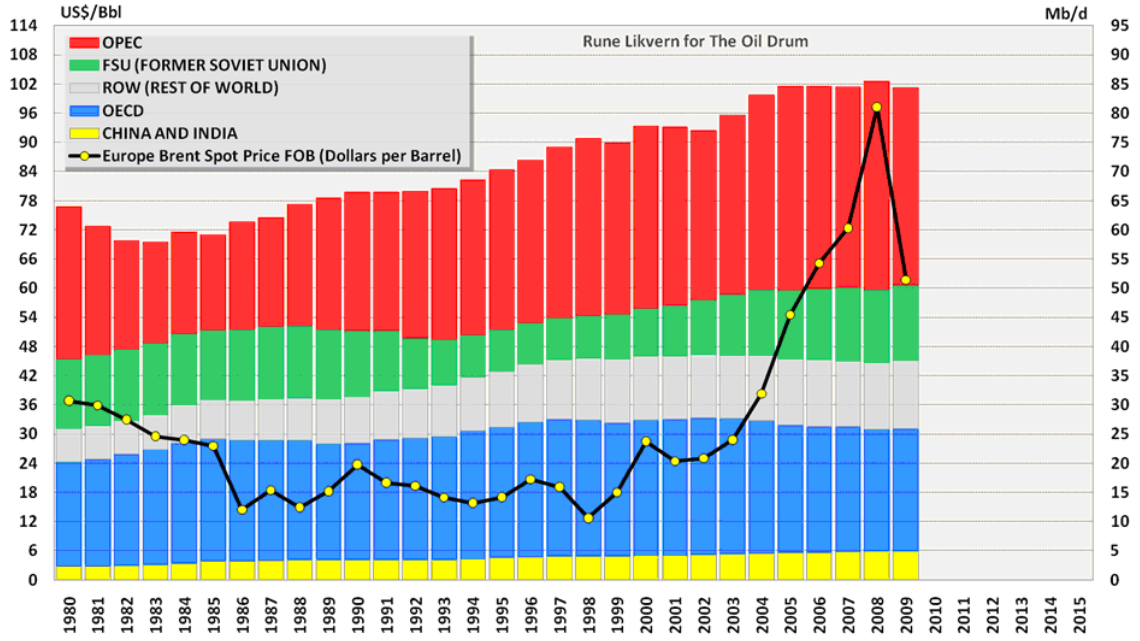


Figure 3.3: World, Oil Supply By Economic Groups Of Countries, 1980 – 2009

Source: Based Upon Data from EIA International Energy Statistics

The stacked columns in the diagram above show the development in world supplies of liquid energy (crude oil, condensates, NGLs and other liquid energy) from 1980 to 2009 split among 5 economic groups of countries. Annual oil price (Brent) is plotted against the left hand y-axis.[15]

The chart above illustrates how world oil supply grew steadily for over 20 years, between 1983 (after the oil price shock and the recession in the early 80s) and 2005. After 2005, it formed a plateau. Apparently, the growing oil supply from some OECD countries helped bringing down the oil price and contributed to 2 decades of low and predictable oil price.

[15] Likvern R.: Trends in world oil supply/consumption and net exports/imports.

The chart also shows how recent (1997 to present) growth in oil supply from FSU supported Non OPEC growth in oil supplies and its effect on maintaining the recent plateau in world oil supply.

The remarkable thing is that by coincidence the oil price started its strong growth as OECD supply started to decline during 2004.

During the first half of 2010, the average oil price was $77/Bbl (Brent) which is approximately 25 % above the annual price of $62/Bbl in 2009. This has increased world supply by 1,6 Mb/d (1,1 Mb/d (C+C), 0,3 Mb/d (NGLs), 0,2 Mb/d (other liquid energy)) so far in 2010 relative to 2009. A major part of the growth in supply is growth in net oil exports.[15]

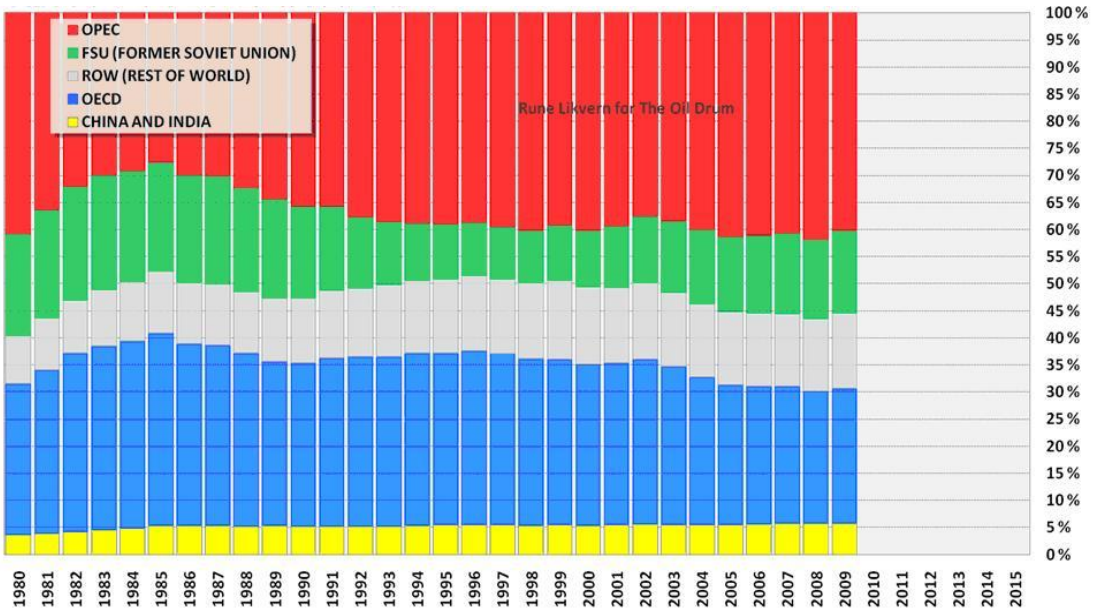


Figure 3.4: World, Relative Development In Oil Supply By Economic Groups Of Countries, 1980 – 2009

Source: Based Upon Data from EIA International Energy Statistics

In the past year, many of the OECD countries have applied stimulus packages. It appears that the result of this additional spending has been higher oil prices, without much additional oil supply. Furthermore, EIA and IEA forecasts now both indicate that OECD oil supply is headed for a near term decline.

The stacked columns in the diagram above show relative development in world oil (all liquids) supply among the 5 economic groups of countries presented here.

It illustrates how OPEC's share of world supply declined between 1980 and 1985. Since then, it has grown to approximately 40 % now. The chart also shows how OECD's share is now declining.

The world oil supply picture tells only part of the story. What is equally important is to understand developments in world net oil exports.

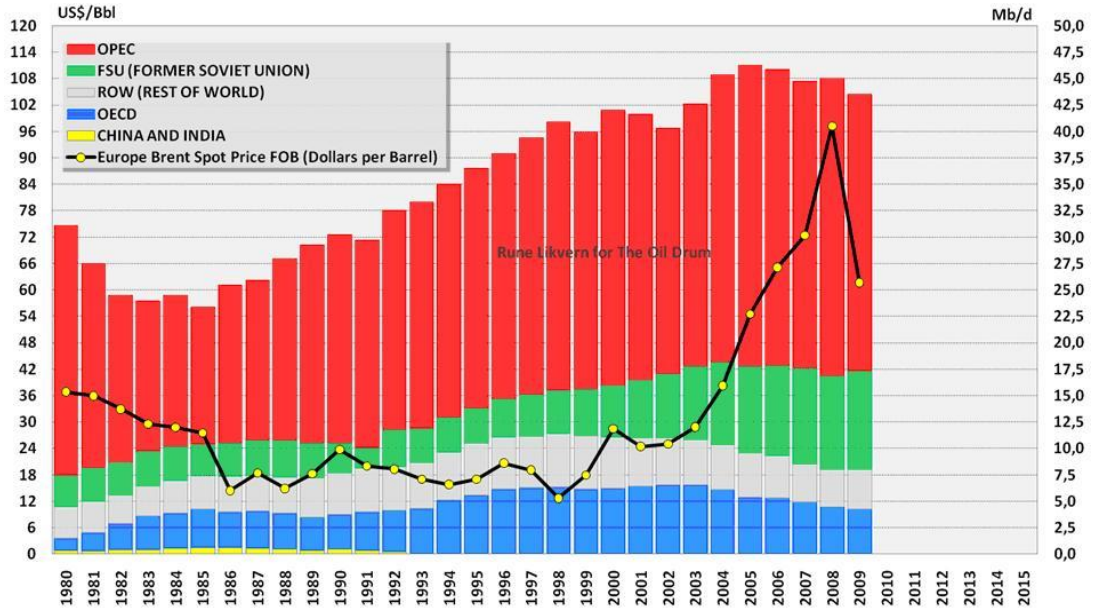


Figure 3.5: World, Net Oil Exports By Economic Groups Of Countries, 1980 – 2009

Source: Based Upon Data from EIA International Energy Statistics

The stacked columns in the diagram above show development in world net oil exports of liquid energy (crude oil, condensates, NGLs and other liquid energy) from 1980 to 2009, split among the 5 economic groups of countries. The development in the annual oil price (Brent) is plotted against the left hand y-axis. NOTE: net oil exports are calculated as the difference between production and consumption for only those countries that are exporters. Adjustments for stock changes may impact the annual numbers a little in either direction. [15]

The diagram shows that world net oil exports reached a high in 2005, and have since declined. There was a larger decline 2009, mainly due to reduced oil imports into

OECD caused by the economic slowdown. The growth in oil price after 2005 did not result in an increase in world net oil exports, which strongly suggests that price rationing took place.

In 2009 there were 31 countries that had annual net exports above 100 kb/d. Some of these, including Brazil, Colombia, and Sudan, are included in the ROW group. It appears that growth in the oil price coincided with the start of decline in OECD net exports in 2004. [15]

The chart also illustrates that growth in net oil exports in recent years have come from FSU and OPEC. World net oil exports could reach another high in the near future. For the first half of 2010, world oil supply grew by 1,6 Mb/d relative to 2009 in response to a 25 % growth in the oil price. Most of this supply growth is believed to be increased net exports. The bottom line here is that there exist possibilities that new highs of both world oil supplies and net oil exports could happen in 2010 or 2011. What happens beyond 2011 is anyone's guess - we expect that both total world oil supplies and net exports will show declines in 2012 at the latest. Figure 3 also demonstrates how net oil exports from FSU have grown in recent years. World supplies, net exports and the world economy would have been quite different without FSU's growth in supplies.

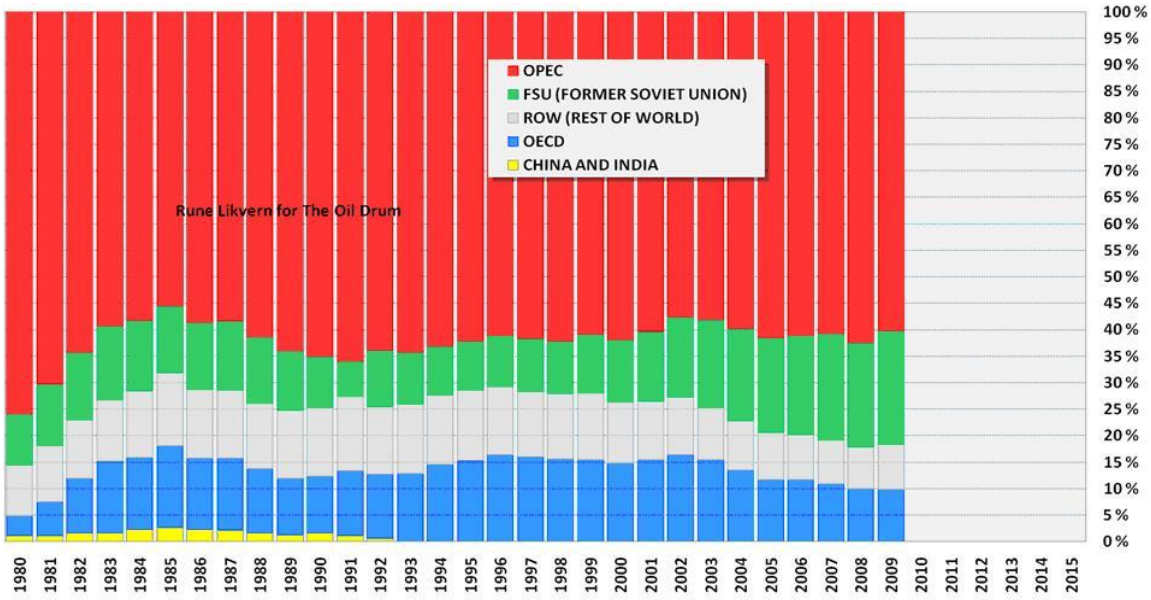


Figure 3.6: Development In Relative Share Of World Net Oil Exporters Amongst Economic Groups Of Countries, 1980 – 2009

Source: Based Upon Data from EIA International Energy Statistics

The stacked columns in the diagram above show relative development in world net oil (all liquids) exports among the 5 economic groups of countries presented here.

The chart shows how OPEC's share of net oil exports declined from around 76 % to around 55 % during the first half or the 80's. As of 2009 OPEC had around 60 % of world's net oil exports and FSU had grown their share to around 22 %.

The stacked columns in the diagram 3.7. show development in OECD net oil exports of liquid energy (crude oil, condensates, NGLs and other liquid energy) from 1980 to 2009. The development in the annual oil price (Brent) is plotted against the left hand y-axis. [15]

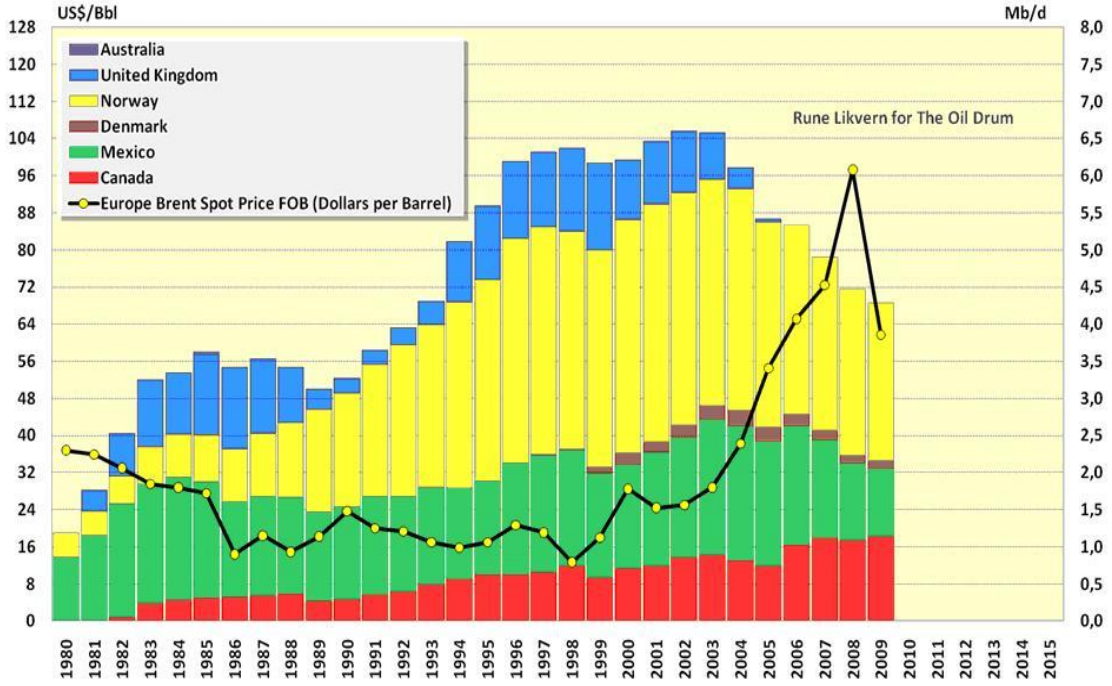


Figure 3.7: OECD, Development In Net Oil Exports By Country, 1980 – 2009

Source: Based Upon Data from EIA International Energy Statistics

Interesting in the chart above is that it shows how the oil price declined during the first half of the 80s with growth in OECD oil supply and net oil exports, and then remained stable and predictable until net exports from OECD started its decline in 2004. The decline in OECD net exports continues in 2010, and the oil price so far in 2010 is up 25 % relative to 2009 on an annual basis.

