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Energy in Russia's foreign policy

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To the Memory of Yegor Gaidar
1956-2009

Prologue

"*What lessons can we learn from the Soviet collapse and apply to the current situation in Russia? First, we must remember that Russia today is an oil-dependent economy. No one can accurately predict the fluctuations of oil prices. The collapse of the Soviet Union should serve as a lesson to those who construct policy based on the assumption that oil prices will remain perpetually high. It would seem that in our country, which has lived through the collapse of the late 1980s and early 1990s, this fact would be evident. But as soon as the prices went up again at the beginning of 2000 and in 2004 became comparable in real terms to those at the beginning of the 1980s, the idea that 'high oil revenues are forever' has gained an even wider acceptance.*

Of course, the Russian government has taken into account some lessons from the experience of the Soviet collapse and has been conducting a careful policy during the current period of high oil prices. The administration has accumulated a considerable reserve of foreign currency, 'sterilized' a significant portion of oil revenues in the Stabilization Fund, and approached budgetary spending with great care. Nevertheless, the temptation to take and immediately divide these revenues is great. Those who argue on every television channel or newspaper about how to better spend these relatively modest funds, which would only be enough for maintaining stability for two to three years if oil prices decline, should read again the documents that demonstrate how a seemingly stable superpower disintegrated in only a few short years."

Yegor Gaidar
Acting Prime Minister of Russia
15.6-15.12.1992
Washington
November 2006
(for reference see AEI 2010)

1 Introduction: Have gas pipes become a more powerful foreign policy tool for Russia than its army?

Every nation uses its political connections, economic relations (e.g. foreign trade and FDI), military capability and other available means in the most effective way to strengthen the nation's position in the international arena. Russia is no exception.

What makes Russia exceptional is the loss of its super power status due to the break-up of the USSR in 1991. Bugajski (2004, 1) argues that "*Russia experienced the most profound economic, political, and military collapse by an empire not defeated in war*".

The collapse of the Soviet Union almost led to the disintegration of the Russian Federation and to a deep economic fall. As a consequence of the prolonged crisis roughly one half of Russia's GDP evaporated during the period 1990-1996. The post-Soviet economic fall came to an end in 1997 but already a year later Russia also experienced the consequences of the Asian crisis. Since 1999, Russia's recovery has, to a great extent, been based on the booming oil prices (Appendix 1) [2].

In the past decade, Russia managed in almost doubling its real GDP, though the country experienced a GDP drop of 8% in 2009. The drop will be temporal. It is officially estimated that the Russian economy will grow by 3-6% this year (BOF 2009; 2010).

The growth has inspired the Russian leadership to aim at regaining the superpower status it lost two decades earlier. Even if Russia's foreign exchange reserves (currently over USD 450 bn) are the third largest in the world after China and Japan (IMF 2010), it should be remembered that Russia is still a relatively small actor in the international economy.

Russia represents some 2% of the planet's population and 2-3% of the world GDP (CIA 2010). The country's share in the global exports and the world's outward foreign direct investment stock is 3% and 1%, respectively (UNCTAD 2009; WTO 2010). It is worth

[2] Russia reached the GDP level of 1990 only in 2007 (RIA 2008).

noticing that should the oil and natural gas sales be excluded from the Russian exports, the value of its exports would be smaller than that of the Czech Republic (CIA 2010).

Russia's share in the globe's military expenditure is slightly larger than its share in the world economy, i.e. Russia spends 4% of the globe's military expenditure. Just to give a reader a comparison point, the military expenditure of the USA is some 10 times larger than that of Russia[3]. In 2008, Russia's military expenditure was USD 40-60 billion, whereas two decades earlier the spending was 3-5 times bigger, accounting for more than 10% of the country's GDP (SIPRI 2010).

Russia's current military spending naturally does not indicate the country's real military might. One should not forget that Russia still possesses a devastating number of Soviet-era tanks, military airplanes, warships and submarines, nuclear warheads, and chemical weapons. On the other hand, a large part of the Soviet era weaponry becomes obsolete by the end of the next decade, as the Soviet armaments are already at least 20 years old[4].

Since the country's military might and its economy (state budget) financing the army do not allow Russia to act as a global superpower, it has chosen another strategy, i.e. Russia is using energy to strengthen its position in the international arena (Rozman 2007). During the past decade, Russia became the largest energy exporter in the world. The change in strategy is an understandable move, since the energy weapon can be used in a daily foreign policy unlike the military force.

The goal of this report is to analyse 1) the capability of Russia to use its energy to reach its foreign policy objectives, 2) the energy import dependence of Russia's main clientele, 3) ways how Russia has previously used energy as a foreign policy instrument, and 4) the strategic goals of Russia's foreign energy policy.

[3] The USA spends roughly Finland's annual military budget in one day.
[4] "*On April 8th Mr Medvedev and the US President, Barack Obama, signed a nuclear arms reduction agreement in Prague, after a four-month delay. The new agreement replaces the 1991 Strategic Arms Reduction Treaty (Start I), which expired in December 2009. It limits the two countries to 1,550 warheads and 700 delivery vehicles (missiles and strategic bombers). … In the negotiation on delivery vehicles, Russia wanted a limit of 500 and the US wanted 1,100. A large proportion of Russia's missiles are coming to the end of their service life, so that by the end of the 2010s the country will have little more than 500 delivery vehicles*" (EIU 2010c, 13).

In order to improve the readability of the report, the author has shortened the text by including several illustrative tables and numerous appendices in the publication.

The author is grateful for the financial support of The Emil Aaltonen Foundation, Foundation for Economic Education, The Jenny and Antti Wihuri Foundation, The Marcus Wallenberg Foundation, The Niilo Helander Foundation, and The Paulo Foundation, which made the absence of leave from my current job and the research work at the University of Kent in the United Kingdom possible.

I wish to express my gratitude to several anonymous reviewers. Special thanks go to Dr. Amelia Hadfield, Director of Energy Analysis Group, for her help during my stay at the University of Kent. Needless to say, I am personally responsible for any errors and misinterpretation.

Turku, May 9th 2010 [5]

Kari Liuhto

[5] May the 9th is one of few common days for celebration between the EU and Russia. The EU celebrates the Europe Day, whereas Russia the Soviet Victory Day. Hopefully, both the parties could look to the future and celebrate together this moment as a day for the European integration and peace.

2 Russia's energetic foreign policy

2.1 Russia's capability to use energy as a foreign policy instrument

Nearly two millennia ago, the famous Roman historian Caius Cornelius Tacitus stated "*felicitate corrumpimur* [we are corrupted by good fortune]". The aforementioned statement applies, at least, to a certain extent to Russia with its giant metal and fossil fuel reserves.

Energy reserves, production, and exports: Russia possesses the largest natural gas reservoirs in the world. Its gas reserves are larger than the combined reserves of all the countries in North, Central and South America, Europe, and Eurasia[6]. In terms of coal, Russia comes second after the USA, which holds nearly a third of the planet's coal. China possesses nearly 15% and the EU some 5% of the earth's coal reservoirs. The main oil fields in Europe and Eurasia are located in Russia, controlling a half of the region's oil reserves. In a global comparison, Russia is not a key player. Russia has 'only' 6% of the planet's oil reservoirs, i.e. the oil reserves of Middle East are almost 10-fold that of Russia and they are feasibly accessible unlike the remote fields in Russia (British Petroleum 2009).

In 2008, Russia was the world's largest natural gas supplier[7], the second largest oil and coal producer after Saudi Arabia and the USA, respectively. Last year, however, Russia became the leading crude producer when Saudi Arabia reduced its production due to the

[6] The estimate does not take into account the unconventional gas reserves. Currently, no detailed picture on the unconventional gas reserves can be drawn. However, it is commonly believed that North America holds a quarter of non-traditional gas reservoirs, while the share of the EU is less than 5% (NPC 2007). Even Europe's global share seems modest, in absolute terms the unconventional gas reserves in Europe could be some 35,000 bcm (Kefferpütz 2010). If the aforementioned figure turns out to be real, Europe could meet its gas consumption with unconventional gas for the next 30 years. According to IEA (2010), unconventional gas already represented a half of the US gas supply in 2008. As the USA is the largest consumer of gas in the globe (22% of the world total), the growing proportion of the unconventional gas production in the USA reduces the LNG import needs of the USA, and consequently, fills the EU with relatively inexpensive LNG shipments affecting its gas import needs from Russia (Kefferpütz 2010). Prior to the unconventional gas revolution, LNG imports represented a bit less than 1/10 of the EU's gas consumption and 1/5 of the EU's gas imports, but its share is expected to grow (Kavalov et al. 2009).

[7] Gazprom's CEO Alexei Miller stated in mid-April 2010 that the company expects to exceed the pre-crisis level of gas production in 2013. Gazprom's gas output in 2013 will reach 565 billion cubic meters, up 3% as compared with 2008.

OPEC's production restrictions triggered by the international financial crisis. Furthermore, Russia covers almost a tenth of the world uranium production, being the 4th largest producer in the globe (WNA 2010b).

A reader should not be dazzled by Russia's colossal reserves and impressive production shares, since the country consumes a substantial amount of its energy production itself, and moreover, all its proven reserves become economically viable only if their prices rise from the current level. It should be remembered that the mammoth-like gas fields in Tyumen (Western Siberia) are rapidly depleting, and most probably, the largest production sites of Russian gas are to be found above the Arctic Circle in the next decade. In other words, if the energy prices do not rise from the current level, Russia sits on enormous energy reserves without being able to use them in full. In addition, one should bear in mind that natural gas is Russia's major energy policy asset abroad, since production costs of oil are cheaper in the Middle East, and coal is unlikely to become a major international tradable commodity in the foreseeable future, because modern energy production with coal is relatively expensive and the coal reserves of China and the USA are substantial.