As a matter of fact, such significant changes in The OECD oil net imports development can be explained by a number of factors. And the first one and, probably, the most important, is the increase in the quantities demanded. Development of new technologies in the sphere of transportation, especially air one, and development of other industries had resulted in the increasing demand for oil products.

And second reason was a significant increase in quantities demanded from non-OECD member-states.

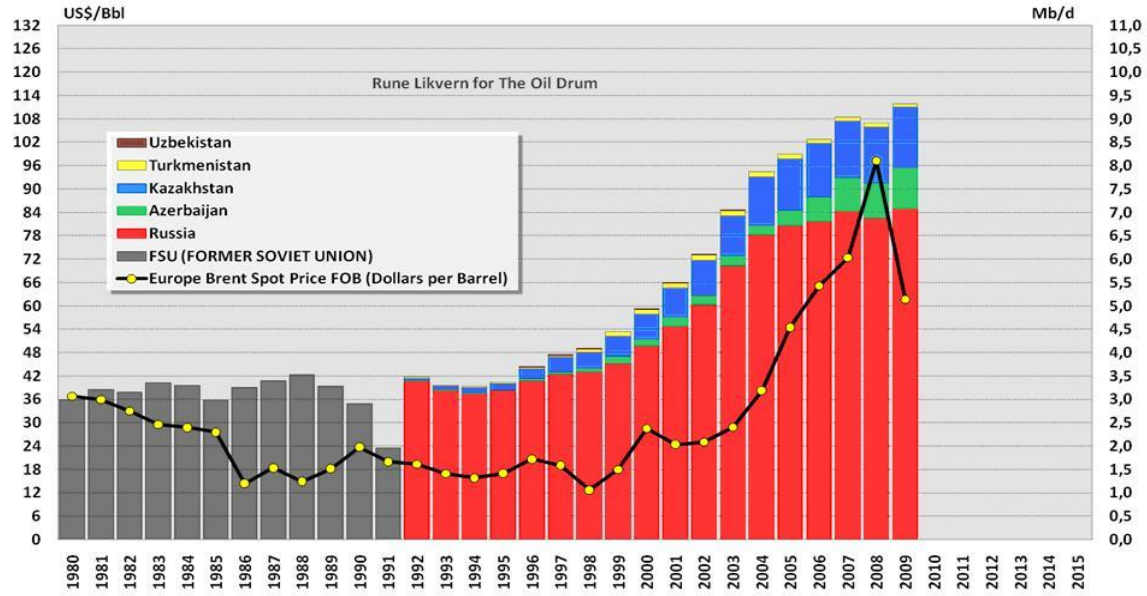


Figure 3.8: FSU (Former Soviet Union), Development In Net Oil Exports By Country, 1980 – 2009

Source: Based Upon Data from EIA International Energy Statistics

The stacked columns in the diagram above show development in FSU (Former Soviet Union) net oil exports of liquid energy (crude oil, condensates, NGLs and other liquid energy) from 1980 to 2009. The development in the annual oil price (Brent) is plotted against the left hand y-axis. [15]

Apparently the events leading up to the collapse of Soviet Union with declines in its net oil exports from the late 80s had little effect on the oil price. This happened while OPEC had the capability to grow its share of world net oil exports.

The growth in oil supply and net exports from FSU in recent years gives some food for thought about how things may have been without this.

2004 appears to be the year when the oil price revealed that the world supply/demand situation was getting tighter. Total net oil exports from OECD, FSU, (China + India) and ROW reached a high in 2004, leaving OPEC as the only group of countries with the potential to still increase net exports.

Note also the uptick in the oil price in 2000 when OPEC provided a major part of the growth in net oil exports. [15]

Between 2002 to 2005, OPEC increased their net oil exports by 5,3 Mb/d, while the oil price more than doubled.

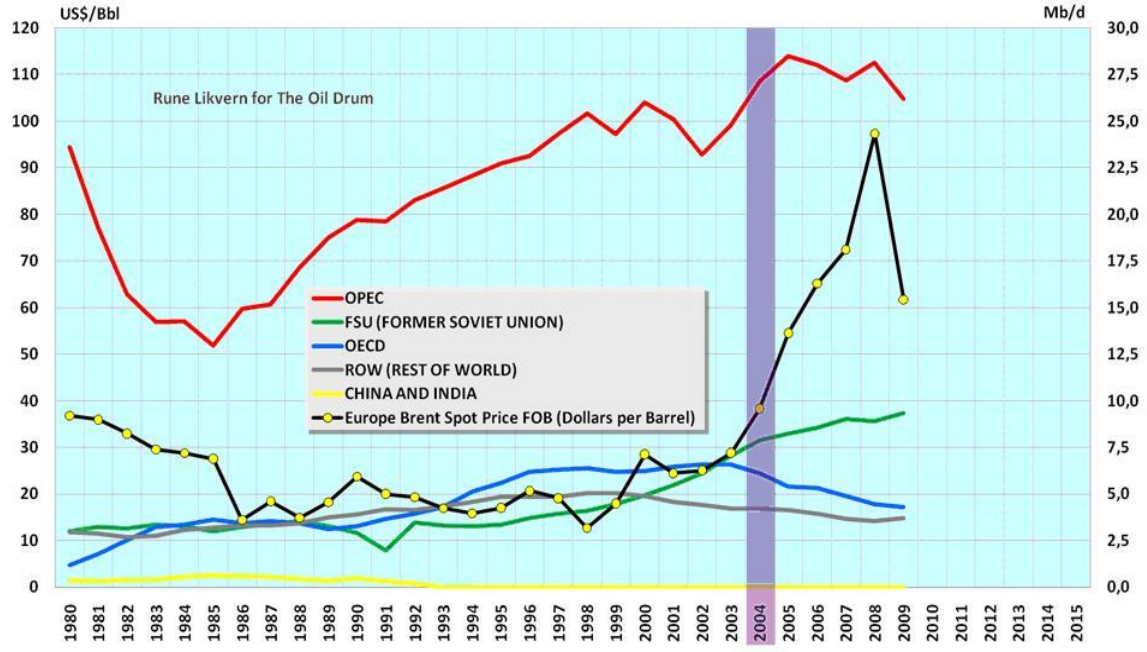


Figure 3.9: Development In Net Oil Exports By Economic Groups Of Countries, 1980 – 2009

Source: Based Upon Data from EIA International Energy Statistics

The lines in the diagram above show development in net oil exports for each of the 5 groups of countries presented here. The development in the average annual oil price is plotted against the left hand y-axis. The continued growth in the oil price between 2005 and 2008--which did not result in any growth in net exports from OPEC - strongly suggests that OPEC was maxed out in these years. The full picture is probably better understood if developments in consumption (demand) are presented together with developments in oil supply.

The world totals relating to supply and consumption may differ slightly. This is now believed to be mainly due to stock changes, but the fact that some data are still estimates subject to future revisions, may also play a role.

The stacked columns in the diagram 8 show developments in world consumption of liquid energy (crude oil, condensates, NGLs and other liquid energy) from 1980 to 2009, split among 5 economic groups of countries. The development in the annual oil price (Brent) is plotted against the left hand y-axis.

OECD has so far had a high in oil consumption of 49,5 Mb/d in 2005 which declined to around 45,1 Mb/d in 2009.

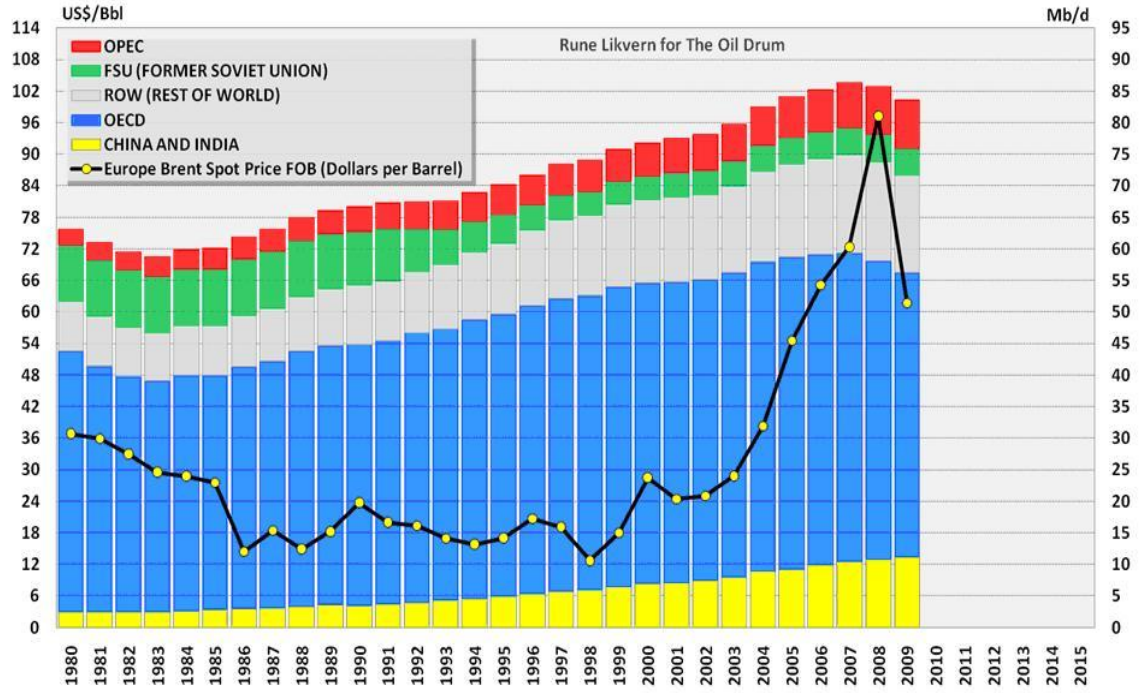


Figure 3.10: World, Oil Consumption By Economic Groups Of Countries, 1980 – 2009

Source: Based Upon Data from EIA International Energy Statistics

The chart illustrates that the growth in oil consumption from (China + India) has not (yet) soaked up the entire decline in OECD consumption in recent years.

Oil consumption for ROW (Rest Of World) countries had a slight decline from 2008 to 2009. These may reflect effects from the financial crisis and/or the oil price. [15]

Oil consumption within OPEC has seen growth in all the years presented in the Figure 7. Between 2003 and 2009, it grew from 5,9 Mb/d to 7,7 Mb/d or 30 %. Presently the areas of the world with growing consumption are OPEC and (China + India). Between 2000 and 2009, these two groups of countries increased their oil consumption by 6,8 Mb/d which is more than 55 %.

For the first half of 2010, world supply of oil (all liquids) has been around 86,0 Mb/d, which is 1,6 Mb/d more than in 2009 and around 0,5 Mb/d more than in 2008. The stacked columns in the diagram 9 show relative development in world oil (all liquids) consumption for the 5 economic groups of countries presented here.

This chart shows how OECD's share of world oil consumption has shrunk while (China+India) and OPEC's share has grown during the last 15 years.

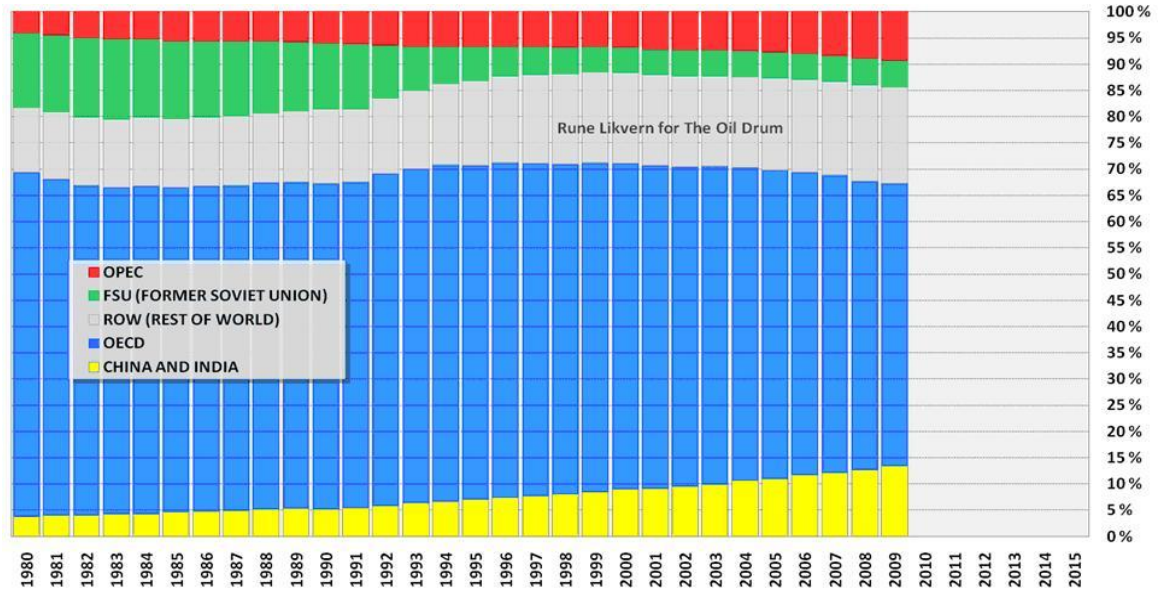


Figure 3.11: World, Relative Development Oil Consumption By Economic Groups Of Countries, 1980 – 2009

Source: Based Upon Data from EIA International Energy Statistics

In fact there are many reasons which could explain these trends in crude oil consumption patterns, like growing population, growing needs in energy, scientific progress, enlargement of infrastructural base, etc. The last one better explains the reasons of sudden increase of Chinese crude oil consumption.