Russia's current export potential (production – own consumption) of various energy forms is significant (Table 1). According to British Petroleum (2009), Russia is presently able to export over 180 billion cubic meters (bcm) of natural gas, some 360 million tonnes (mt) of oil, and over 50 million tonnes of oil equivalent (mtoe) of coal. Two thirds of Russia's exports consist of oil and gas and a quarter of the country's GDP is generated by the energy sector – 10% by Gazprom alone (Gazprom 2009a; Hanson 2009). According to EIU (2010c), approximately 40% of the federal budget revenues originate from hydrocarbons.

Table 1 Russia's energy reserves in the global scene (2008)

	Reserves of world total (%)	Production of world total (%)	Export potential (production-consumption)
Natural gas	23.4	19.6	181.5 bcm
Oil	6.3	12.4	358.1 mt
Coal	19.0	4.6	51.5 mtoe

Abbreviations: bcm = billion cubic meters
mt = million tonnes
mtoe = million tonnes of oil equivalent

Source: British Petroleum 2009

In order to assess the importance of Russia as an international energy player, one could take Finland as a comparison point. Finland's annual gas consumption is approximately 5 bcm, oil consumption a bit more than 10 mt and coal usage some 3 mtoe. To put it differently, with Russia's annual energy exports Finland could meet its gas and oil consumption for nearly 40 years, and coal use for 20 years (British Petroleum 2009).

Russia does not export only fossil fuels but also significant amounts of electrical energy. Russia's electricity exports exceeded 20 billion kWh in 2008, Russia being the number 4 electricity exporter in the world after Germany, Canada, and Paraguay (CIA 2010). Russia exports electricity to the former Soviet republics (mainly Belarus and Kazakhstan) and Finland, in particular. Finland imported one half of Russia's electricity exports (Appendix 17).

In 2009, the share of Russian electricity in Finland's electricity consumption increased by two percentage points to 14%. Finland imports more electricity from Russia than the two nuclear power units located in Loviisa produce together. Last year, Finland imported close to 12 billion kWh of electricity from Russia and the production of the two Loviisa units was around 8 billion kWh (Energiateollisuus 2010).

Although tens of companies produce hydrocarbons in Russia, Russian oil and gas output is rather concentrated. The four largest producers, namely Rosneft, Lukoil, TNK-BP and Surgutneftegaz, cover 2/3 of Russia's crude oil output (Appendix 2). Correspondingly, Gazprom accounts for approximately 80% of Russia's natural gas production, and furthermore, this state-controlled corporation holds a gas export monopoly[8], meaning that other companies cannot export gas from Russia, excluding the ExxonMobil-led consortium in Sakhalin 1. The consortium, based on the production-sharing agreement signed during the Yeltsin era, does not wish to sell gas to Gazprom at the domestic prices as long as the Russian prices do not correspond to the market-based pricing. One does not have to

[8] "*Gazprom, which holds a monopoly on exporting all kinds of gas from Russia, will export the LNG from Yamal, but will return a proportion of the revenue to Novatek. The company's consent to sharing its export profits means above all that Novatek is in a particularly privileged position. The agreement's entry into force may also contribute to undermining Gazprom's status as a monopoly. … Yamal LNG plans to put the South Tambey field into operation (with reserves estimated at 1.3 billion [figure should be 1.3 trillion i.e. 1300 billion] cubic meters) and build an LNG plant with the capacity of around 15 million tons a year (to be completed in 2016)*" (EW 2010b, 5-6).

possess a crystal ball to predict turbulent times in Russia, if Gazprom confronts ExxonMobil, like it attacked RD Shell in Sakhalin 2 and BP in the Kovykta field (Donovan 2010).

In spite of the fact that Russia's oil and gas industry is relatively consolidated and the state plays a key role in the energy sector[9], the Russian oil and gas corporations are not the largest actors in the global energy scene (Appendix 3). Russian energy companies are mainly regional players, their focus region being Europe and Eurasia, though they also conduct some energy operations linked with Russian political support to some South American countries (MT 2010c/h/i) and operations linked with Russian armaments exports, approaching USD 10 billion level annually (IT 2010b). For instance, in March 2010, Russia and India signed a deal, which allows Russia to build 12 nuclear reactors in India, while India simultaneously agreed to buy MiG-29Ks with USD 1.5 billion (Anishyuk 2010; MT 2010b). Also France has recently concluded a 'guns against gas' - deal with Russia, when France agreed to sell a Mistral warship in exchange for receiving a 9%-stake in the Nord Stream pipeline consortium (Schmitt 2010; Troika Dialog 2010f).

Russia strengthens its own position by controlling Central Asian energy exports: Russia does not only export its own energy, but the country with its vast pipeline network also acts as an important gatekeeper, strengthening its energy position in Eurasia further (Appendix 4 and 5). Russia buys gas and oil from Central Asia, which allows it to export more of its own resources, or alternatively, sell Central Asian resources on its own account, with higher prices eventually. As Russia has not ratified the Energy Charter Treaty (ECT) it signed during the Yeltsin presidency[10], the Central Asian countries cannot freely access the Russian pipeline network, even if there would be a capacity available. Naturally, such a gatekeeper position improves Russia's foreign policy position vis-à-vis the Central Asian countries, which are rather dependent on hydrocarbon exports. For

[9] State-owned companies accounted for over 85% of worldwide oil and gas production and over 95% of global reserves in 2008 (Pleines 2009). Therefore, Russia can be regarded as having an exceptionally private oil sector, i.e. around a half of Russia's oil production is in state hands. The role of the state in Russia's gas production corresponds to the global figures (Liuhto 2007; 2008).

[10] In the autumn of 2009, Russia announced officially its intention to withdraw from the ECT (Andoura et al. 2010). After rejecting the ECT, Russia prepares a Global Energy Code to create global production and technology chains in the supply of Russian energy resources. The aforementioned confirms Russia's unwillingness to play by the rules created by others, and instead, Russia tries to create own rules and asks others to follow them (Schroeter 2010).

instance, approximately 80% of Kazakh and Turkmen exports consist of fuels and mining products (WTO 2010).

The controller position of the pipes strengthens Russia's negotiation position towards Ukraine, which is the major recipient of Central Asian gas. In 2008, Ukraine imported close to 60 bcm of gas. According to Loskot-Strachota (2009), all Ukraine's gas imports arrived from Central Asia via the Gazprom pipes in 2008. Despite the fact that over 90% of Poland's gas imports arrive from/via Russia and Poland's own gas production is, at the moment, insignificant, it should be remembered that natural gas is not as strategic an energy source for Poland as it is, for example, for Ukraine or Belarus. Gas represents only 13% of Poland's primary energy consumption, whereas the share in Ukraine and Belarus is 40% and 70%, respectively. In fact, Russian gas plays a bigger role in the primary energy consumption of Finland than that of Poland. Therefore, one can argue that Poland's vocal criticism towards the Nord Stream pipe does not only stem from energy security but rather from general security, i.e. many Poles consider that the less sovereign Ukraine and Belarus become, the more security concerns Poland faces from the East. The economic dependence of Belarus on Russia has already passed the line, which endangers the future sovereignty of Belarus. Ukraine might soon follow the Belarusian path, unless the current trend is reversed.

Turkmenistan has traditionally been Russia's major energy partner in Central Asia. Since the year 2006, Turkmenistan has exported some 50 bcm of gas, mainly to Russia (RAD 2010). However due to the pipeline blast in April 2009, Russia's gas imports from Turkmenistan reached only 10 bcm last year. Fernandez (2010) estimates that Russia's gas imports from Turkmenistan will remain at the current level until the end of 2012, and only thereafter, imports may resume to 2008 levels. When one predicts the future volumes, one should not forget that in December 2009 China opened a gas pipeline from Turkmenistan with an annual 6 bcm deliveries (Pirani 2010). The pipeline is expected to deliver 40 bcm a year to China by the time it is running at full capacity in 2013 (BBC 2009).

Even if the Turkmen leadership tries to balance between the political leverage of China and Russia, it is unlikely that Turkmenistan can fill both the Russian and Chinese gas

pipelines in full[11]. Should the Turkmen supplies to Russia decline, it would be more difficult for Russia to maintain earlier volumes of gas exports to the West. Ukraine would be the first country to face the reducing amounts of natural gas flows from Central Asia.

This should further encourage the Ukrainian leadership to erect several nuclear power stations (IT 2010f). In April 2010, the Russian Prime Minister Putin proposed funding for Ukraine's new nuclear power units. Putin said that Russia could grant a USD 5-6 billion loan to Ukraine for building the third and forth units of the Khmelnitsky nuclear power station. Besides the nuclear option, Ukraine possesses close to 5% of the global coal reservoirs (more than the whole EU), and at the current production rate they will last over 400 years, i.e. Ukraine could, for instance, construct modern coal power plants with the EIB and the EBRD co-funding.

Similarly to Turkmenistan, Kazakhstan distributes significant volumes of oil and gas via Russia. In 2007, Kazakhstan exported some 60 mt of oil. Kazakhstan's gas exports are much smaller than those of Turkmenistan. In 2007, Kazakhstan exported only 5 bcm of gas to Russia, equalling to Finland's gas imports from Russia (RAD 2009a). Kazakhstan depends almost exclusively on oil and gas transit via Russia (Socor 2007; Yenikeyeff 2008).

Due to its geographical location, Uzbekistan is not only dependent on Russia, but it is also dependent on its former Soviet neighbours, Kazakhstan and Turkmenistan, since its other neighbours, namely Afghanistan, the Kyrgyz Republic, and Tajikistan, are practically closed by geographical obstacles or politically instability. Uzbekistan exports 15 bcm of natural gas. Approximately three quarters of Uzbek gas goes to Russia or through Russia to West-bound countries (Entrepreneur 2008).