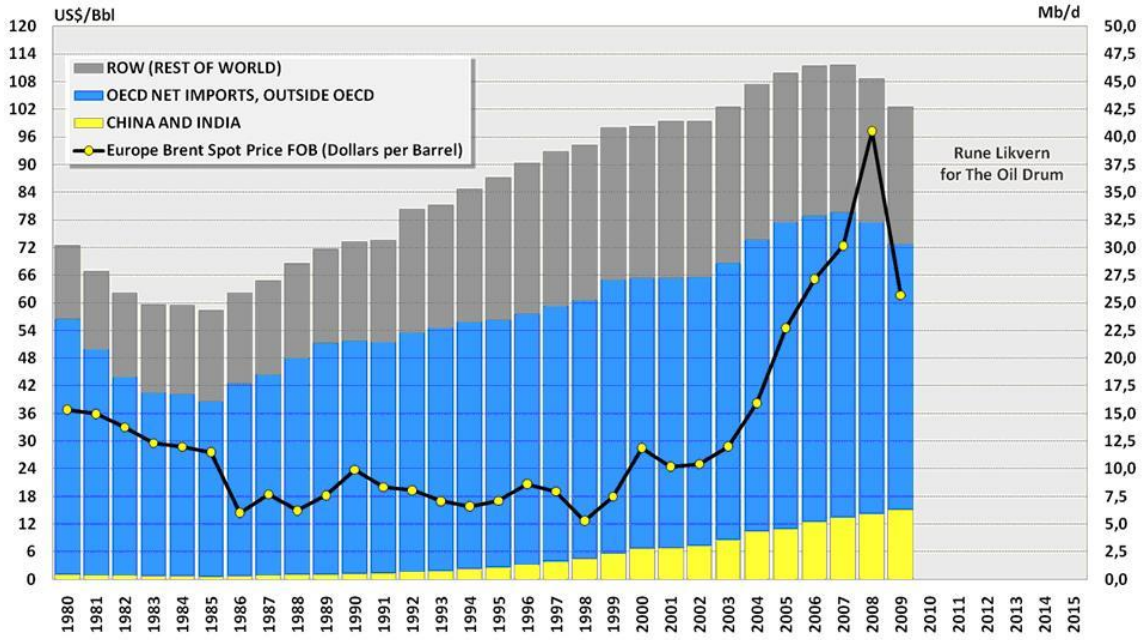


Figure 3.12: Global, Net Oil Imports For Groups Of Economic Countries, 1980 – 2009

Source: Based Upon Data From EIA International Energy Statistics

The stacked columns in the diagram above show development in world net oil imports of liquid energy (crude oil, condensates, NGLs and other liquid energy) from 1980 to 2009, split among 3 economic groups of countries (OPEC and FSU are net exporters). The development in the annual oil price (Brent) is plotted against the left hand y-axis. NOTE: net oil imports are here presented as the difference between consumption and production for the importers. Adjustments for stock changes may impact the annual numbers a little in either direction. [15]

The chart illustrates that the decline in OECD oil imports in the recent years has not been completely mopped up by (China + India)'s growth in oil imports.

ROW reached a high point in net oil imports in 2001. Net oil imports declined by 1,7 Mb/d or 12 % between 2001 and 2009. ROW's share of world net imports declined from above 30 % between 1991 and 2004 to around 29 % after 2004.

The decline accounting just for 1% for the period of 10 years doesn't seem to be very significant, but still it is the world trend and it accounts for million barrels and billion dollars.

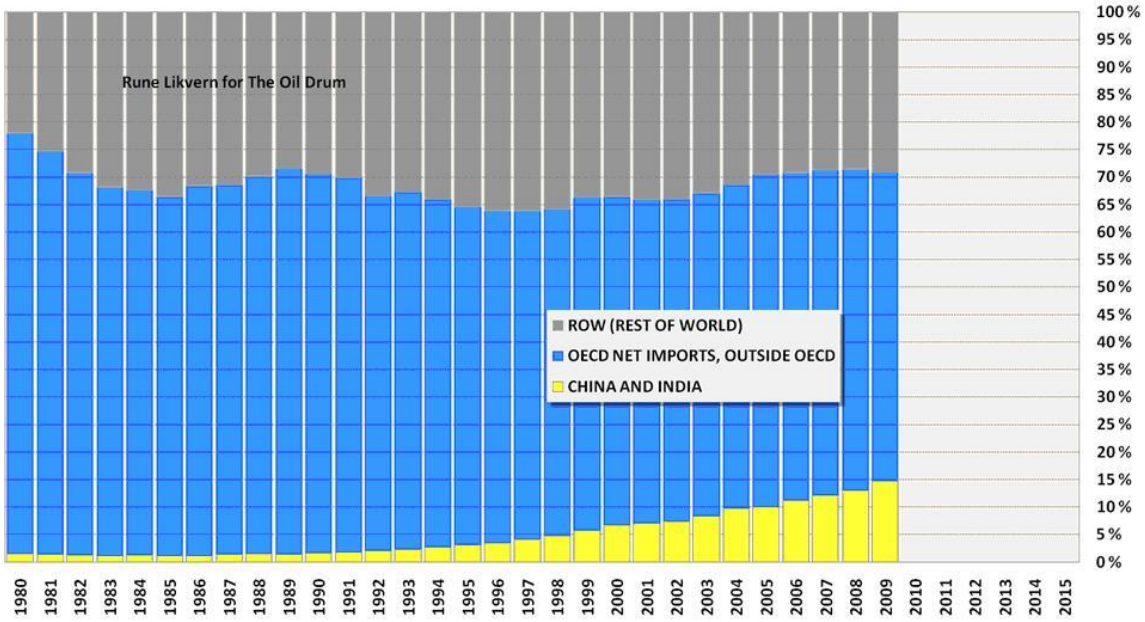


Figure 3.13: Development In Relative Share of Global Net Oil Imports Amongst Economic Groups Of Countries, 1980 – 2009

Source: Based Upon Data from EIA International Energy Statistics

The stacked columns in the diagram above show relative development in world oil (all liquids) net imports among 3 economic groups of countries. FSU and OPEC are net exporters.

And in fact it appears that we are now witnessing a race between demand, supplies and decline rates, and as long all the wheels on the world economy remain on, oil price movements will give an important signal about the supply/demand balance. This race may soon come to test the remaining marketable world oil spare supply capacity. [15]

4. THE EU – THE RUSSIAN FEDERATION CRUDE OIL DIALOGUE

4.1 Russian Crude Oil Industry and Its Influence on the World Supply

The Russian Federation holds the world's largest natural gas reserves, the second largest coal reserves, and the eighth largest crude oil reserves. It is a major exporter of oil and natural gas and its economic growth over the past decade has been driven primarily by energy exports, given the increase in Russian oil production and relatively high world oil prices during the period.[16]

Russian crude oil industry has a long history which has lasted over 130 years and since that time has become an indispensable part of Russia (firstly in the image of the Tsar Russ, further the USSR and finally the Russian Federation). It is possible to trace the changes in the country's image, historical epochs, political regimes, people, traditions, but crude oil and refinery industries undertook the same changes facing ups and downs, triumphs and crashes.

Today it is a bit difficult to overestimate a significance of crude oil for the Russian Federation. The richest people and companies working on the Russian territory are someway or another connected to the oil extraction, export, refinery or export. For Russia oil is the most profitable natural resource which yields significant profits and allows solving economic, social, political and other problems. In most cases it is taken into account as a financial weapon of a "big brother" setting up the rules of the game. But each stick is in two ends: that is not a secret that Russia really depends on this strategic resource. Nowadays the economic well-being (and not only) of the Russian Federation much depends not on a high technologies, know-how or high competitiveness of its production, but on the world crude oil prices. Such a situation requires thinking over the possible threats and possibilities – mostly threats in our case, because even small fluctuation on the world oil market, or trade wars, or terrorist attacks may suddenly influence the oil price resulting in Russian GDP changes.

In olden times such oil export orientation of the former USSR caused a lot of problems resulting in global economic crises. And one more global question: what role – good or bad – does crude oil play for the modern Russian Federation. It can be

[16] U.S. Energy information administration. Russia.

perceived as a long-term source of financial flows, or otherwise as a brake descending the flows of foreign investments into the less profitable sectors.

The Russian Federation was the largest producer of crude oil in 2009, surpassing Saudi Arabia. Russia's proven oil reserves were 60 billion barrels as of the beginning of 2010. Most of Russia's resources are located in Western Siberia, between the Ural Mountains and the Central Siberian Plateau. Eastern Siberia holds some reserves, but the region has had little exploration.

In 2009 Russia produced an estimated 9.9 million bbl/d of oil, and consumed roughly 2.9 million bbl/d. It exported around 7 million bbl/d in 2009 including roughly 4.0 million bbl/d of crude oil and the remainder in products. Russia's oil exports fall under the jurisdiction of the state-owned pipeline monopoly, Transneft.

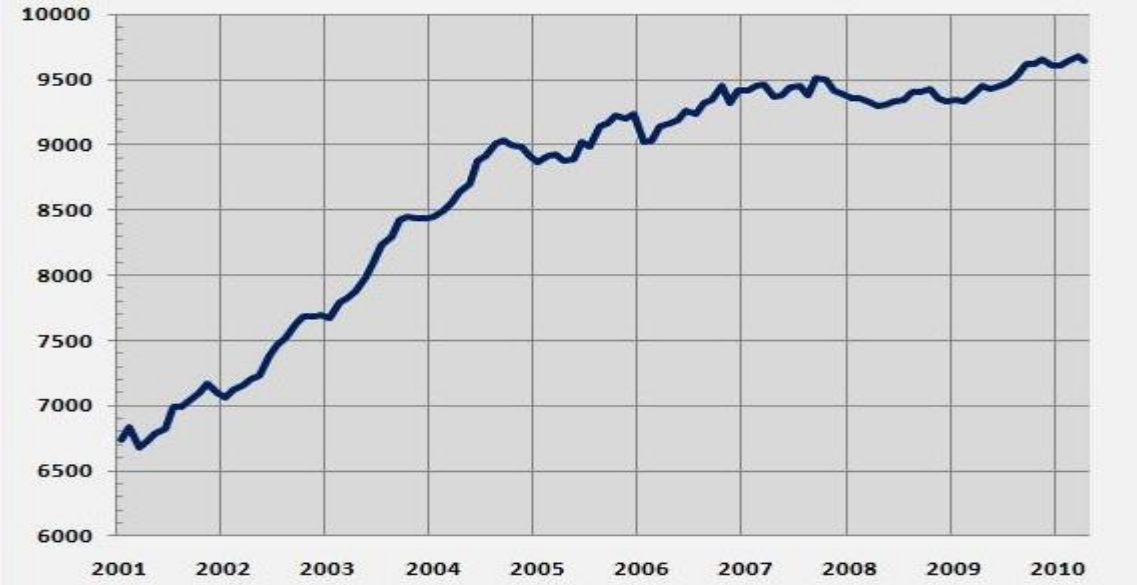


Figure 4.1: Russia Crude Oil Production 2001-2010, thousand b/d

Source: EIA Washington Statistics.

During 2009, Russia exported 7 million bbl/d of oil. The majority of Russian exports (80 percent) are destined for European markets, particularly Germany and Netherlands. Around 12 percent of Russia's oil exports go to Asia, while 6 percent are exported to North and South America, with the majority of those exports going to the United States (5 percent of total exports).[17]

[17] Saudi Arabia, Russia and oil production.

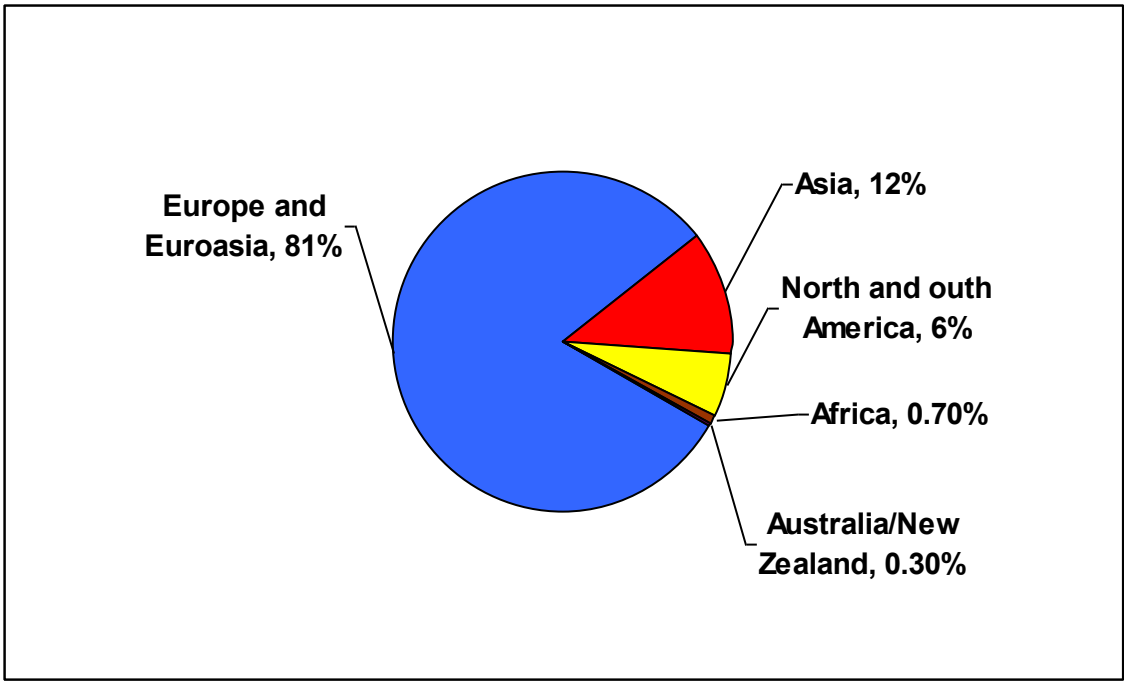


Figure 4.2: Russian Crude Oil Exports by Region, 2009

Source: Global Trade Atlas, FACTS and EIA.

Most of Russia's oil production comes from Western Siberia, more specifically from Priobskoye, Prirazlomnoye, Mamontovskoye, Malobalykskoye, and Surgut group of fields. The Sakhalin group of fields in the Far East is expected to contribute to most of Russia's oil production in the near term. In the longer-term, untapped oil reserves in Eastern Siberia, the Caspian Sea, and Sahkalin are expected to play a larger role and several international oil companies, including ExxonMobil, Shell, and BP are actively working in this area.[16]

Most of oil production remains dominated by domestic firms. Following the collapse of the Soviet Union, Russia undertook privatization of the oil industry, however the consolidation that followed transformed the sector into one dominated by a few privately-owned companies that drove the growth in the sector starting in the late 1990s. In 2003, BP invested in TNK, forming TNK-BP, one of country's major oil producers. This was followed by the entrance of ConocoPhillips into the Russian oil exploration and production. Subsequent attempts by foreign firms to increase their investment in Russia were unsuccessful. The state-run Rosneft acquired most or the

Yukos assets, and became the largest oil producer in Russia. While foreign companies can invest in Russia, this is generally done with a Russian company, usually Rosneft.