[11] Nanay (2009, 128) states that "*both Kazakhstan and Turkmenistan may see the creation of exports routes to China as an alternative that is less politically threatening for Russia than options to the West*".

Russia's pipes bypassing Ukraine: Nord Stream and South Stream[12] will be more significant game changers than the new gas pipe from Turkmenistan to China[13]. Together Nord Stream and South Stream may carry 50-75% of Russia's natural gas flows to the EU, depending on the volumes of the EU's future gas imports from Russia and the final capacity of Nord Stream (max. 55 bcm) and South Stream (max. 63 bcm). The maximal capacity of these two pipes could go as high as 118 bcm. However, the maximal capacity does not seem likely in the foreseeable future. Troika Dialog (2010f, 2) aptly writes "*we imagine that notwithstanding timely completion, full use of the pipeline capacity in 2013-14 is very much in doubt. … Gazprom will delay some of its planned gas deliveries through the pipeline by two or three years, or temporarily scale down the volumes, because of the glut on the European gas market*".

When analysing the impact of Nord Stream and South Stream, one should first note that the total pipeline capacity added by Nord Stream and South Stream will be much larger than Russian gas export volumes to the West[14], allowing Russia to choose the preferable routing (Appendix 4, 5, and 6).

Second, it is good to remember that currently 80% of gas flowing to the West goes via Ukraine. Russia is not interested in distributing gas via Ukraine if it does not gain at least partial control of the pipe[15]. Even if Russia would gain ownership in the Ukrainian

[12] Russia's Energy Strategy 2030 refers that South Stream could alternatively go through Turkey (Samsun) instead of travelling directly via the Black Sea to Bulgaria (Gromov 2009). South Stream's precise route is to be decided and the final investment decision is to be taken with 18 months from now [April 2010] (MT 2010m).

[13] When one analyses Nord Stream and South Stream, one should not completely forget the Nabucco plan, aiming at bypassing Russia and bring Central Asian and probably some Azeri gas to the EU. Even if the project has difficulties to fill the pipe with gas, the project is not dead yet. "*Turkmenistan is expected to sign a gas-supply deal for the Nabucco pipeline with German energy company RWE in a matter of months, according to an announcement this week [beginning of March 2010] by a company official from RWE. European supplies are not a priority for Turkmenistan, but the consequences of last year's rupture in gas-trading relations with Russia could create the scope for Turkmenistan to export to the EU*" (BEE 2010, 1).

[14] A German professor, Westphal (2008, 109) writes that "*the pipeline through the Baltic Sea carries ecological risks of leaks, which, deep in the sea, take time to be discovered and identified. The Nord Stream pipeline is on the whole seen as an economically costly, essentially political project, especially since the alternative pipeline routes to Germany and Western Europe are at the moment operating below full capacity. Modernizing and reconstructing them would have been cheaper, and alternative projects also exist*".

[15] "*Russian Energy Minister Sergei Shmatko has stated that Moscow has never abandoned its old proposal to set up an international Ukrainian pipeline consortium, Interfax reported on Friday*

pipelines, the Ukrainian share in the gas transit to the EU will drop considerably by the end of this decade. If the total capacity of Nord Stream and South Stream will really reach 118 bcm, which is not very likely, gas transit via Ukraine and Belarus will dry up.

Third, Russia's core gas fields are depleting fast, which may force Russia to cut its exports to the West. The largest importers of Russian gas, Germany[16] and Italy (Appendix 14), wish to secure their gas supplies from Russia, even in the case that there would be a serious supply reduction to Ukraine, Belarus and some countries in Central Eastern Europe. Finland obviously will not be affected if only a minor export reduction occurs. However, in case of a major slump, Russian gas deliveries even to Finland would be anything but secure.

There are many uncertainties in the Russian gas supply, but there are also major uncertainties in the European gas import needs due to the EU's energy reform and a possible start of unconventional gas production in the EU. However, if unconventional gas production does not proceed as expected in the EU, the European (incl. Ukraine and Belarus) gas demand will exceed Russian gas supply to the West. In such a scenario, one can be sure that increased competition leads to higher gas prices in Europe. Gas prices will grow despite the possible failure of the Gas Exporting Countries Forum (GECF)[17],

[5.3.2010]. The formation of an international consortium, now also reportedly favored by the new Ukrainian administration, would secure investment for the modernization of Ukraine's pipeline system and increase the reliability of gas transit through Ukraine. Media reports suggest that Yanukovych might offer Gazprom/Russia a 33% stake in the country's pipeline system. Should such a development materialize (although we admit that it is a very long shot), this would be potentially positive for Gazprom, as it could drop construction of the expensive South Stream pipeline, which may run to more than EUR 11 bln." (Troika Dialog 2010b, 4). Ukraine's ex-Prime Minister Tymoshenko opposed the idea, when she stated: "*I'm asking that the country and all of its politicians and people don't allow [the creation of a consortium], Tymoshenko said on Ukraina television Friday evening. We don't have any more property like that – it's the last thing that we still have*" (MT 2010a, 2). In my opinion, the consortium is not bad idea per se, if the ownership can be equally divided between Ukraine, Russia and the EU or its reliable representative. However, I do not believe that even a successful ownership division would stop Russia from further developing South Stream (MT 2010o). Nevertheless, Russia seems still to be interested in ownership of the Ukrainian gas pipe despite the South Stream plan (IT 2010c). In fact, Russia might even be interested to merge the Ukrainian gas company and Gazprom (Troika Dialog 2010j). The Ukrainian president Viktor Yanukovych stated in the beginning of May that the EU should be part of any talks between Kiev and Moscow to merge their national gas companies (MT 2010q).

[16] Germany also imports a third of its oil from Russia (Götz 2007).

[17] Already in October 2008, Gazprom and representatives of Iran and Qatar agreed to hold regular meetings of the Big Gas Troika and discuss the key issues concerning the gas market development (Gazprom 2009b).

founded in 2001, to lift gas prices in a similar way as its counterpart, OPEC, does in the oil business. The CIS countries will take the price blow hardest, since Russia's willingness to subsidise the former Soviet republics is fading. Naturally, gas price reductions, particularly in Belarus, Ukraine, and Kazakhstan, may be used in supporting Russia-friendly leadership in these countries.

After the bypassing pipelines are in operation, Ukraine loses one of its few trump cards, i.e. Russia's gas transit to the West. In order to secure gas deliveries from/via Russia, the current Ukrainian leadership allowed the Russian Black Sea Fleet to stay in the Sevastopol Port in the Crimean Peninsula until 2042 (EW 2010c; MT 2010l).

Liquefied natural gas deliveries from the Arctic region unlikely prior to 2016: Even if Russia conducted its first liquefied natural gas (LNG) shipment from Sakhalin to Japan in March 2009, it can safely be argued that Russia's gas exports towards Western Europe will completely dependent on the pipelines, at least until 2016. The situation will remain unchanged until production in the South Tambey field in the Yamal Peninsula will start and the LNG terminal will probably be erected by Novatek (EW 2010b; Appendix 8). Gazprom may prefer the development of the Yamal fields, and due to a lack of gas consumption in Western Europe, the development of the Shtokman field could perhaps be delayed until the next decade.

Financial uncertainties shadow the Yamal projects, though it seems that Russia is technologically capable of opening the fields and constructing the necessary pipelines. In 2004, Pirani estimated that the development of the Yamal fields requires investments of approximately USD 70 billion (Solanko – Ollus 2008). Gazprom has recently revealed that it plans to invest USD 165-199 billion towards the Yamal fields by 2030, i.e. up to USD 10 billion a year (SL 2010). Even if Gazprom's annual investment programme is gigantic, some USD 20-25 billion, it needs to be remembered that Yamal is not the only major project Gazprom needs to invest in, i.e. the corporation needs a considerable amount of external finance.

As a half of Russia's primary energy consumption and some 6-7% of the EU's primary energy consumption is in the hands of the Gazprom management (energising completely

30-35 million EU citizens), the European Commission should insist that Gazprom should more openly deliver reliable information on the production development in the Yamal Peninsula and the Shtokman field, which both have already faced delays. Bovanenkovo, the flagship project in Yamal, has been postponed at least until 2012 and Shtokman could be postponed even longer[18]. It needs to be remembered that it takes at least 3-5 years from the 'go ahead' before gas starts to flow from the Shtokman field to the EU, i.e. it is unrealistic for the EU to think that Shtokman would happen any time soon. In a similar vein, it is unrealistic for Russia to consider that it would be able to develop the Arctic offshore fields on its own. It seems that the Russian Government has realised this, but the foreign energy companies being prepared to take the risk and invest in Russia after the strategic sector law passed in April 2008 and the less encouraging experiences of RD Shell and BP is another question (Liuhto 2007; 2008; Medetsky 2010; MT 2010n; Schroeter 2010).

When analysing the Russian Government's financial possibilities, it is wise to keep in mind that the investment needs of Russia's energy sector are gargantuan. According to Bushuev (2009), Russia should invest altogether around USD 2500 billion in the energy sector during 2008-2030, or around USD 100 billion a year. Oil and gas projects would swallow nearly half of the aforementioned investment needs. As Gazprom's annual investment programme is USD 20-25 billion, Russian oil companies should bear the responsibility of financing the remaining part, i.e. USD 25-30 billion a year. I doubt that the oil companies are capable of conducting such investments by themselves.

Should Russia be unable to open the gas fields fast enough in the Yamal Peninsula, it would not be able to meet domestic consumption – not to speak about being able to maintain their current export levels to the West (Appendix 7, 8, and 9). In this context, one should keep in mind that gas forms more than half of Russia's primary energy consumption and it is highly unlikely that the country is able to replace hydrocarbons with other forms of energy within the next 20 years[19].

[18] A contrary statement was given by Putin in mid-April 2010: "*No one has cancelled this project. The investment decision has to be made next spring. The development of the field will begin immediately after that*" (IT 2010j).
[19] According to Russia's Energy Strategy 2030, natural gas still covers in 2030 some 46-47% of the country's primary energy consumption i.e. the Russian Government does not believe in a major

If Russia is unable to open major gas fields in Yamal, the country will face a major socio-economic crisis, and naturally those countries, which depend on the Russian gas imports the most, will be hit the hardest. One could exaggerate a bit by stating that the opening of the Yamal fields is a matter of life and death for Russia, and therefore, the Russian leadership will do everything possible to bring the Yamal fields alive, i.e. Russia will even save on other society-oriented projects in order to be able to fund the Yamal projects.

Should Russia's gas production decline in the forthcoming decades, it has a direct impact on the Russian electricity production, as half of the electricity production is generated with gas[20]. In case of a drop in gas output, Russia would obviously use more of its coal in electricity production, which is no problem for Russia, as its coal reserves will last, at the current production ratio, almost 500 years. Currently, the share of coal in Russia's electricity generation is just 16% (Vestas 2010).

Despite an ambitious nuclear programme, Russia cannot lean on a major increase in nuclear electricity production since old nuclear units are decaying fast (Hanson 2009)[21]. The aforementioned applies to the hydro power units as well[22]. In this context, it needs to be kept in mind that only 5% of Russia's primary energy is covered by hydro and another 5% by nuclear, i.e. against a rather widely-shared belief Russia is a nuclear power state; only in terms of nuclear warheads. Just to compare, the share of nuclear energy is at its highest among the EU member states of France and Sweden, where it represents over 30% of their primary energy consumption (Appendix 11).

change in energy usage in the next two decades. In 2005, the respective share was 52% (RES 2009).

[20] Hanson (2009, 39) argues that "*some 70 percent of Russian electricity is generated from gas, accounting for a substantial part of the 68 percent or so of Russian gas production that is consumed domestically*".

[21] Russia currently operates 31 nuclear units and aims at constructing 26 nuclear power units before 2020, i.e. more than one unit per year (Rosatom 2010). I doubt whether Russia is able to reach its plan in doubling the country's nuclear electricity output by 2020 without extending the life-span of the existing units. The extension of existing units' life-span involves additional risks (Troika Dialog 2010i; WNA 2010a).

[22] The annual investment programme of RusHydro is equal to approximately USD 3 billion (TD 2010c).

Russia creates 'new resources' by energy savings: As Russia has major challenges in generating more energy in the future, it has chosen another path, i.e. the energy efficiency (savings) programme is very high on the priority list of the Russian leadership. Extensive gas flaring, amounting annually to 16-38 bcm, is only one of the indicators of Russia's careless energy usage (Pirani 2010)[23]. In addition to gas flaring, Russia uses its energy extremely ineffectively.

UNDP (2010, 8) aptly states "*energy intensity of Russia's GDP was much lower in the economic rise of the 2000s compared with the early 1990s, and there has been sustained progress towards greater energy efficiency, although dependence of the national economy and budget incomes on energy exports gas increased. However, overall energy efficiency in Russia remains low compared not only with developed countries, but also with developing countries*".

In a similar line, World Bank suggests (2008, 1) "*Russia can save 45 percent of its total primary energy consumption. Russia's current energy inefficiency is equal to the annual primary energy consumption of France. Achieving Russia's full energy efficiency potential would cost a total of $320 billion to the economy and result in annual costs savings to investors and end users of about $80 billion, paying back in just four years. Benefits to the total economy are much higher: $120-150 billion per annum of energy cost savings and additional earnings from gas exports*" (World Bank 2008, 5).

The increasing prices are the best means to encourage firms and households towards more rational energy consumption, and there is a lot of work to be done in this field. Domestic gas prices are only around a fifth of what Germany pays for Russian gas (Kupchinsky 2008; Appendix 10). If gas prices do not go up, firms and households maintain reckless gas consumption, and furthermore, private oil companies do not increase their gas production at such a tempo as forecasted in official scenarios (Appendix 7 and 8). It is very encouraging to hear that the Russian Government considers stopping

[23] As a comparison, Russia exported to Germany some 38 bcm of gas in 2008 (Gazprom 2010). In March 2010, Medvedev signed a law providing priority access to the wholesale electricity market working on oil gas or gas products. The aim of the law is to promote more efficient use of oil gas, and hence, reduce oil gas flaring; definitely a step towards a correct direction (IT 2010a). However, many more steps needs to be taken in order to complete this energy savings marathon.

subsidising domestic gas prices by 2014 (MT 2010g). The resistance of the Russian population and industry may, however, delay this ambitious goal.

Besides gas, the electricity price difference between Russia and Western Europe is wide. Lundén (2009) writes that the Finnish electricity company, Fortum, sold electricity in the Ural region at the price of 700 RUR / MW (some EUR 17-18) in July-September 2009. At the same time, the wholesale electricity prices in the Nordic electricity market, NordPool, were some EUR 30-40 / MW.

Though the wholesale prices of electricity are planned to become unregulated in Russia at the beginning of 2011, political and societal realities do not necessarily allow Russia to adopt a completely market-based pricing of industrial electricity so soon. The major protest in Kaliningrad in January 2010 showed that the population is not prepared for major increases in living expenditure, when salary growth has halted and the risk of unemployment has grown[24].

Future energy exports: At the moment, Russia exports around 70% of its oil production. No dramatic volume change is forecasted though the Russian Ministry of Industry and Energy predicts that oil exports will increase by 40 mt to some 400 mt within the next 20 years. The Ministry forecasts that the oil throughput via the Eastern Siberia-Pacific Ocean (ESPO) pipelines may grow from the current level of 10 mt to 80 mt by 2030 (Gromov 2009)[25]. This scenario would factually mean that the West-bound oil exports would decrease. In addition to the ESPO, the possible completion of Baltic Pipeline System-2 (BPS-2) by the end of 2011 may allow Russia to re-direct up to 30 mt of oil from Belarus to the Russian shore in the Gulf of Finland, Ust-Luga[26]. If the planned re-direction truly happens[27], the Gulf of Finland is clearly Russia's largest oil export channel.

[24] Over a percent of the population of the Kaliningrad region protested on the streets. On a federal level, this would translate into 1.5 million protesters marching on the streets.
[25] Transneft continues the building of the ESPO-2 link through 2013 (Troika Dialog 2010e).
[26] "*Seventy percent of the works have already been completed. We plan to commission the pipeline by the end of next year by almost six months in advance from the network schedule. … At the first stage we plan to pump 30 million tonnes of oil with a possible increase in the throughput capacity*", Nikolai Tokarev, Transneft CEO, said in the beginning of May 2010 (IT 2010k).
[27] It needs to be noted that Russia's Energy Strategy 2030 predicts the throughput of BPS-2 to be in the range of 2-50 mt (Gromov 2009). Such a variation indicates that this pipe is Russia's political negotiation chip with the Belarus leadership. In a similar line, Johnston writes (2010, 9) "*there is*

Similarly to an increase in oil exports, the Ministry believes that gas exports will jump by 80 bcm to 300 bcm. The export growth (70-75 bcm) is mainly expected to take place in Asia, i.e. the West-bound exports are estimated to remain almost unchanged[28].

Whereas the Ministry foresees no change in coal exports (85 mt)[29], electricity exports are predicted to skyrocket by 80 billion kWh (i.e. quadrupling from their current level) and reach 100 billion kWh level by 2030. It is unclear to me how the quadrupling of electricity exports can be achieved, when the nuclear power programme advances behind the timetable, and the reduction in Finland's electricity imports from Russia is possible[30].

The Ministry, presenting the aforementioned energy exporting scenario, can be blamed for many things but definitely not for a lack of optimism. Therefore, it might be advisable for major consumers of Russian energy to critically evaluate Russia's real capability to execute these plans (Ministry of Industry and Energy 2007)[31].

also a degree of political bluffing that occurs, particularly with respect to the Baltic Pipeline System II (BPS II). The Russians have begun construction of this pipeline which they intend to use to reroute oil that currently flows into Eastern and Central Europe through the Baltic Pipeline System (BPS). BPS II would take this oil and move it entirely through Russia to a shipping terminal that would enable Moscow to divert it away from its traditional partners. However, there are currently no plans to build this terminal hence the pipeline, once constructed will not be able to ship oil anywhere. It seems that BPS II is currently a political slight rather than a serious business endeavour".

[28] Russia plans to export 15% of its gas and about a third of its oil to Asia by 2020 (Perovic 2009). I estimate that the shares of Asia will be much lower than indicated by Perovic.

[29] Russia's coal exports exceeded 100 mt already in 2009. With the aforementioned figure, Russia is the third largest exporter of coal in the world after Australia and Indonesia. Russia's share is around 10% of international coal trade (Rosner 2009; WCI 2010).

[30] Finland covers more than a half of Russia's electricity exports i.e. Finland imports annually more than 10 billion kWh from Russia.

[31] In 2009, only 60% of planned investments were realised in the energy sector (Komduur 2010).

2.2 Dependence of main consumers on Russian energy

The analyses on the importance of the Russian energy to the recipient countries are misleading, when the reports one-sidedly deal with the Russian share in the energy imports of the recipient countries. In order to be able to analyse the strategic importance of Russia in the energy usage, the analyses should instead focus on the total energy consumption of the recipient countries and the role of the Russian energy in it. To put it differently, it does not matter even if all salt in the household would originate from a single supplier, if the household does not use salt that much.