Russia has an extensive domestic distribution and export pipeline network. Russia's entire pipeline network is dominated by the state-run Transneft, which transports 90 percent of all oil produced in Russia, according to IHS Global Insight. These include a number of domestic pipeline networks, pipelines that transport oil to export terminals such as Novorossiisk on the Black Sea and Primorsk on the Baltic Sea, as well as a number of export pipelines that deliver oil to western European markets. Russian export pipelines include Druzhba, Baltic Pipeline System, North-Western Pipeline System, Tengiz-Novorossiisk, and Baku-Novorossiisk. All of these pipelines with the exception of the Tengiz-Novorossiisk are Transneft-controlled pipelines. Druzhba is Russia s largest pipeline, transporting oil to European markets on two routes, (1) northern via Belarus, Poland, and Germany, and (2) southern via Belarus, Ukraine, Slovakia, Czech Republic, and Hungary. Druzhba is more than 2,300 miles long and has the capacity to carry up to 1.4 million bbl/d of oil. [16]

There are eight ports in Russia serving as export outlets for Russian oil to various markets, including Europe, North and South America, as well as Asia. The largest Russian port is Primorsk with a capacity of 1.5 million bbl/d. Other ports include DeKastri, Kozmino Bay, and Prigorodnoye (located in the Far East), as well as Novorossiysk, Yuzhny, and Tuapse (Black Sea).

Currently, there are a few proposals for expansions and new terminal constructions in Russia. These include the proposed expansion to Primorsk, where throughput capacity has steadily increased, with additional capacity being added once the Baltic Pipeline System II (BPS-II) comes online. The construction on BPS-II began in June 2009. An export terminal in the Gulf of Finland, Ust-Luga, is also under construction. Once completed, the terminal will be mainly served by rail and will have the capacity to export up to 500,000 bbl/d.

Rail exports comprise roughly 5 percent of Russian oil exports. Rail is generally used as an alternative to Transneft's pipeline network, although rail shipments generally are costlier than pipeline exports. Russia exports crude oil and petroleum products by rail through Estonia and Latvia. Additionally, crude oil is transported to China via rail

to the northeast cities of Harbin and Daqing and to central China via Mongolia. In 2009, Russia exported an average of 306,000 bbl/d to China via rail, however Russia plans on increasing exports to China significantly in the future. The planned ESPO pipeline will stretch from Eastern Siberia to the Pacific Ocean, with a planned spur allowing significant increase in export volumes to China. [17]

As it is seen from the analysis above, the Russian Federation – the largest country in the world and at the same time one of the most influential player on the crude oil market. Titanic deposits of world crude oil stocks are located on the territory of this country – more than 12%. It has got well-developed infrastructure to facilitate crude oil distribution – pipelines, railways, sea ports, etc. It all works like a well-adjusted mechanism which increases its power on a day-to-day basis. Production volumes have significantly increased since 2001 from 6.8 to 9.9 bbl/d in 2010. This is the increasing trend which results in an increasing well-being, influence, GDP, trade volumes, whatever, but on the other hand we are talking about the natural non-renewable resource which in twenty, thirty or hundred years will be run out of. So Russia has already started the policy of keeping control, even though their crude oil reserves are currently plentiful. It is seen from the recent joint-venture of TNK and BP which is a clear trial to get control over the situation and to ensure blooming future in the crude oil business.

4.2 The EU Crude Oil Market Analysis

On the assumption of the energy security, since 1960s the European Union has already started the policy of prevention of crude oil supply shortages, which was the first step towards deliberate energy policy. Council Directive 68/414/EEC therefore laid down the obligation on Member States to build up and maintain strategic oil stocks. Subsequently, Council Directive 72/425/EEC raised the obligation for stocks initially set at the equivalent of at least 65 days of the daily internal consumption to an obligation for stocks equivalent to at least 90 days. Council Directive 98/93/EC developed and strengthened the provisions of Directive 68/414/EEC. In the interests of clarity and effectiveness, these Directives were consolidated in, and thus repealed by, Council Directive 2006/67/EC.

Security of energy supply, the second wing of the common energy policy, is defined as the ability to ensure the continued satisfaction of essential energy needs by means of, on the one hand, sufficient internal resources exploited under acceptable economic conditions and, on the other, of accessible, stable and diversified external sources. With this definition, most European countries had a more secure energy supply in the 1950s than they had in the 1970s or even in the 1990s, despite their efforts in those three decades. Indeed, at the beginning of the 1950s, the Community's energy economy revolved around indigenous resources, chiefly coal. In 1955, coal met 64% of gross internal energy consumption in the then Community of Six; but little by little, demand switched from primary energy to processed energy, chiefly electricity and petroleum products. Due to strong growth in demand for light petroleum products (chiefly petrol), heavy fuels became residual products, which refiners wanted to get rid of at any price, often below that of crude oil. Unfortunately for coal, its main competitors were these heavy, industrial use fuels. In that oil was almost exclusively imported from third countries, the consequences on the Community's energy independence were plain to see. Energy independence was sacrificed on the altar of rapid industrial growth, stimulated by low energy prices.[4]

The crisis at the end of 1973 brutally highlighted the Community's energy problem and the soaring prices resulting from it aggravated the situation. The problem was structural and not simply short term. By 1973, in fact, the Community was 63% dependent on third countries for energy supplies. The energy crisis clearly illustrated the extent to which the economies of the Community countries and even their political decision-making independence could be jeopardised by a group of countries that held in their grip the bulk of energy supply. The new energy policy emphasises the importance of measures which ensure solidarity between Member States and of the diversification of supply sources and transportation routes. Minimising the vulnerability concerning imports, shortfalls in supply, possible energy crises and uncertainty with respect to future supply is nowadays a first priority for the EU.

Security of supply is closely bound up with energy demand. Steadily growing demand constitutes a major risk where the security of energy supply is concerned.

[4] Moussis N.: Access to European Union: law, economics, policies.

Following a Commission Green Paper, entitled "Towards a European strategy for the security of energy supply" a consensus has emerged around some key issues, such as the need to considerably improve energy efficiency, to step up the promotion of renewables, to reduce environmental damage from energy use, to improve the investment climate in supplier and transit countries, and to develop the producer-consumer dialogue.

Thanks to the massive exploitation of British oil in the 1980s, to crude oil savings achieved by the quality of petrol and diesel fuels and the diversification of supply sources, EC/EU supply of oil and natural gas was undoubtedly better guaranteed at the beginning of the 1990s than at the beginning of the1970s, as demonstrated by the lack of panic in response to the Gulf crisis at the end of 1990, sparked by Iraq's invasion of Kuwait. However, the European Union is still vulnerable as regards its oil and natural gas supply and lacks a genuine policy in this field. Although there is a common interest in a common development of strategic relations with external suppliers, the governments of the Member States continue to guard their prerogatives jealously.[4]

The selective review of the EU historical trends in the sphere of energy policy has been made. We may definitely state that the European Union has started the policy of protection since the very beginning, but the world is not as easy as it seems. There were many “traps” on the way to success like a few world oil shocks, which caused significant problems with oil supplies and increased oil market price in many times; also some military problems in oil-exporting countries like Kuwait and Iraq, and finally oil clashes with one of the main suppliers – the Russian Federation.

It would be mistaken to state that the only EU was so sensitive to oil shocks. There are many other countries and group of countries which faced the same problem in the sphere of energy security. In case of the European Union we have to conduct an accurate market analysis with the investigation of crude oil supply and demand, total production of oil, net imports, etc. That will give us a clear picture about the EU crude oil market, its stocks and flows.

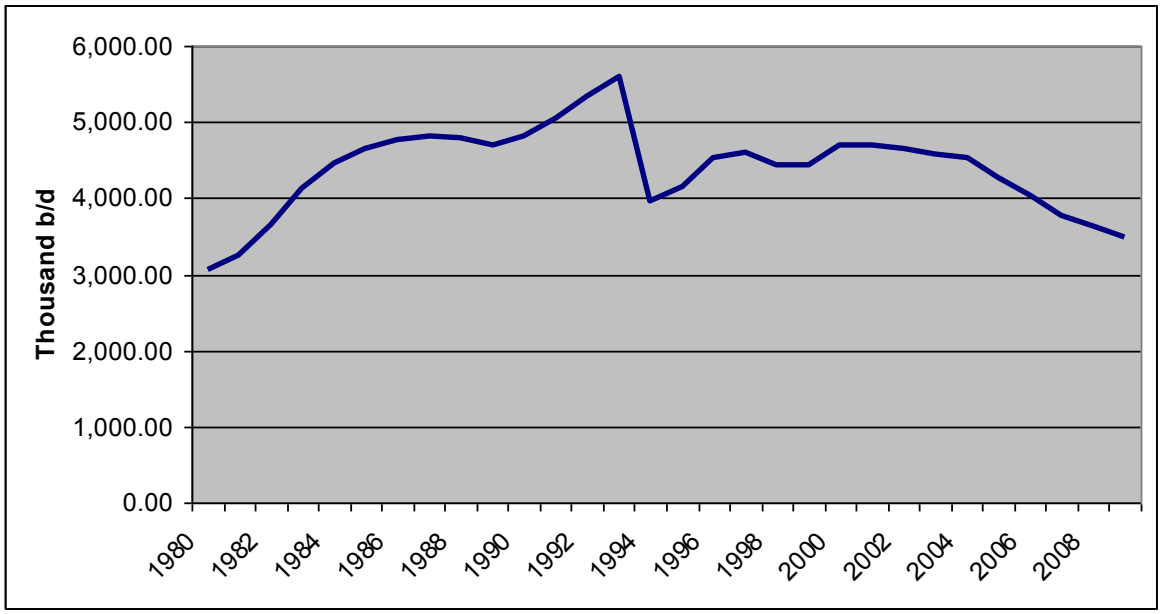


Figure 4.3: EU: Total Oil Supply, 1980-2009

Source: Eurostat Statistics – Own Calculations.

On the basis of the fig.4.3. it is possible to trace the EU total oil supply for the period from 1980 to 2008. In 1980 the total supply of crude oil in the European Union was 3,047.745 thousand barrels per day – it is 15% higher comparing to the previous year. That was the first sign of the recovery after the third world oil shock in 1979 which had led to significant price rise and reduction in oil supply – but step-by-step crude oil turned from a cheap to very expensive energy source. But still in the year 1980 the price of one barrel was 82$ - peak price of the XX century.

Further we can trace significant increase in the oil supply volumes which can be explained by the "world oil glut" – the price is falling while the EU is increasing its strategic oil stocks.

From the other hand, the fluctuations of the crude oil supply trend in the following periods could be explained not only by the price changes, but also by the EU extension – new member-states also required some crude oil inflow. And those members were definitely net crude oil importers.

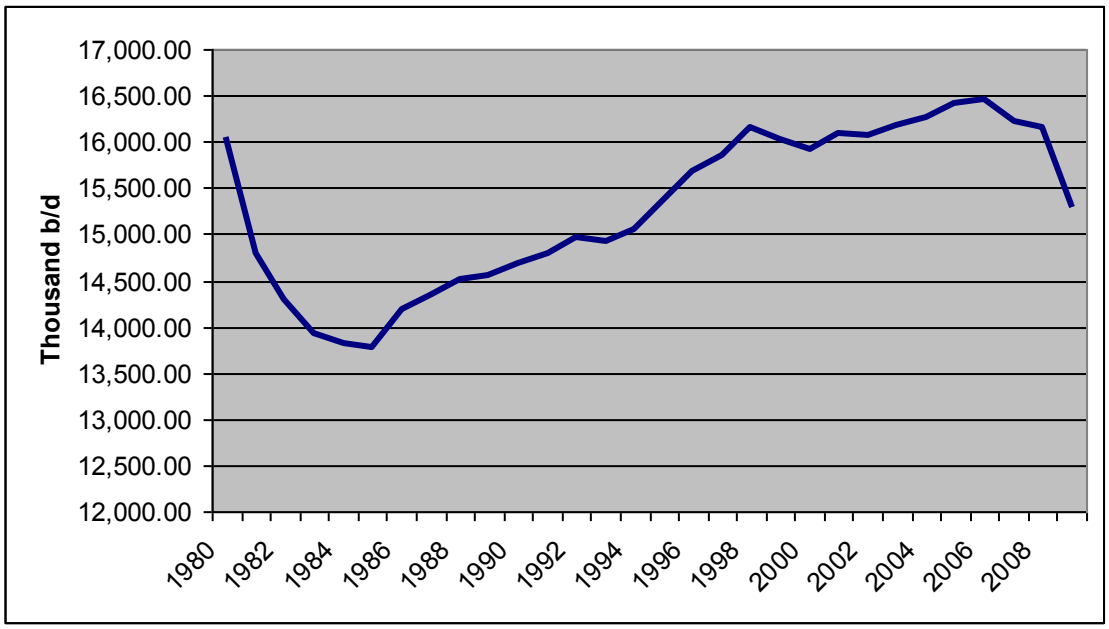


Figure 4.4: EU: Total Consumption of Oil and Petroleum Products, 1980-2009

Source: Eurostat Statistics – Own Calculations.

The EU total consumption of oil and petroleum products is clearly shown on the figure 4.4. At first glance it seems to be reverse to the total supply trend. And to some extent it is really so, because supply and consumption are mutually interdependent.

A sudden decline in the oil consumption in the period from 1980 to 1985 is correlated with a recent 1979 world energy shock. Many countries switched to economic patterns of production which reduced crude oil consumption in 2 – 2.5 times; many oil exporting countries were not able to increase their oil production.

To some extent that was a kind of unexpected coincidence, when each market player was trying to decrease crude oil consumption. One brighter example can be found in the car producing industry. Main car producers both in the US and Japan were started to make more compact cars with less fuel consumption which became one more reason of the slight world crude oil consumption.

When the analysis of crude oil consumption is made, it is worth mentioning the largest EU consumers of this unique energy source. They are depicted on the following figure.

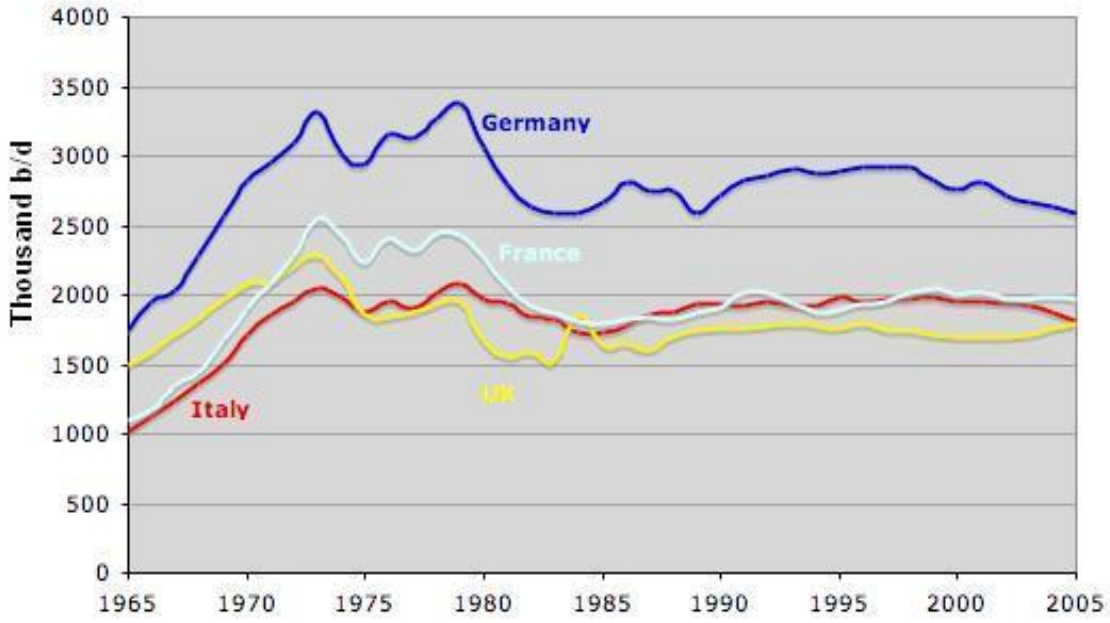


Figure 4.5: Oil Consumption: Germany, Italy, France and the UK

Source: The Oil Drum: Europe

France is the best example. Unlike some of its neighbours (the UK, The Netherlands and Germany), France has little by way of indigenous energy resources - oil, gas and coal. Faced with the crippling rise in energy costs following the oil shocks of 1973 and 1979 France opted for the nuclear route, whilst others turned to coal and natural gas for electricity generation.