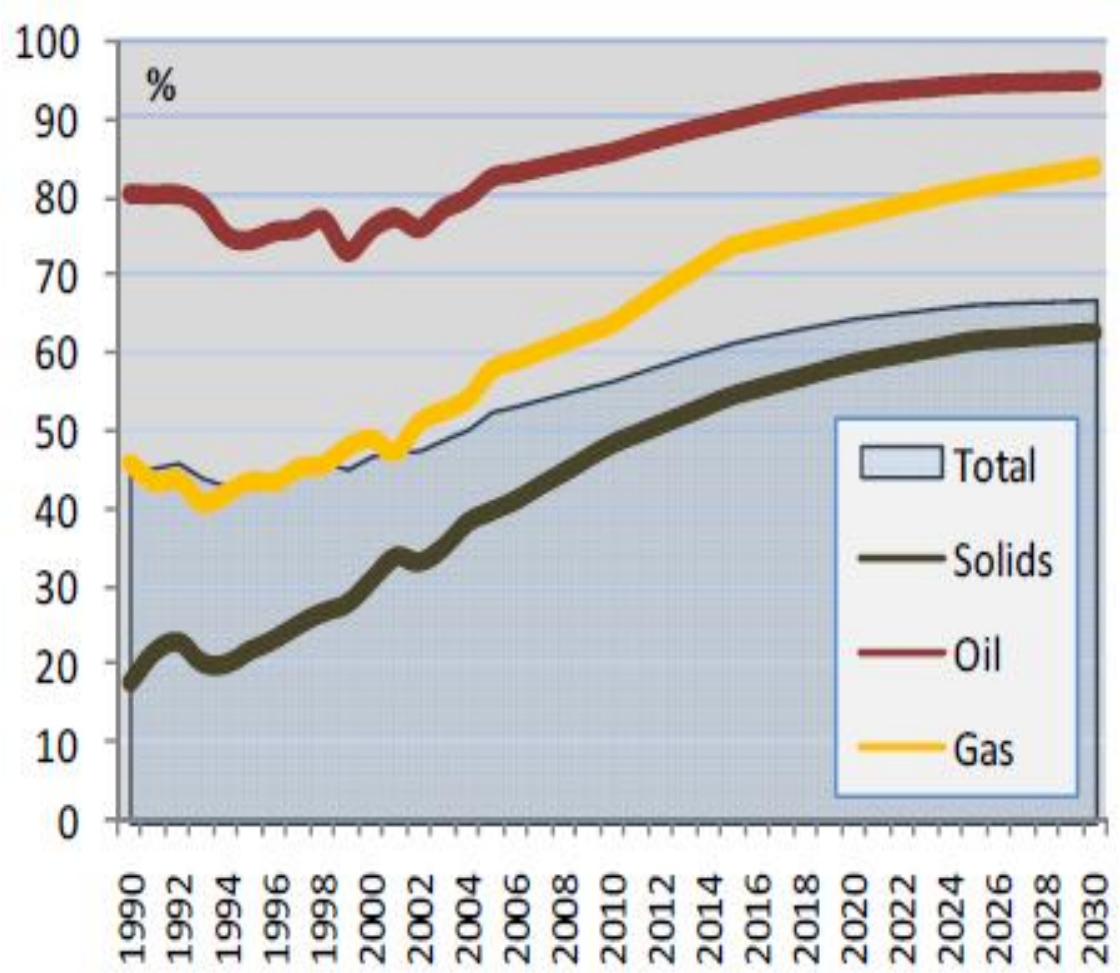
The EU's dependence on Russian energy: In 2005, the EU was able to cover slightly over a half of its total energy consumption. The remaining share of the energy was imported. The EU's energy import dependence is expected to increase rather sharply in this decade. According to the European Commission (2007), the energy import dependence reaches 65% in 2020. The growth in import dependence is not only due to growing energy consumption but it is mainly caused by decreasing gas and solid fuel production inside the European Union (Appendix 16).

The EU's gas production, for instance, meets 40% of the union's gas needs at the moment, whereas in 20 years from now, this share may have dropped to around 16%. According to the IEA (2008), the EU is able to cover only 6% of its oil supply and 37% of coal supply in 2030 (Table 2).

Table 2 does not take into account the possible impact of unconventional gas production inside the union on gas imports. If the unconventional gas production will follow the development in the USA, the increase in the EU's energy import dependence would slow down.

Russia is clearly the main external energy supplier to the European Union followed by Norway, and Algeria. The share of the Russian gas in the EU's natural gas consumption is a quarter, which is more or less the same as the share of Russian oil in the Union's oil supply. The respective share for coal is around a tenth (Table 3). In addition, Russia represents a fifth of the EU's uranium supply (IEA 2008).

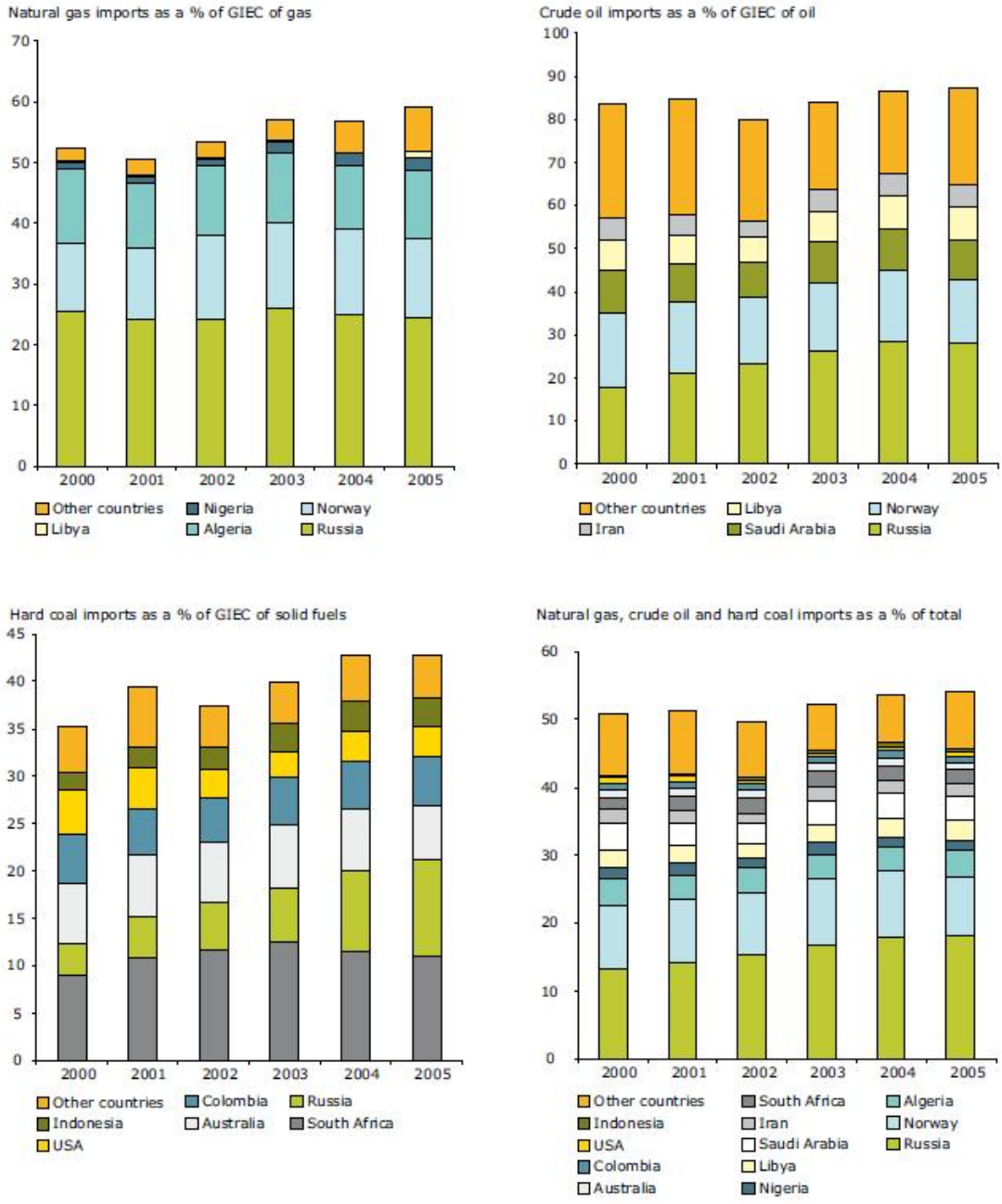
Table 2 The development of the EU's energy import dependence (imports / consumption)



Source: European Commission 2007

According to the EEA (2008), Russia's share jumped from 13% to 18% in the EU's total primary energy consumption between the years 2000-2005. The main explanation for such a jump is the EU enlargement of 2004, since then eight former socialist countries, traditionally highly dependent on Russian energy, joined the EU. The impact of the membership of Cyprus and Malta in the energy balance of the EU is insignificant. When the statistics, including the impact of the EU membership of Bulgaria and Romania, are available, Russia's share is probably close to 20%, which would mean that 100 million EU citizens are completely energised by Russia.

Table 3 The EU's dependence on external energy suppliers [32]



Note: GIEC = gross inland energy consumption (or primary energy consumption).

Source: Eurostat.

Source: EEA 2008

[32] The remaining part up to 100% is covered by the EU producers. For instance, some 40% of natural gas consumption is met with gas production taking place inside the EU. The shares of internal production for oil and coal are roughly 10% and 55%, respectively.

My preliminary calculations refer that Russian energy may have already exceeded the 20%-level; oil forming approximately 9-11%, gas 6-7%[33], nuclear 2-3% and coal 1-3% of the EU's total primary energy consumption. Though the share of Russian gas is not particularly high in the EU's primary energy consumption, natural gas is more pipeline-dependent than oil, and therefore, any Russian gas is less easy to be replaced than Russian oil.

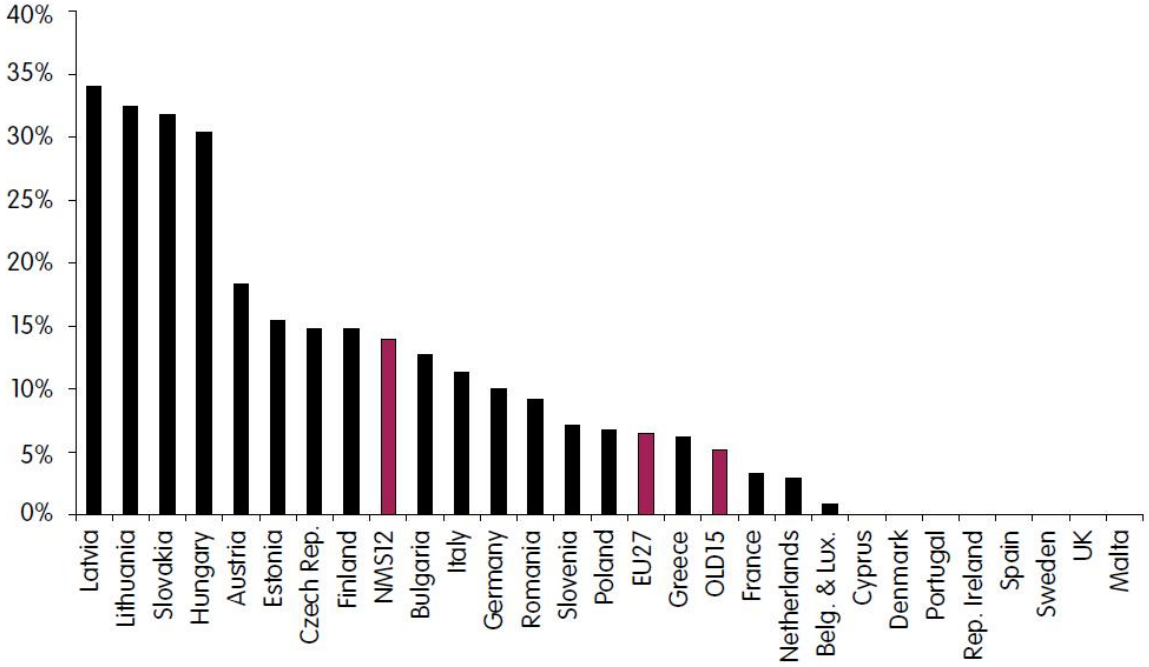
In this context, it needs to be stressed that the EU's gas imports are mainly based on pipeline deliveries (4/5). Oil deliveries by pipe in the total oil imports to the EU are much smaller. Russia, covering a third of the EU's oil imports, is the main distributor of oil via pipes to the union. As less than 30% of Russia's crude oil exports travel via a pipe (Druzhba), it means that roughly 10% of the EU's oil imports arrive by pipe against 80% of gas.

The dependence on Russian energy varies a lot between the EU countries. As the available data do not allow the researcher to analyse EU member states' dependence on all types of Russia's energy, natural gas is taken as an example (Table 5).

The countries of Central Eastern Europe and particularly the republics of the former Soviet Union are historically the most dependent on Russian gas. Significant domestic energy production (oil shale) in Estonia keeps its import dependence on Russian gas lower than that of other Baltic States. Poland, a vocal critic of Nord Stream, has surprisingly little dependence on Russian gas. Austria and Finland were traditionally so close to the USSR that their dependence can still be seen in their contemporary trade and energy consumption patterns. Germany and Italy are to become more dependent on Russian gas due to Nord Stream and South Stream.

[33] Gazprom aims at supplying 32% of Europe's gas in 2020 from about a quarter now (MT 2010k). This would mean that the share of the Russian gas in the EU's primary energy consumption would rise from the current level of 6-7% to around 8%.

Table 4 Share of Russian gas in total primary energy consumption of EU member states (2006)



Abbreviations:
NMS12 = Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, and Slovenia
OLD15 = Old member states of the EU (members accessed the EU in 1995 or earlier)

Source: Noel 2008

Lucas (2009) points to the crucial imbalance between small Central East European countries and Russia. He suggests that the Kremlin does not need to worry about small Central East European countries as gas or oil customers, but those countries do need to worry about Russia as a supplier.

Hanson (2009, 46) descends from the state level to the enterprise level and states: "*the present energy-supply situation between Russia and the EU is not quite one of mutually assured dependence. It is true that Moscow needs the money and the European states need the oil and gas. However, the bargaining positions are not symmetrical. In the critical gas market, Russia has an entrenched, state-owned monopoly exporter: Gazprom.*

Effectively, the Russian side is a single negotiating unit. On the EU side, various companies and governments act separately".

In this millennium in particular, Russian companies have increased their ownership in the European energy firms. Some of these ownership acquisitions are linked with ownership swaps[34], as otherwise the European energy corporations might have had difficulties in gaining an access to the hydrocarbon fields in Russia. The Russian firms have been particularly interested in acquiring companies involved in energy logistics, since by controlling energy logistics the Russian energy corporations control strategic parts of the energy supply. Gazprom has a much stronger position in the European energy business than Russian oil companies, since they face more competition from outside Europe. It is good to recognise that Gazprom owns corporation assets in approximately 20 EU countries (Appendix 13).

Russia also creates dependencies by building systematically close connections to political leaders of European countries and sometimes takes some of the former top politicians onto the pay-roll of the Russian energy companies. In addition to ex-politicians, Russia builds dependencies via using European businessmen, who act on the behalf of the Russian state either by indoctrinating a favourable opinion climate towards Russia or acting as agents in various types of energy-related deals. The moral grounds in some cases are questionable, though these activities are rarely illegal. The history books of tomorrow will teach us, whether these actions should have been treated as traitorous, ruthless financial self-interest, adventurism, naïvism, farsighted patriotism or European visionary leadership, or a peculiar mixture of the aforementioned.

Energy dependence of China and the USA on Russia: Even if China and the USA are also dependent on imported energy, the share of Russia in their energy consumption cannot be compared with the EU's energy dependence on Russia. Russia's share in the energy consumption of China and the USA is only a few percentages (less than 3%), whereas Russia's proportion in the energy consumption of the EU is approximately 20%.

[34] A Russian policy analyst Fyodor Lukyanov states "*Europeans think 'integration' means Russia gradually moving towards the European model, while for today's Russia, integration means 'asset swaps'. You can't have an agreement on interests unless you at least agree on some basic concepts*" (Leonard – Popescu 2007, 53).

A half of the US oil supply is covered by imported oil. Russia's share in the US crude oil and oil product imports was around 4% in 2008, which means that the share of Russian oil in the US oil supply was less than 2%. As close to 40% of the US primary energy consumption is covered by oil, Russian oil forms less than 1% of the US primary energy supply. Currently, Russia does not export gas, coal or electricity to the USA. Even if no adequate data on Russia's uranium exports to Russia was available, one can safely conclude that Russia's role is marginal in the total energy consumption of the USA (EIA 2010)[35].

Some 8% of Chinese oil imports originate from Russia, i.e. Russian oil represents less than 2% of China's primary energy consumption[36]. In addition to oil, Russia sells coal to China. Some 10% of Chinese coal imports arrived from Russia in 2009. Even if Russia takes care of a tenth of China's coal imports [37], one should not forget that the role of imported coal is still minimal in China's coal consumption. China consumes over 2500 mt of coal, while it imports 100 mt and only 10 mt arrives from Russia (WCI 2010). Besides fossil fuels, China imported a relatively small amount of electricity (1 billion kWh) from Russia in 2009 (Blagov 2010; Chinamining 2010). Though China will obviously increase the share of nuclear in its energy consumption from the current level (1%), I believe that the main suppliers of uranium to China will probably be Australia, Kazakhstan, Uzbekistan, and Mongolia not necessarily Russia. Although Russia's oil exports to China may grow and gas exports may begin in the future, I doubt that the Chinese leadership ever allows Russia's share in China's primary energy consumption to exceed 10%.

It is in Russia's interest to seduce China with energy deliveries but not to give major ownership in Russia's fossil fuel fields to the Chinese corporations. Despite this 'hidden'

[35] "*While the US is not dependent on Russian energy supplies and trade volumes between the two countries are marginal, Russian energy is important to Washington in terms of larger strategic considerations. The US is concerned about Russia's domestic developments and how Russia will use energy supplies to influence Europe and its former Soviet neighbors. Russia's increasingly assertive foreign policy and its willingness to use energy as a way to achieve political goals have heightened these concerns*" (Perovic 2009, 16).

[36] China's primary energy consumption grows extremely fast. The annual growth of primary energy consumption in China during the period of 2003-2008 was 11.2%. The respective figure for the EU and the USA was 0.1% (UNDP 2010).

[37] Coal forms some 70% of China's primary energy consumption (British Petroleum 2009).

agenda of Russia, I foresee that the participation of the Chinese companies in the Russian hydrocarbon fields will unavoidably increase. For instance, one may wonder what will be the destiny of the Kovykta gas field[38] nearby Mongolia, if British Petroleum will ultimately have been squeezed out of the field (MT 2010f).

Energy storages: Although the dependence of the EU on Russia is high, one should keep in mind that there are many suppliers of oil, uranium and coal, and one can rather easily store them. The storage of natural gas is costly, and therefore, the natural gas storages of any major significance can only be found in the UK, Italy, and Germany. On the other hand, these countries are major gas consumers, and hence, one should not overestimate the security dimension of the existing gas storages to the whole of the EU (Appendix 12).