In 2005, France consumed more oil than Italy and the UK, but unlike these countries that both have indigenous oil industries, virtually all of France's oil was imported. So French automobiles and planes run on imported oil. The big difference in France is that 80% of its electricity is generated from nuclear sources.

But Germany – the largest economy of the European Union and, at the same time, is the fifth-largest oil consumer in the world. It is totally reliant on crude oil imports and produces only 1.5-2.5% of what it consumes. German oil imports are diversified and approximately half comes form within the EU and the Russian Federation. Main users of crude oil are mainly in transport and heating sectors.

Making the analysis of EU crude oil market it would be mistaken not to mention the price of oil as one of the main market factors. Also the information about crude oil price history and affecting factors should be mentioned ending with the analysis of EU sensitivity to oil price changes.

Crude oil prices behave much as any other commodity with wide price swings in times of shortage or oversupply. The crude oil price cycle may extend over several years responding to changes in demand as well as OPEC and non-OPEC supply.

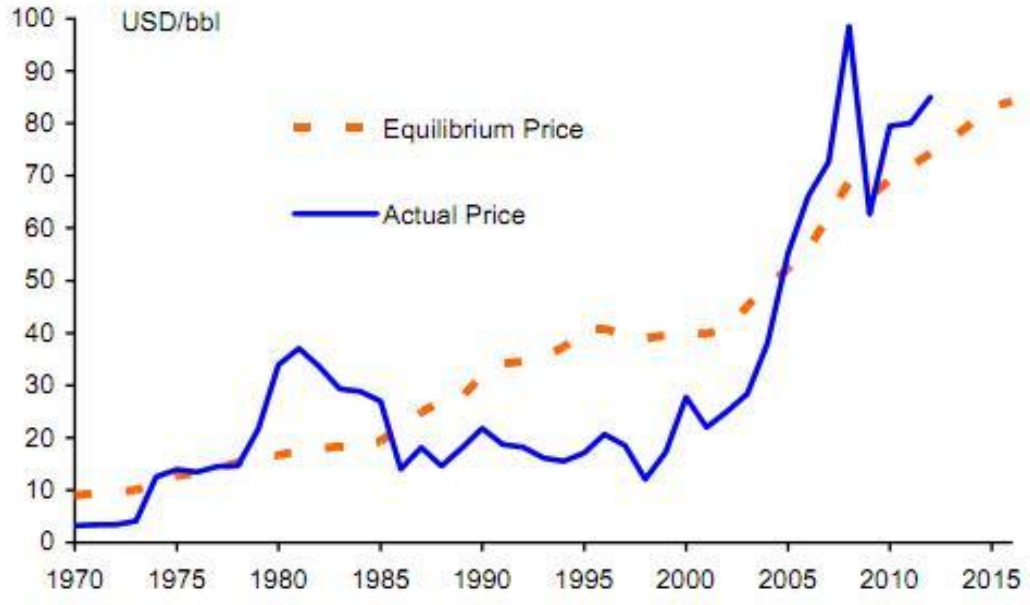


Figure 4.6: Oil Price Historical Chart, USD/b

Source: IMF, IEA, Deutsche Bank

If long-term history is a guide, those in the upstream segment of the crude oil industry should structure their business to be able to operate with a profit, below $17.65 per barrel half of the time. The very long-term data and the post World War II data suggest a "normal" price far below the current price. The results are dramatically different if only post-1970 data are used. In that case, U.S. crude oil prices average $32.36 per barrel and the more relevant world oil price averages $35.50 per barrel. The median oil price for that period is $30.04 per barrel.

Crude Oil prices ranged between $2.50 and $3.00 from 1948 through the end of the 1960s. The price oil rose from $2.50 in 1948 to about $3.00 in 1957. When viewed

in 2008 dollars an entirely different story emerges with crude oil prices fluctuating between $17 and $19 during most of the period. The apparent 20% price increase in nominal prices just kept up with inflation.

From 1958 to 1970, prices were stable near $3.00 per barrel, but in real terms the price of crude oil declined from above $19 to $14 per barrel. The decline in the price of crude when adjusted for inflation for the international producer suffered the additional effect in 1971 and 1972 of a weaker US dollar.

In 1972, the price of crude oil was about $3.00 per barrel. By the end of 1974, the price of oil had quadrupled to over $12.00. The Yom Kippur War started with an attack on Israel by Syria and Egypt on October 5, 1973. The United States and many countries in the western world showed support for Israel. Because of this support, several Arab exporting nations and Iran imposed an embargo on the countries supporting Israel. While these nations curtailed production by 5 million barrels per day other countries were able to increase production by a million barrels. The net loss of 4 million barrels per day extended through March of 1974 and represented 7 percent of the free world production.[20]

In 1979 and 1980, events in Iran and Iraq led to another round of crude oil price increases. The Iranian revolution resulted in the loss of 2 to 2.5 million barrels per day of oil production between November 1978 and June 1979. At one point production almost halted.

The Iranian revolution was the proximate cause of what would become the highest price in post-WWII history. However, its impact on prices would have been limited and of relatively short duration had it not been for subsequent events. Shortly after the revolution, production was up to 4 million barrels per day.

From 1982 to 1985, OPEC attempted to set production quotas low enough to stabilize prices. These attempts met with repeated failure as various members of OPEC produced beyond their quotas. During most of this period Saudi Arabia acted as the swing producer cutting its production in an attempt to stem the free fall in prices. In August of 1985, the Saudis tired of this role. They linked their oil price to the spot market for crude and by early 1986 increased production from 2 MMBPD to 5

[20] Williamss J.: Oil price history and analysis.

MMBPD. Crude oil prices plummeted below $10 per barrel by mid-1986. Despite the fall in prices Saudi revenue remained about the same with higher volumes compensating for lower prices.

A December 1986 OPEC price accord set to target $18 per barrel bit it was already breaking down by January of 1987and prices remained weak. The price of crude oil spiked in 1990 with the lower production and uncertainty associated with the Iraqi invasion of Kuwait and the ensuing Gulf War. The world and particularly the Middle East had a much harsher view of Saddam Hussein invading Arab Kuwait than they did Persian Iran. The proximity to the world's largest oil producer helped to shape the reaction.[20]

The price cycle then turned up. The United States economy was strong and the Asian Pacific region was booming. From 1990 to 1997 world oil consumption increased 6.2 million barrels per day. Asian consumption accounted for all but 300,000 barrels per day of that gain and contributed to a price recovery that extended into 1997. Declining Russian production contributed to the price recovery. Between 1990 and 1996 Russian production declined over 5 million barrels per day.

The price increases came to a rapid end in 1997 and 1998 when the impact of the economic crisis in Asia was either ignored or severely underestimated by OPEC. In December, 1997 OPEC increased its quota by 2.5 million barrels per day (10 percent) to 27.5 MMBPD effective January 1, 1998. The rapid growth in Asian economies had come to a halt. In 1998 Asian Pacific oil consumption declined for the first time since 1982. The combination of lower consumption and higher OPEC production sent prices into a downward spiral. In response, OPEC cut quotas by 1.25 million b/d in April and another 1.335 million in July. Price continued down through December 1998.

Once again it appeared that OPEC overshot the mark. In 2001, a weakened US economy and increases in non-OPEC production put downward pressure on prices. In response OPEC once again entered into a series of reductions in member quotas cutting 3.5 million barrels by September 1, 2001. In the absence of the September 11, 2001 terrorist attack this would have been sufficient to moderate or even reverse the trend. [20]

In 2003-2007 the price of oil was rapidly rising because of increased OPEC and non-OPEC countries oil production. There was a significant increase of crude oil prices

to unbelievable record in 2008 as a result of great financial and economic fall. After the crisis the world started to recover and in two year period the price of crude oil stabilised to the level of 80-85 dollars per barrel.

After the historical and factor analyses of crude oil price changes had been conducted, we switch to the influence of all these price changes onto the European economy.

Europeans pay a lot more than Americans do, when it comes to domestic fuel prices. Oil prices in Europe have been high for ages, when fuel in the USA was sold at $2/gallon; it was roughly priced at $5/gallon in many parts of Europe. The reason for such a marked difference is that there are mammoth oil taxes levied on oil by the governments in Europe. According to a study, the rate at which Europe gets its crude oil supplies is actually lower than the prices at which the USA gets it. So then, why is there such a telling gap in the final cost of fuel in America and the cost of fuel in Europe? The answer lies in the fact that in the US, only 10% of what the end-user pays goes to the white house, while in Europe, this percentage is roughly 70%.[21]

People have adapted rather well to the spiralling costs of fuel in Europe by choosing some of the most innovative methods. People have started looking out for residences that are at a walking distance from the place they work, they have started using scooters that are far more fuel efficient than cars and they have also started opting for smaller fuel efficient cars than the gas-guzzling ones. SUVs are almost out of the market in European nations, with the cost of gas touching $9/gallon in some areas.

There is another peculiar, rather interesting feature of the taxes imposed and the cost of oil in European nations. Because the Europeans pay a lot more taxes on fuel, the present rise in the cost of crude oil, that has taken the world by a shock hasn't affected much of Europe. The reason is that America has seen its oil prices double for the last time, but in Europe, there has been a rise of just 40%-50% on their fuel costs, as the governments, particularly that of Nicholas Sarkozy have reduced the taxes levied. This step has acted as a buffer to the general public against the global surge in fuel prices.

Most affected though, are the people living in the isle regions of the Netherlands and Greece, because most of their commodities and supplies come via boats, and boats

[21] The economics of Europe oil prices.

run on oil. Oil therefore, is pretty cheap in the Greek Isles as compared to the rest of the continent, and is priced at around $7/gallon. [21]

Moreover, oil is also the basic raw material for the plastics and petrochemical industries. Therefore, an increase in oil price implies an increase in production costs of all goods requiring energy for their manufacture, of the transport sector, and for all sectors that use oil as a raw material. Thus oil price directly or indirectly influences every economic sector.

Higher oil prices increase production costs and thus contribute to inflation. As this inflation is caused by the price increase of a commodity that in the EU mainly needs to be imported, it is called 'imported inflation'. The sharp increase of prices will engender a decline of consumption levels, leading to declining profits for most companies. Producers will scale back production and postpone investment decisions, causing unemployment levels to rise. An oil-importing country can run the risk to get stuck in a downward spiral, initially caused by the high oil prices.[8]

But the conducted analysis of the EU crude oil market is not full enough without presenting an import and export statistics, which will definitely show the picture of oil market state.

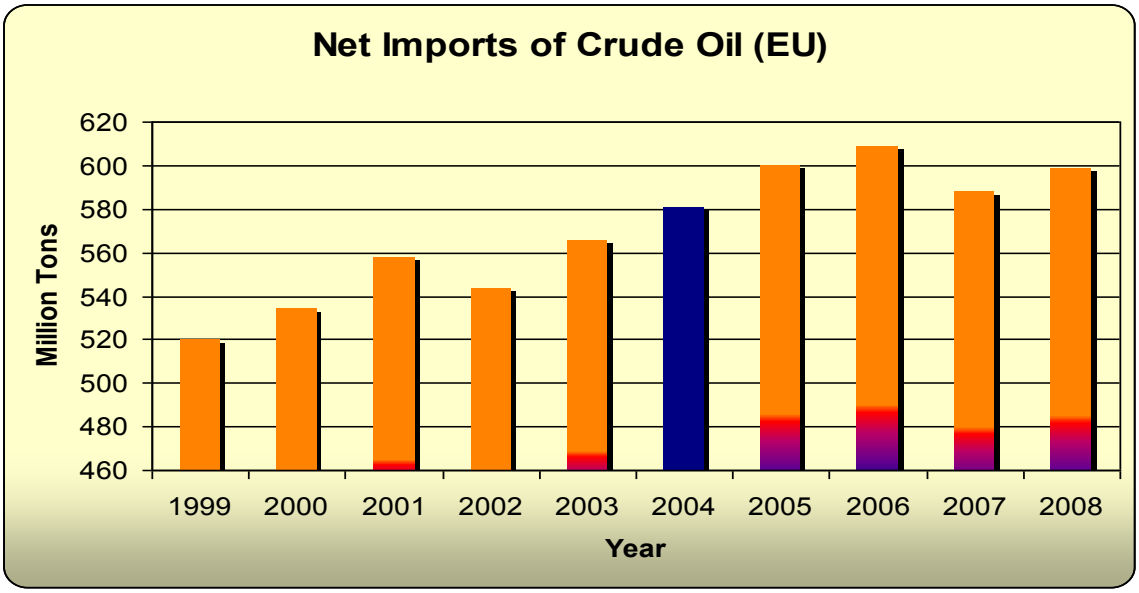


Figure 4.7: Net Imports of Crude Oil (EU)

Source: Eurostat Statistics – Own Calculations.

[8] World Oil Outlook 2009, OPEC, Austria, 2009.

In the case with the EU it is enough to show the trend of crude oil net imports, because the EU is mostly oil-importing; only few countries like Denmark and the UK can fully satisfy their crude oil needs and even export the remaining volumes of extracted oil.

As it is seen from the above graph, the European Union has significantly increased net imports of crude oil for the last ten years. It could be explained by many reasons, but two of them are of major importance: 1) accession of new member states with the parallel increase of crude oil needs in production spheres; 2) market instability affected by many external and internal factors resulted in the EU policy of increasing oil strategic reserves.

Europe will most probably face a declining domestic oil production in the future, necessitating increasing imports. At the same time, the energy efficiency of the European economy is expected to further improve and the relative share of oil in European energy use to decrease. Due to the reduced relative importance of oil in Europe's energy supply, European economies should become less sensitive to oil price fluctuations. Conventional views predict over the next 30 years a stronger market share and influence of Middle East oil producers; however, there remains some uncertainty whether this concentration of oil supply origins actually will materialize. The likelihood of price increases and volatility depends to a high degree on how competitive oil markets will be in the future.

Chokepoints in supply routes pose significant short-term risks to oil markets. Closure of any of the chokepoints could cause an immediate supply shortage in corresponding consuming regions that could possibly not be met in the very short-term by alternative supplies.

Oil markets are currently very liquid and offer a variety of tools to hedge against price risks. The direct economic implication of an increase in oil prices remains subject to discussion among economists - the conclusion that higher energy prices do indeed have a direct negative impact on the economy remains intuitive. Stable energy prices

however are in the interest of policy-makers since energy prices, in particular for oil and natural gas, feature high in the awareness of household consumers.[22]

4.3 The EU Dependency on Russian Oil and Its Consequences

Energy has become an increasingly important and defining policy issue as the growing competition for access to limited resources has altered the global economy.

Population increases, dynamic economic growth (particularly in China and India), and the spread of prosperity are stimulating a rising demand for energy. However, high energy prices and the lack of spare capacity, particularly in the oil market, have made the global economy sensitive to energy disruption. Energy security, in terms of supply and stability of price (two key factors for economic strength and growth in industrialised and industrialising countries), is intertwining with geopolitics and international relations.

A shift is also taking place in the balance of power in the international energy market which is now dominated by a number of key 'producer' states. Since 'consumer' states are dependent on growing imports, and given the high price of oil and spot gas, the geopolitical advantages are beginning to shift back towards 'producer' states. How will these countries act as access to their resources becomes increasingly important, how reliable are they as suppliers and how will they use their assets to wield influence on the world stage?[23]

In fact it is not so easy to answer these questions while taking into account that fact, that today the world is approaching the new "energy era", which requires new global negotiations steps and better cooperation. Europe, in particular, is influenced by the global energy situation, which dictates what approaches in energy policy and energy security have to be done, causing EU member states to face new challenges and uncertainties.

[22] Willonberg R.: Europe's oil defences: an analysis of Europe's oil supply vulnerability and its emergency oil stockholding systems, 2004.
[23] Energy security and Europe.

The European Union is very dependent on crude oil and natural gas supplies, like many other countries, at the same time it is one of the world's largest oil and gas importer.[26]

Thus, it is one of the key tasks for the EU to provide good neighbourhood relations, because they might play the vital role in the EU future prosperity and energy security. One of those vitally important neighbours is the Russian Federation, which is, friendly speaking, the largest supplier of EU crude oil and natural gas imports.

The European Union and Russia are important strategic partners. Russia is Europe's third biggest trade partner and Russian supplies of oil and gas assemble a large percentage of its export to Europe. The EU and Russia cooperate on a number of challenges, both on international and local level and share a great deal of common interests and concerns. The relationship is one of interdependence not dependence, which means that Russia needs us as much as we need Russia. This offers both sides powerful motivation to put our energy relations on a predictable and concrete basis. We want to develop and further strengthen our relations with Russia based on the principles of reciprocity and transparency.

Russia is indeed the most important energy supplier to the European Union and European companies are its key foreign investors and it is in our mutual interest to continue this trend. Russia has the world's largest known natural gas reserves and its oil and gas deliveries represent more than 25% of the EU's consumption. What's more, sales of Russian raw materials to the EU contribute to over 40% of its federal budget and the EU represents almost 80% of cumulative foreign investments in Russia. This clearly shows our interdependence and creates a common ground for future cooperation.[26]

Although the EU has to diversify its energy sources and suppliers, the share of Russian gas and oil in the EU market will remain high in the next 20–25 years due to the geographical closeness of Russia to the EU, the existing transport infrastructure and the energy cooperation based on long-term agreements. In this respect, the EU is working together with Russia towards diversification of delivery routes of gas to Europe, creation of new pipelines, development of new gas storages and LNG facilities.

[26] The EU-Russia centre review.

Both sides strongly support the cooperation of the EU and Russian oil and gas companies on such projects as Stockman gas field, Burgas– Alexandropoulos oil pipeline and the Nord Stream gas pipeline.

The partnership between Russia and the EU represents an important component of stable mutual relations. The Partnership and Cooperation Agreement (PCA) concluded in 1994 between Russia and the EU indicated a few cooperation areas in the energy sector. Since then both parties are working together inter alia in order to improve the security of energy supply, to develop management and regulation of the energy sector, to promote energy saving and energy efficiency, to modernise energy infrastructure and to limit the environmental impact of energy production. What's more one of the main objectives of the PCA is investment and trade promotion as well as the development of harmonious economic relations between the parties.

A significant share of Russia's economic growth in recent years can be attributed to increased production and exports of energy products, supported by high world prices and recently favourable terms. The share of the energy sector of the Russian economy as a whole has already grown to approximately 25%, approaching levels of some of OPEC countries. The Russian economy, including the federal budget, continues to be largely dependent on the export of hydrocarbons.

At the same time, Russia is the EU's most important single supplier of energy products, already supplying about 25% of the EU's total oil consumption and about 25% of overall natural gas consumption. The trade is also of immense importance to Russia, accounting for over 60% of exports and about 25% of government revenues. Russian energy supplies to the EU are expected to grow further in the future, though there are concerns about "supply gaps", notably for gas, because of insufficient investment.[26]

These figures illustrate the importance that from both side of the border, the sector of energy has in the bilateral energy relations. It is not by chance that in the bilateral relations of the two neighbours energy got a special treatment. On the occasion of the sixth EU-Russia Summit (30th October 2000, Paris), it was agreed to institute an Energy Dialogue on a regular basis between the EU and Russia to enable progress to be made in the definition and arrangements for a EU-Russia Energy Partnership.

The overall objective of the energy partnership was to enhance the energy security of the European continent by binding Russia and the EU into a closer relationship in which all issues of mutual concern in the energy sector can be addressed while, at the same time, ensuring that the policies of opening and integrating energy markets are pursued. With the strong mutual dependency and common interest in the energy sector, this was clearly a key area of EU-Russia relations.

In a first face the energy dialogue aimed at improving the investment opportunities in Russia's energy sector in order to upgrade and expand the energy production and transportation infrastructure as well as improve its environmental impact, to encourage the ongoing opening up of energy markets, to facilitate the market penetration of more environmentally friendly technologies and energy resources, and to promote energy efficiency and energy savings.

The dialogue was a novelty in the way the Commission was dealing with International energy relations. Actually, the Green Paper on Energy Policy of 20001, probably the first strategic paper on energy policy in the history of the European Union, developed the idea of the dialogues, which had to follow later on with other key countries. The Green Paper already made clear that the political and economic influence of Europe had to use in order to ensure flexible and reliable external supply conditions. "The European Union must establish an ongoing dialogue with producer countries and not only in response to major movements on the market. This will lead to greater transparency on the market and obtain stable prices. It is important to be aware of the expectations of several producer countries regarding political developments in the Middle East. Such dialogue must facilitate the improvement of pricing mechanisms, the conclusion of agreements and the use of reserve stocks for mutual benefit." [26]

The idea of the mutual benefit was key to the structure of the idea of the dialogue. For instance the green paper mentioned that the dialogue "should be extended to all matters of common interest, in particular protection of the environment (flexibility mechanisms) and technology transfer". The European Union was prepared to mobilise European technical assistance to facilitate European investments in transport and production in the energy sector (oil, natural gas and electricity), study legal framework

for investments in the energy sector, questions relating to taxation or a guarantee mechanism for investments.

However, initially the dialogue was seen as step towards a more ambitions energy cooperation within the framework of a co-operation and partnership agreement between the European Union and Russia. This idea has been retaken in the current negotiations for the next PCA.

The idea of the energy dialogue with Russia has been the basis for the development of similar processes with other key players in the European Union. For instance in a similar basis there is a permanent dialogue with Norway (06/07/2005) and with the OPEC (09/06/2005) or Brazil (05/07/2007). With other countries the approach has been the signature of Memorandums of Understanding as the founding stone of closer energy cooperation. This is the case of Ukraine (01/12/2005), Azerbaijan (07/11/2006), Kazakhstan (04/12/2006), Turkmenistan (25/05/2008), and there are negotiations to sign a similar MoU with Algeria. It cannot be considered as exaggerated that the success of the bilateral Energy Dialogue EU-Russia has set the tone for the way that the EU is conducting the bilateral co-operation in the field of energy, and the tendency is to exploit this line even further.

As a matter of fact, so was recognised in the 2006's Green Paper - A European Strategy for Sustainable, Competitive and Secure Energy, which marked the European Energy Strategy under the Barroso's Commission. "The EU and its energy partners are interdependent. This is reflected at bilateral and regional level in a number of specific EU energy dialogues with a number of producer and transit countries.

Equally, energy issues are a growing feature of the EU's political dialogues with other major energy consumers (such as the US, China and India), including through multilateral fora like the G8. These dialogues should be set within the common vision offered by the Review".[26]

However, immediately it stated that in the case of Russia, "our most important energy supplier, it was necessary to move forward towards a real partnership in the framework of the next PCA. "The EU has an established pattern of relations with major international energy suppliers including OPEC and the Gulf Cooperation Council. A new initiative is particularly opportune with regard to Russia, the EU's most important

energy supplier. The EU, as Russia's largest energy buyer, is an essential and equal partner in this relationship. The development of a common external energy policy should mark a step change in this energy partnership at both Community and national level.

A true partnership would offer security and predictability for both sides, paving the way for the necessary long-term investments in new capacity. It would also mean fair and reciprocal access to markets and infrastructure including in particular third party access to pipelines. Work should start on an energy initiative based on these principles. Subsequently the results could be integrated into the framework of EU-Russia relations due to replace the current EU-Russia Partnership and Cooperation agreement in 2007. In addition, efforts should be intensified in the G8 to secure rapid ratification by Russia of the Energy Charter Treaty and conclusion of the negotiations on the Transit Protocol".

The Dialogue continues to be a valuable tool for enhancing EU-Russian energy relations providing that there is commitment on all sides - the Russian government, Commission, EU Member States and industry and that the Dialogue has the political impetus provided by energy PPCs. The practical results of the dialogue are reflected in the so-called "Progress Reports, which are normally adopted in the PPCs or in the meeting of the Coordinators of the dialogue. [26]

One of the most positive elements of the energy dialogue was that it identifies the issues that were going to be of mutual concern and work on common approaches to address those issues. It is therefore not surprising that the thematic groups before the modifications of 2008 were based in the questions of investment, infrastructures, trade and energy efficiency. There was an element that has been always present in the bilateral energy dialogue in which both, Russia and the Commission have shown that joint work can lead to concrete results. I would like to underline some of the main elements addressed in the framework of the dialogue.

Energy efficiency has been on the main elements of the dialogue since its very beginning. The Commission has identified energy efficiency as the main priority of European energy policy. One of the three famous 20-20-20 objectives of the Energy and Climate action plan is precisely The 20% energy savings by 2020. The first paper

presented by the Commission in its new Energy Strategy was precisely the Energy Efficiency Action Plan (November 2006).

The interest of energy efficiency is share by both parts for different reasons. First of all there is the common objective of Climate Change prevention. Experts (IEA, for instance) recognise that one of the main ways to achieve CO2 reduction is improving energy efficiency and energy savings. In the case of Russia, there is a big interest to decouple economic growth with energy demand, which has put the supply system for both gas and electricity under certain pressure.

There is of course the question of security of gas supply, since a reduction of demand in the European side would mitigate the rapid depletion of European gas fields, and on the Russian side would reduce the tensions in gas production capacity of growing external and internal demand.

Finally, there is a big interest from both sides to reduce the amount of gas flared in the Russian oil producing facilities, in order to reduce CO2 emissions and increase gas production. Russia is currently flaring more than 24 bcm of gas per year (around 26% of the associated gas coming from oil dwells). Both parties agreed in increasing efficient use of associated bas in Russia from 74% in 2008 and 90.8% in 2010.

The EU and Russia have expressed satisfaction about fruitful and continued cooperation under the Energy Dialogue as it provides the appropriate framework for frank and objective exchanges on issues of common interest in the field of energy cooperation. They praised active participation of a wide range of experts, from the Commission, EU Member States, Russia, European and Russian energy companies and IFI's. The continuation of the Dialogue represents an interest shared by both sides.

The Russian side expressed the wish to expand the scope of the Energy Dialogue, to strengthen its high level steering and increase the frequency of meetings. It also expressed the wish that The Energy Dialogue becomes a platform for support to contacts between EU and Russian companies and plays an educational role. The Russian side also expressed the wish that the Energy Dialogue focuses more on investment conditions in Russia.

The EU and Russia agreed on the need to strengthen the Early Warning Mechanism and to invite transit countries to participate. The EU suggested to create a

core group while the Czechs underlined that further development of the Early Warning Mechanism would be a priority for their Presidency. [26]

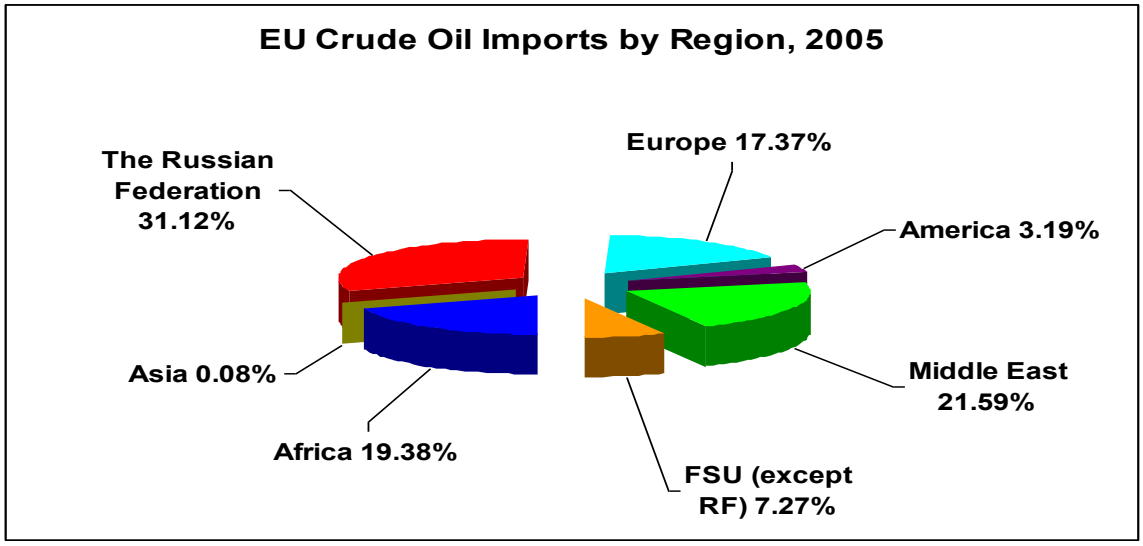


Figure 4.8: EU Crude Oil Imports by Region, 2005

Source: Eurostat Statistics – Own Calculations.

The Russian Federation accounts for more than 31% in EU crude oil imports – it is the highest percentage among all the EU crude oil importers.

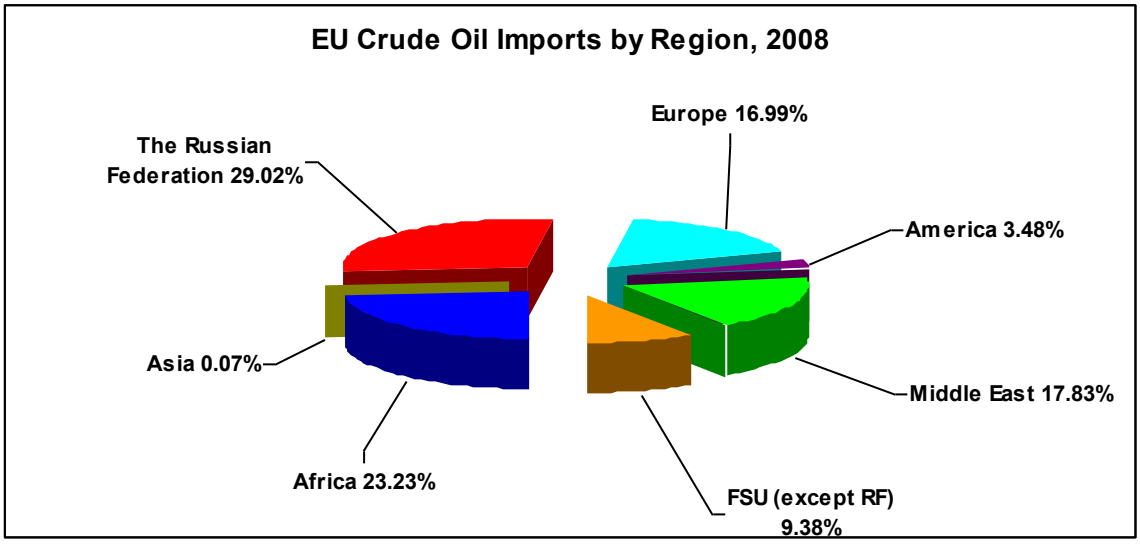


Figure 4.9: EU Crude Oil Imports by Region, 2008

Source: Eurostat Statistics – Own Calculations.