The European Parliament wishes to introduce emergency gas storage regulation, and therefore, it pushes the EU member states to meet their own gas consumption for at least 45 days (MT 2010e)[39]. In this context, one should remember that 1.5 months is hardly enough to change the energy consumption pattern of any country, if there would be a structural (long-lasting) gas supply problem outside the EU (Table 4).

Table 5 Natural gas storage of selected European countries

Country	Storage meets the consumption for time period of
Slovakia	180 days
Hungary	105 days
Austria	60 days
Czech Republic	60 days
Italy	52 days
Romania	43 days
Germany	40 days
Bulgaria	30 days
Croatia	24 days
Poland	14 days
Greece	6 days
Bosnia-Hertzegovina	Insignificant
Macedonia	Insignificant
Serbia	Insignificant

Source: Stratfor 2009

[38] According to Hanson (2009), Gazprom does not intend to open Kovykta before 2017. The size of Kovykta is around a half of the Shtokman field, i.e. some 1900 billion cubic meters.
[39] Finland does not possess any gas storages.

Therefore, it is advisable to develop domestic resources further, i.e. renewables. Even the storage costs of uranium are small compared to storing gas, one should not forget that the EU members supply only less than 3% of the union's uranium consumption (IEA 2008).

The EU's future energy dependence: As Norway's accession to the EU does not materialise in the foreseeable future, and the majority of the Balkan countries and perhaps even Turkey may join the EU by 2030, the union's energy import dependence will rise (Appendix 16).

When assessing the energy impact of the future enlargements, one should acknowledge that the total population of Turkey and the Balkan countries, excluding the EU member Slovenia, would increase the EU's population by over 90 million people. A population increase of nearly 20% would unavoidably mean a considerable growth in energy consumption. As the former socialist states in the Balkans are relatively highly dependent on Russian supplies, the role of Russian energy in the EU's energy supply would grow further. Turkey with a population exceeding 70 million deserves some special attention.

Turkey's energy consumption is at the level of Poland, though Poland's population is just a half of the Turkish population, i.e. Turkey is a low energy user per capita (Appendix 11). Though Turkey is not high energy user per person, it nevertheless uses considerable volumes of hydrocarbons due to its large population size.

Oil and gas forms some 60% of Turkey's primary energy consumption and nearly 70% of Turkey's oil and gas originates from abroad (Bruno 2008; Appendix 11). Turkey depends on Russia for 65% of its natural gas and 40% of its oil imports (Bhalla et al. 2009). The aforementioned figures lead one to assume that Turkey neither decreases the EU's energy import dependence nor dependence on Russia.

Even if official Turkey stresses the country's importance as an energy gateway to the EU, turbulence in the Middle East does not support the gateway position. For instance, it is not realistic to count on secure pipeline deliveries from Egypt via Israel and Syria to Turkey or from Iraq and Iran to Turkey in the foreseeable future. Iraq is still a war-torn society and Iran is a net importer of gas despite its large reserves. Besides, the pipeline between

Northern Iran and Turkey operates far below full capacity and does not link with the main producing fields in Southern Iran (Norling 2008). Also Turkey is not completely free from possible terrorist attacks against its pipelines. One should not forget the explosion of a major oil pipeline from Baku via Tbilisi to Ceyhan in the Turkish territory in August 2008 (Reuters 2008).

South Stream, or alternatively, Nabucco is the most realistic and perhaps the only realistic alternative for Turkey to create the energy gateway towards the EU. But as Nabucco's main reserve base lies in Turkmenistan, the Trans-Caspian pipeline and pipes crossing Caucasus and Turkey needs to be erected. The construction of these pipes does not only require gas reserves, time and money, but also predictable gas consumption in the EU. No serious prediction can be done on the European gas import needs until credible estimates on unconventional gas production in the EU are available.

Although Turkey's role as an energy gateway cannot be taken as granted, the EU should vigorously work on Nabucco to be able to diversify its energy sources before the supplies from Norway will end. According to British Petroleum (2009), Norway's proven oil reserves deplete by the end of this decade and gas reserves by 2040 with the current production volumes, if no new reserves are found.

The EU has set extremely ambitious goals for renewable energy. Ten years from now, the EU should cover 20% of its primary energy consumption with renewable energy. Currently, the share is less than 10%. This task is extremely challenging and the goal cannot be reached without a serious energy savings programme. If the renewables fail to meet the expectations set for them and no shale gas production of significant scale takes place inside the EU, I would not be surprised to witness that the import dependence of the EU would be over 70% and the Russian share in the EU's primary energy consumption would have climbed from the current 20%-level to nearly 25% by 2030.

2.3 Russia's foreign energy policy arsenal

Bugajski (2004) divides Russia's foreign policy arsenal into 14 measures: 1) diplomatic pressure; 2) propaganda attacks; 3) disinformation campaigns; 4) military threats; 5) peacekeeping deployments; 6) energy controls; 7) economic leverage; 8) exploiting ethnic divisions; 9) inflaming social discontent[40]; 10) discrediting governments; 11) political influences; 12) supporting isolationism; 13) manipulating criminal networks; and 14) penetrating intelligence services. Protecting Russian citizens, particularly children, abroad could be added as a growing trend in Russia's contemporary foreign policy.

Bugajski's division is one-sided, since it focuses only on less acceptable or condemnable methods in Russian diplomacy. Despite Bugajski's bias, the division aptly stresses the role of energy as one of the many tools in Russia's foreign policy arsenal.

Leonard and Popescu (2007) describe Russia's foreign policy toolbox and divide the actions into hard power and soft power categories. These analysts regard energy embargoes and non-market-based energy pricing as hard power measures.

Table 6 Russia's foreign policy toolbox

HARD POWER	SOFT POWER
• Blockades of wine, vegetables, meat, dairy products	• Russian mass-media
• Oil and gas embargoes	• Financing NGOs
• Transport and communications blockades (railway, postal services, bank transfers)	• Economic growth
• Different energy prices	• Visa free regime
• Infrastructure takeovers	• Open labour market
• Secessionist conflicts	• Authoritarian capitalism
• Non-withdrawal of troops	• Protection of authoritarian regimes
• Arms at discount prices for allies	• Exporting 'sovereign democracy'
	• Russian citizenship and pensions
	• Military training

Source: Leonard – Popescu 2007

[40] In April 2010, Stratfor (2010) published an interesting paper on Russia using social unrest in the CIS as a foreign policy tool.

Eight years ago, an American foreign policy researcher Fiona Hill (2002) wondered: "*Could Russia be poised to become an energy superpower in the 21st century? The short answer is yes, but not in the near future – and not in oil*".

In 2006, Russia's former Deputy Energy Minister Vladimir Milov was not convinced about Russia becoming an energy superpower, when he stated as follows: "*The 'energy superpower' concept is an illusion with no basis in reality. Perhaps most dangerously, it doesn't recognize the mutual dependence between Russia and energy consumers. Because of political conflicts and declining production, future supply disruptions to Europe are likely. As a result, there will come a day when European gas companies demand elimination of the take-or-pay conditions in their Russian contracts. This will threaten Gazprom's ability to borrow. Putin's attempt to use energy to increase Russian influence could backfire in the long run"*.

Two years later, Dmitri Trenin neither believed in Russia becoming an energy superpower nor considered that Russia is using energy as a foreign policy tool. Trenin (2008, 15; 23-24) asked: "*Should one worry about Russia as an energy superpower? The short answer is No, because Russia's energy policy is much more about seeking profits than about establishing political domination. … Gazprom's moves are often misconstrued as a tool of some political strategy. The reality is different: energy is a political business, but it is business first and last*".

Goldthau (2008) also questions Russia becoming an energy superpower. He writes that "*Russia owns 26.6 per cent of the world's proven gas reserves, and 6.2 per cent of the world's proven oil reserves. In 2005, the country accounted for 21.6 per cent of global gas production and for 12.1 per cent of global crude oil production. In that respect, Russia could in fact be perceived an 'energy superpower.' However, conventional wisdom is wrong on five counts. First, Russian energy is not primarily about geopolitics. Its rhetoric to the contrary, the Kremlin does not dispose of an effective 'energy weapon.' Second, the rationale behind Russia's recent 'gas disputes' with its neighbors is to a large extent profit maximization, rather than punishing renegade governments in the neighboring Commonwealth of Independent States (CIS). Third, Moscow will not subordinate its economic interests in the name of a geostrategic Sino-Russian alliance. Fourth, Russia will*

have a hard time retaining the status of an 'energy superpower' as it risks running out of gas instead. Finally, Russia is less reliant on oil and gas than assumed, at least as regards the drivers of its recent economic success story. In a nutshell: Western excitement about the Russian 'Energy Inc.' appears to be caused largely by a well crafted piece of Russian pr".

In a quite similar tone, Rutland (2008) concludes that the idea of Russia as an energy superpower has more polemical than analytical content. It exaggerates Russia's ability to use gas and as weapons to augment Russian influence over its neighbours and on the world stage. At best, energy can be used as a hard power resource only when it is combined with the other tools at Russia's disposal, including military capacity and diplomatic bargaining.