The basic idea behind the dialogue is a simple balancing of interests: the Russians need more European investment to develop their energy resources, while the Europeans need secure long-term access to Russian oil and gas, but not the strict dependence which is clearly shown on the previous graphs.

As a matter of fact, for the next three years the situation hasn't changed to much. It is possible to trace a slight decrease in the percentage supplied by the Russian Federation - decrease from 31.12% in 2005 to 29.02% in 2008. The main reason for that was the Russian Federation – Ukraine crude oil clash. At the end of 2007 Ukraine was blamed for the reduction of crude oil supply to Europe because of illegal oil pumping from the pipeline. But in fact, the Russian Federation again used such the crises to emphasize its importance as the main oil supplier. To see the detailed imports of Russian crude oil by EU member-states, see Supplement.

But to get some more explanations about the dependency of the European Union on crude oil we next calculate the index of energy dependence. In practice it shows the extent to which an economy relies upon imports in order to meet its energy needs – and further to create a good basis for energy security adjustments. This indicator is calculated as net imports divided by the sum of gross inland energy consumption plus bunkers. As a matter of fact, it is the ratio, which shows how well an economy is endowed in crude oil. If the crude oil endowments are too small, than the economy has to rely only on imports.

The next graph shows us the increasing trend of the EU crude oil dependency. In 1999 the index accounted for 73%, while in 2008 the new record was reached – 84%. It means that in 2008 84% of crude oil being used, refined, reserved, etc. by the European Union was imported. In fact, that's already the question of energy security. The level of such the dependency is quite high; but the fact that this dependency is increasing every day causes more worry.

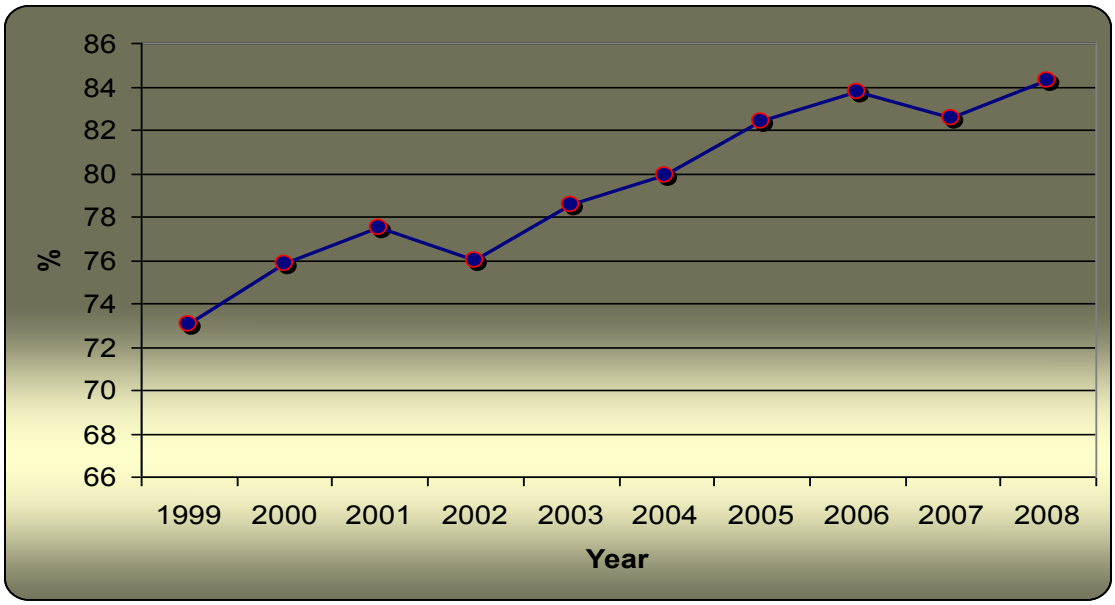


Figure 4.10: EU Crude Oil Dependency

Source: Eurostat Statistics – Own Calculations

The main reason for the dependency rise is very simple: after two enlargements in 2004 and 2007 the European Union has got 12 new member-states; in fact, these countries are totally relied on crude oil imports, because they are not endowed at oil resources at all – that meant an additional oil demand and increasing crude oil dependency.

Of course, it is possible to argue that the situation is under control, that the EU has made strategic oil stocks, that some of the member-states – namely Denmark and the United Kingdom – are able to satisfy their own needs in crude oil, and even export the rest of unused resources, butt in practice that is the question of power. Recently, in January 2011, British Petroleum and Rosneft signed the agreement about mutual cooperation: it gives for BP the access to an oil-rich swath of Russia's South Kara Sea, but at the same time - the deal will make Rosneft BP's single largest shareholder.

The following graph will show the extent to which the EU economy relies on the Russian crude oil.

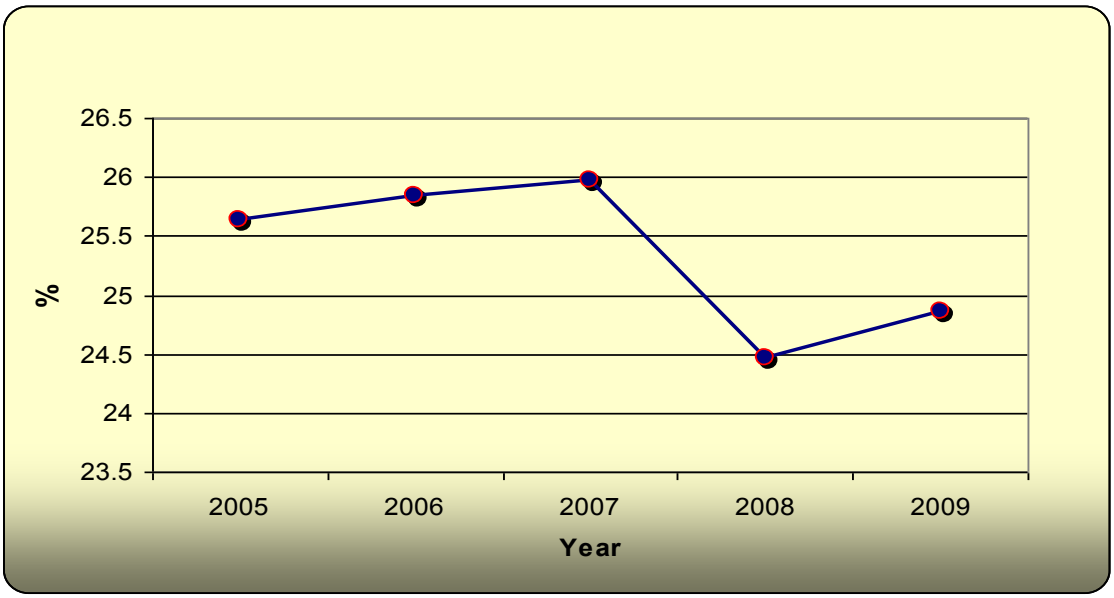


Figure 4.11: EU Crude Oil Dependency on the Russian Federation

Source: Eurostat Statistics – Own Calculations

For the period of 2005-2009 the rate of EU crude oil dependence on Russian oil supplies was fluctuating form 24.5% to 26%. The deviation accounts for 1.5% - in practice it practically means nothing, but in money or real terms these figures are huge. But in general, it is possible to speak about stable pattern of EU – Russia crude oil dialogue, the rate of dependence for 5 years period remained practically the same. Such small deviations could be explained by different reasons, but two of them were of high importance: firstly, a slight decline in crude oil dependence in 2007 – 2008 was the result of global financial crisis, which influenced all the business spheres and operations; secondly, the great gas and oil slash between Ukraine and the Russian Federation in 2007 had caused many troubles in the energy dialogue.

In fact, there are several more reasons why progress in crude oil and gas dialogue has been slow for so long time. First, energy is hugely important for the Russian economy. Second, the EU-Russia energy dialogue involves a host of participants that do not always see eye-to-eye. The Russian government and the EU may agree on the importance of bilateral co-operation. But the key players in this field are private or state-controlled companies that often have their own agenda. Third, the energy dialogue is not only, or even primarily, about country-to-country sales of oil and

gas. It has many implications for national economic policies, in particular energy market liberalisation. Last but not least, the question of energy sector reform has become intertwined with other EU-Russian negotiations.[25]

The EU is interested in Russian energy market reforms for several reasons. First, energy prices in Russia are only a fraction of their world market levels. The EU argues that this gives russian exporters an unfair advantage, notably in energy-intensive sectors such as aluminium or fertilisers, and that therefore Russia should not join the WTO unless it is prepared to raise energy prices. But everyone in Russia, whether they are pro- or anti-WTO, regards this as an unreasonable demand. The issue of energy prices has become the biggest bone of contention in the negotiations over Russian membership of the WTO – and since the EU is Russia's biggest trading partner, it has considerable influence over the progress of those negotiations. Both sides appear to have softened their stance to some degree. Russia no longer refuses to discuss energy prices in the framework of WTO talks. And the EU no longer tries to set a firm target for domestic Russian energy prices. "We have shifted our position, we no longer insist on EU energy prices for Russia," said Richard Wright, the EU's ambassador to Russia in May 2003, at a Helsinki seminar organised by the 'Russia in a United Europe' committee. "What the EU asks is that prices of energy to industrial users should be above loss-making levels. The trouble now is that we don't know at what price Gazprom sells gas at a loss."

The second reason why the EU is pushing Russia on energy market reform is that there is a growing mismatch between the EU's own efforts to liberalise its energy markets and the supply of Russian gas through a monopolist, namely Gazprom. However, Russia supplies its EU customers under long-term supply contracts, many of which contain so-called territorial restriction clauses: even if one EU country receives more gas than it needs, it is not allowed to sell it on to its neighbours. The clauses are in breach of EU single market rules. They allow Gazprom to sell gas to different EU countries at different prices, and they prevent the EU from developing a functioning EU-wide gas market. The Commission has been negotiating with Gazprom on this problem and reports some progress.

[25] Dragan G.: EU-Russia relationship: Smooth as oil? An analysis of the linkages between the European Union and Russia in the global oil market.

A third reason is that the EU fears that as long as Gazprom remains in sole charge of Russia's gas, Russian supplies may not keep up with rapidly growing EU demand. Gazprom's output has been more or less flat for the last decade, as the company has failed to invest sufficiently in the development of new gas fields. Meanwhile, Russia's privately-owned oil majors sit on huge gas fields that they do not exploit commercially because Gazprom does not allow them access to lucrative export markets.

After the 2004/2007 enlargements, Russia has became the largest neighbour of the EU and it is now bordering five EU member countries (Finland, Estonia, Latvia, Lithuania and Poland). Russia is now a "strategic" partner for the EU but also an independent player and sometimes an unpredictable one, both parts interacting on a huge agenda of common interests and concerns. Relationship between EU and Russia has been and is strongly influenced by the peculiarities of previous and current economic and political developments of both sides. Therefore, while the EU has been progressing from an economic cooperation towards a political union, Russia has been progressively moved from a centralised and authoritarian regime to a democratic system. However, at the moment, both partners, which are major players in the world economy and, especially on the European continent, must intensify the political dialogue in the interest of political stability, lasting security and economic prosperity in the whole region, since significant obstacles remain on the way to deeper cooperation.[25]

The dialogue on oil is less politically charged, partly because Russia has already privatised and liberalised its oil industry. Just like the US, the EU is keen on diversifying its oil imports away from the volatile Persian Gulf region. Russia and other producers in the former Soviet Union offer themselves as a natural alternative.

EU-Russia energy relations are likely to remain an area of political tension for some time. The future trajectory of Russia is impossible to determine. It projects a combination of overweening confidence and congenital insecurity. In the eyes of some new member states, Russia is an aggressive power ready to use all its assets to secure control of its neighbourhood. But one can also argue that the bigger danger is Russian weakness. Russia is a country characterised by stark demographic imbalances, decaying infrastructure, dysfunctional governance and chronic underinvestment. It is this

combination of ambition and vulnerability which makes partnership with Russia so difficult.

The EU needs to get Russia back into proportion, including its position as a major energy supplier. The credit crunch has hit Russia harder than other emerging economies with Gazprom losing more than two-thirds of its market capitalisation since May. With oil prices down from a peak of $147 a barrel in July 2008 to below $40 in February 2009, the heavily oil-and-gas dependent Russian economy is highly vulnerable, especially since Russia needs Western technology to boost its energy extraction. Furthermore, concerns about state meddling in business, widespread corruption and shortcomings in the rule of law have contributed to its failure to diversify away from hydrocarbons and minerals.

In the medium term, the EU and Russia are condemned to be partners in the energy field. There is simply no alternative supplier for the EU and the EU is the most lucrative market for Russia (Gazprom gets nearly 70% of its profits from sales to the EU). Talk of alternative pipelines to China is just that – talk. Until the recent crises, Russia was a reliable supplier of energy to Europe for decades – even at the height of the Cold War. The current elite in the Kremlin is unlikely to take measures that would harm the steady income they receive from EU sales. But there is now increasing doubt about Russia's reliability, even in quarters normally sympathetic to Russian concerns. How these developments will play out in the EU-Russia negotiations for a new partnership agreement is an open question. The EU member states do not have a good track record in being able to speak to Russia with one voice, especially on energy issues. But if they fail to do so then Russia will continue its successful policy of divide and rule. The ball is very much in the EU's
court. [25]

5. PROPOSALS AND RECOMMENDATIONS

As we have already seen, the European Union has got a serious problem in the sphere of its energy security. It is extremely depended on crude oil and natural gas imports, because the level of EU energy endowments is far from being ideal to satisfy

internal energy needs. Only a few countries among EU member states – Denmark and the Great Britain – are able to satisfy their domestic energy needs in crude oil and partly in natural gas, but such recent events as world financial crisis, the Mexican Gulf oil catastrophe and uprising in Libya and other African countries have disproved the EU ideal energy horizons and perspectives.

For many times these political and natural tensions have injured players of the world and European energy markets, causing significant changes in energy supply and demand resulting in equilibrium price fluctuations. Those changes were the area of strategic interest for the EU policy makers, because as the historical practice has shown – it could lead not only to market instability and profit losses, but to oil and gas supply disruptions like it happened in 2007, which resulted even in the number of deaths.

Moreover, the EU energy security and future energy perspectives are partly the questions of energy dependence on its key suppliers. As we have already investigated, the Russian Federation is a key player on the EU energy market. It supplies about 30% of EU total crude oil imports and about 60% of natural gas. In fact, this is the evidence of a monopolistic market influence from the side of the Russian Federation, taking into account the number of EU crude oil suppliers.

As a matter of fact, such oil leverage is mostly used for the purpose of political pressure. Recently the Russian Federation has signed few long-term agreements with Turkmenistan and Azerbaijan for gas buying and selling so trying to monopolize "western" export. It is also trying to buy EU crude oil refinery plants so targeting to won the first place in the area of oil refinery and marketing. It often uses its close relations with Italy and Germany to break EU energy policy. Thus, immoderate energy dependence from the Russian Federation is the EU sore point.

In order to tackle these problems in future and provide the EU deliberate energy policy acting, the next proposals and recommendations have to be taken into consideration.

The European Union has to diversify its oil imports by paying more attention to Middle East and Africa directions in spite of recent political clashes. Maybe it is worth building not only new gas pipeline bypass the Russian Federation, but new oil pipeline as well.

The energy mix should also be diversified. Why not to use coal more intensively while country is better endowed in it – the example of the Czech Republic and Germany. It will give the chance to manage some unexpected energy shortages and decrease the impact of higher energy prices, at the same time making crude oil supply more secure.

Much attention and investments have to be devoted to efficiency because energy security starts at home. There are many new and alternative energy sources and fresh flow of investments into this sphere will allow to use energy more efficiently and so to decrease EU energy dependence. New solar and wind power stations are widely used across Europe: why not to use them more extensively? Again, the reorientation and modernization of huge industrial consumers will allow reducing oil consumption.

The same or even bigger problem is in the sphere of transportation. The biggest consumers of crude oil are cars, lorries, busses, trains, planes, etc. Gradual transition to new technologies – solar and electrical transport – will give the chance to be one step forward emerging problems and rising crude oil prices. The scariest perspective is to lose the technological leadership. Investments in new technologies have a very short pay off period; it is better to invest, discover and use technologies than just wait and pay for them times and times more. For example, the scarcity of petroleum reserves makes renewable energy sources more attractive and popular. The most effective way to satisfy growing demand is to utilize alternative energy sources and biofuels which are relatively cheaper in production and at the same time biofuels are environment-friendly with lower emissions of CO2.

In general, all the actions are devised to reduce overall oil and gas consumption and to provide sustainable development which has been on the EU day-to-day agenda for many years.

Much attention has to be paid to energy strategies towards the main transit countries, such as Ukraine and Georgia. The information about agreements, roadmaps, or cooperation perspectives has to transparent and available with these parties. Though it will reduce the risk of “being tricked” effect and allow negotiating or solving any unexpected problem transparently and effectively.

As it has been proven many times in practice, the EU crude oil market is quite unstable, thus it is very sensitive to oil shocks, sudden price changes and other unexpected circumstances. So it would be needed to think over deliberate system of crude oil reserves – strategic stocks in case of any dangerous situations. This will allow the EU to regulate its internal oil market by additional inflows or outflows when needed thus stabilizing demand/supply and oil price variables.

With the regards of all the above mentioned points, lets summarize the main step and procedures that should be undertaken by the European Union in order to gain the balance in its energy security policy.

The overall solution of the European energy problems lies beyond the energy sector. Unless common trust, confidence and mutual assistance come back to the EU-Ukraine-Russia relations, we may witness recurrence of energy and other conflicts. For this to be the case, all the actors should take necessary actions.

Liberalisation and democratisation of the political and economic life in Russia is, probably, the key not only to the European energy security, but to the stability and steady development of the European continent. Nothing can be better for prosperous and predictable development of Europe than Russia implementing common with the EU values, principles and rules. The European Union should, first of all, restore its self-confidence and realise not its dependency, but interdependency with Russia. [26]

Thus continuing efforts in the sphere of EU – Russia relations liberalization are vitally needed to be undertaken so far as the cooperation in energy dialogue is the question of at least next twenty years or even more. And so friendly relation will only stanch further problem solving.

6. CONCLUSIONS

Having made the analysis over the issues stated in the Diploma Thesis "The dependency of EU on crude oil, case study of Russian oil", we have come up with the following conclusions:

1. Crude oil has been known for the mankind since ancient times. The history of its extraction starts thousands years ago when it was mainly used for lightening torches, ancient weapons, etc. The isolated cases of oil extraction from oil wells could be found in the history of Middle East and some other Asian countries. Since that time the situation with oil extraction and uses has changed much, especially for the past century.

And nowadays energy resources play one of the major roles in the modern economy. In any country of all over the world the production capacity level is determined by the extent of energy resources consumption. Moreover, about 70% of extractable resources are crude oil, natural gas, coal, etc. For the last century crude oil and gas have been playing the leading role on the world energy market consequently creating a conductive environment for vital dependence of economies on the "black gold".

2. The exploration of crude oil reserves has progressed significantly for the last seventy years. These trends of oil exploration and extraction gather pace with the developments in the world oil market.

As it has been proven in practice the oil market itself is very sensitive to different political clashes, terrorist attacks, wars, etc., as a result causing vulnerability in oil supply and dramatic price changes which has resulted in numerous world oil shocks and crisis.

Nevertheless, the oil producing countries has managed to overcome main obstacles and increase their production capacities for the last years to the unbelievable heights. Partly it is the merit of modern technologies development, but still the oil has become a key leverage of political and strategic influence of the world scene. For reference, in 2009 the world oil production of both OPEC and non-OPEC countries was 1336, 9 billion barrels - many times more than it was in 1950's.

This rapidly increasing trend is the proof of technological progress, but still we should not forget that crude oil is non-renewable resource and in the near future its deficit could lead to more serious consequences we have already faced.

3. The Russian Federation holds the world's largest natural gas reserves, the second largest coal reserves, and the eighth largest crude oil reserves. It is a major exporter of oil and natural gas and its economic growth over the past decade has been driven primarily by energy exports, given the increase in Russian oil production and relatively high world oil prices during the period.[16]

At the same time it is the EU's neighbour country and major trading partner, especially in the field of energy resources supply. Thus, it is one of the key tasks for the EU to provide good neighbourhood relations, because they might play the vital role in the EU future prosperity and energy security.

The European Union and Russia are important strategic partners. Russia is Europe's third biggest trade partner and Russian supplies of oil and gas assemble a large percentage of its export to Europe. The EU and Russia cooperate on a number of challenges, both on international and local level and share a great deal of common interests and concerns.

But as it has been proven in practice, with the lapse of time any kind of dependency could lead to very serious and unexpected problems. Being based on the made calculations, we may state that for the last ten years the overall EU crude oil dependency has increased from 73 to 84%. The dependency from its key oil supplier – the Russian Federation – for the last five years has been approximately the same – it fluctuated from 25,6% in 2005 to 24,8% in 2009. The deviation is negligible – even less than 1%, but still such a stability of 25% dependence is not good, and it has to reduced in order to reach EU energy policy goals.

4. In order to tackle these problems in future and provide the EU deliberate energy policy acting, the next proposals and recommendations have to be taken into consideration.

Firstly, the European Union has to diversify its oil imports by paying more attention to Middle East and Africa directions in spite of recent political clashes.

[16] U.S. Energy information administration. Russia.

Secondly, more attention has to be paid to modern technologies and crude oil substitutes like biofuels; even though such investments have long pay-back period, in future energy stability and independence will be provided.

And thirdly, for the next twenty or thirty years the Russian Federation is supposed to be closest and the biggest crude oil supplier. Thus, friendly and mutually-supporting relationships are the key to successful and fruitful cooperation not only in the sphere of energy supply.

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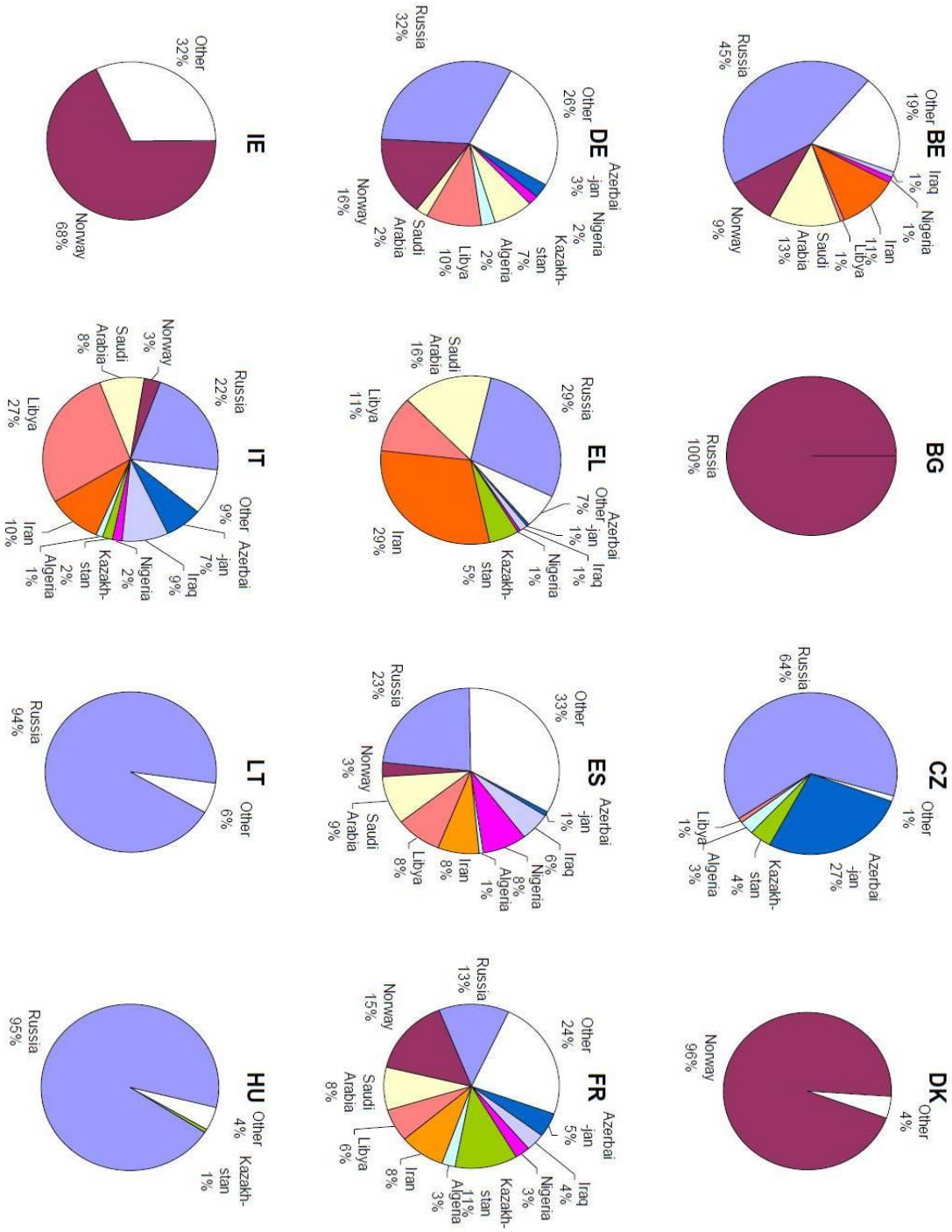
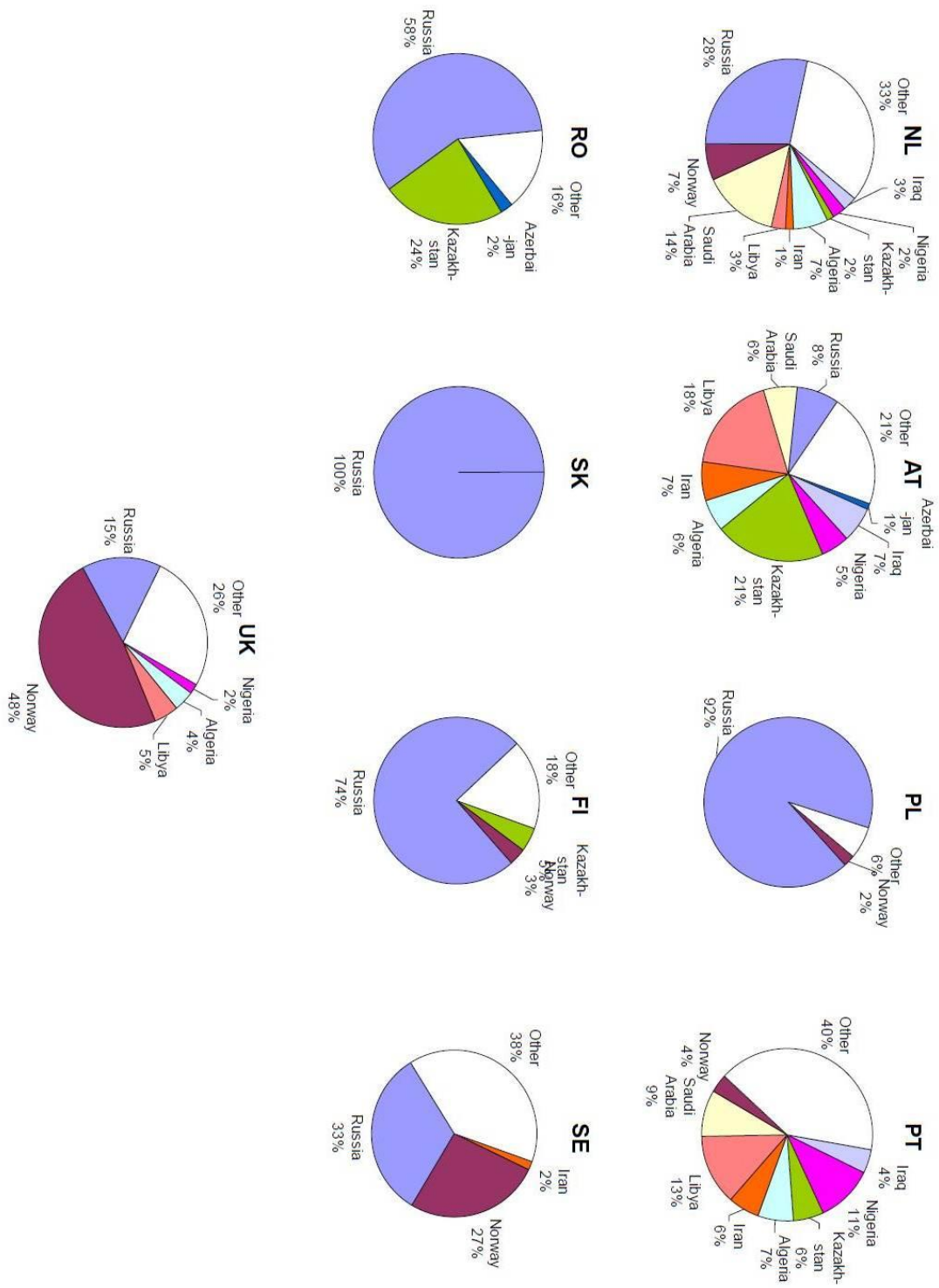
8. SUPPLEMENT

Imports of Crude Oil and Feedstocks by member states (% of Total Imports), 2007.





Source: Kroeppl C.: Oil economy 2007.