A Swedish defence researcher Robert Larsson presents an opposite view. Larsson (2006, 262-263) has analysed concrete cases, when Russia has used energy in its foreign policy: "*Firstly, the number of incidents (cut-offs, explicit threats, coercive price policy and certain take-overs) exceeds fifty-five (of which only a few are unconfirmed) since 1991. Of these incidents, at least twenty have occurred during Putin's reign and between twenty and thirty during Yeltsin. The frequency has thus not been reduced dramatically [Larsson's study was completed in the middle of Putin's second term]. Over forty incidents appear to have economic underpinnings and over thirty to have political underpinnings. Only eleven of the incidents occurred without any known political connection. This is attributed to the majority being both political and economic underpinnings. However, but it is at the same time important to stress that there are long-term strategic underpinnings in almost every case.*

Second, over forty cut-offs of energy supplies have occurred against the Baltic and CIS countries since 1991 (three that are unconfirmed and technical failures or sabotage are not included). Approximately, twenty five of these occurred during Yeltsin and around fifteen during Putin. Half of these cases had notable political underpinnings. …

Third, incidents where Russia has put forward political demands in connection to its energy policy (or conducted clear punishment for unwanted actions) is a matter of

discussion and definition, but on seven occasions appear to be the case (Belarus 1994, 1996, Estonia 1992, Georgia 2001, 2005, Ukraine 1993, 2005/2006).

Fourth, the number of incidents is approximately equally divided between oil and gas. Gazprom has been involved on around twenty occasions and Itera at five. Transneft and Lukoil have been involved in eleven respectively twelve. In addition, Transnafta and Tatneft have also been involved in a few cases".

Hedenskog and Larsson (2007) sum up the empirical research findings above as follows. Some 70% of Russia's coercive energy measures against the ex-Soviet republics were supply cut-offs during 1991-2006. Over 40% of these actions were targeted against the Baltic States. Another 40% of the coercive measures were targeted against Georgia and Belarus. State-run Gazprom and Transneft, and private oil company Lukoil were involved in over a half of the incidents. These incidents were almost equally divided between the Yeltsin and the Putin presidencies.

Hedenskog and Larsson (2007, 59) continue that Russia uses a different energy policy arsenal in different areas: "*Russia's energy levers are both a tactical and strategic nature and the character differs depending on the region. Asia and Central Asia have mostly been affected by the strategic levers, where pipelines and transit power are central. Western FSU [former Soviet Union] and the South Caucasus have in contrast been objects of the tactical levers, such as supply cuts and coercive price policy. Legitimate reasons have been exploited for political and other purposes*".

When one analyses bilateral disputes between the EU countries and Russia, it becomes apparent that Russia has more disputes with the union's ex-SEV members than with formerly non-socialist countries. Besides, natural gas and oil are also frequently present in the disputes with the EU countries. This is not surprising, since energy is a more persuasive foreign policy tool than import bans of certain foodstuffs or increasing export tariffs of some raw materials (Table 7).

Table 7 Russia's disputes with EU member states under Putin's presidency

Country	*Measures*
Bulgaria	Early renegotiation of gas contracts; threat of pork ban
Czech Republic	Missile defence; interruptions of oil supplies
Denmark	Arguments over Kaliningrad led to storm over exile Chechen congress; Diplomatic pressures; harassment of Danish companies and NGOs
Estonia	'Bronze statue affair'- movement of Soviet War memorial led to organised riots in Tallinn; Diplomatic pressures; cyber attacks; trade and transportation embargoes; discriminatory rail tariffs
Finland	Russian export taxes on timber
Germany	Oil supply cuts; Lufthansa cargo dispute
Latvia	Discriminatory rail tariffs; trade sanctions (canned sprats)
Lithuania	Mazeikiu refinery – possible deliberate sabotage of pipeline; oil blockade; discriminatory rail tariffs
Netherlands	Trade disputes (flowers, fruits and vegetables); renegotiation of contracts (Shell)
Poland	Meat and vegetable embargo
Sweden	Russian export taxes on timber
UK	Litvinenko affair. Diplomatic pressures; revision of contracts (BP and Shell); pressure on the British Council

Source: Wilson et al. 2009

A couple of years ago, Mark Leonard and Nico Popescu (2007, 2) categorised the EU member states' policy approaches to Russia into 5 groups. "***'Trojan Horses'*** *(Cyprus and Greece) who often defend Russian interests in the EU system, and are willing to veto common EU positions;* ***'Strategic Partners'*** *(France, Germany, Italy and Spain) who enjoy a 'special relationship' with Russia which occasionally undermines common EU policies;* ***'Friendly Pragmatists'*** *(Austria, Belgium, Bulgaria, Finland, Hungary, Luxembourg, Malta, Portugal, Slovakia and Slovenia) who maintain a close relationship with Russia and tend to put their business interests above political goals;* ***'Frosty Pragmatists'*** *(Czech Republic, Denmark, Estonia, Ireland, Latvia, the Netherlands, Romania, Sweden and the United Kingdom) who also focus on business interests but are less afraid than others to speak out against Russian behaviour on human rights or other issues; and* ***'New Cold Warriors'*** *(Lithuania and Poland) who have an overtly hostile relationship with Moscow and are willing to use the veto to block EU negotiations with Russia.*

Broadly speaking, the EU is split between two approaches – and each of the five groups tends towards one of the main policy paradigms. At one end of the spectrum are those who view Russia as a potential partner that can be drawn into the EU's orbit through a process of 'creeping integration.' They favour involving Russia in as many institutions as possible and encouraging Russian investment in the EU's energy sector, even if Russia sometimes breaks the rules. At the other end are member states who see and treat Russia as a threat. According to them, Russian expansionism and contempt for democracy must be rolled back through a policy of 'soft containment' that involves excluding Russia from the G8, expanding NATO to include Georgia, supporting anti-Russian regimes in the neighbourhood, building missile shields, developing an 'Energy Nato' and excluding Russian investment from the European energy sector."

Larsson (2006, 177) concludes: "*Utilising energy policy as a political or economic lever can be accomplished in several ways. A few energy tools of special importance were identified during the research process, namely:*

- *supply interruptions (total or partial)*
- *threats of supply interruptions (covertly or explicit)*
- *pricing policy (prices as carrots or sticks)*
- *usage of existing energy debts*
- *creating new energy debts and,*
- *hostile take-overs of companies and infrastructure*".

Though I have not conducted a systematic longitudinal study on the energy incidents during the Medvedev presidency, it seems that the incidents have become less frequent, but at the same time their consequences have become more severe.

For instance, the natural gas supply cut-off to Ukraine in 2009 stopped gas deliveries to the EU for approximately two weeks. This cut-off obviously helped the Nord Stream consortium to justify the pipelines bypassing Ukraine, though it is not so self-evident that Ukraine is the only party to be blamed for the cut-off. The Ukrainian researchers even go so far when arguing that Russia's energy deficit was the main reason to stop deliveries to Ukraine and the EU (Gonchar et al. 2009). Though the supply difficulties were unlikely the real and the whole truth, it reveals indisputable evidence on the inflected relations between Russia and Ukraine of that time.

Some three months later, the strange explosion of a gas pipeline from Turkmenistan to Russia heated emotions in Turkmenistan. The Turkmen President and Foreign Ministry blamed Gazprom for the blast, although some experts are sceptical that a lower gas intake by Gazprom might have exploded the pipe (Reuters 2009; RFE 2009). However, one thing is evident; gas exports from Turkmenistan to Russia ended for a long time and Russia was not forced to pay to Turkmenistan the European gas price agreed earlier, which exceeded Russia's domestic gas prices by four fold. In this context, it needs to be remembered that Russia was forced to reduce its gas exports to the EU by 20% in 2009 due to the European Union's decreased demand. Should Turkmenistan have been able to export its gas to Russia, Gazprom should have paid the European price to Turkmenistan, while Gazprom would have received back only a fraction of the price on the Russian market due to a considerable price difference between the domestic and European markets (Chubyk – Zhuk 2010).

Thirdly, Russia reduced oil flows to Belarus by 70% in January 2010 in order to push the Belarus leadership to agree on the conditions of Russian oil deliveries to Belarus in the framework of the Customs Union between Belarus, Kazakhstan and Russia (EIU 2010b). In addition, Russia bargains with cheaper energy deliveries in order to buy the crown jewels of Belarus industry. Russian corporations are currently eyeing, for instance, the

Polimir-Naftan petroleum plant, just to name one example of the Russia's current acquisition targets in Belarus (EW 2010a).

Fourthly, Russia still continues political energy pricing for some countries, such as Belarus. "*We applied a reduction factor of 0.9 to the European price for Belarus … This means that the average price of gas over the current year will make 171.5 dollars per 1000 cubic meters*", Gazprom's Deputy CEO Andrei Kruglov stated in March 2010 (IT 2010e). Also Ukraine will receive a reduction, which may go up USD 100 per 1000 cubic meters i.e. Ukraine is to receive some USD 4 billion annual reduction for its gas bill[41], as Ukraine decided to extend the lease of Sevastopol to the Russian Navy by 25 years (IT 2010d/f/; Troika Dialog 2010h). Though Kruglov's statement indicates a narrow political price margin, the difference is larger in reality (Appendix 10).

I believe that my analysis written in the beginning of 2009 is still valid. "*Russia's short term goal is to get rid of the transit countries and by reducing the importance of the transit, to force the transit countries into its sphere of interest. … With pipes bypassing Ukraine, Russia wants to close Ukraine's path towards the EU and NATO in particular, and ultimately strengthen its own negotiating power over the Sevastopol military base. The Russian Black Sea Fleet is to leave the base in 2017, if the agreement is not renewed. Moreover, Russia's long term goal is to increase its political leverage towards the EU, particularly towards its biggest members. In order to increase the energy dependence of big member states further, Russia offers those states attractive stakes in major hydrocarbon fields.*" (Liuhto 2009b, 20).

Whatever the real reasons behind the natural gas cut-off in Ukraine[42], the pipeline explosion in Turkmenistan, oil delivery problems and price reductions in Belarus, it would be naïve to assume that energy would not be used in Russian foreign policy. All the other countries use energy in their foreign policy, why should Russia be an exception. Perhaps the main difference is how Russia uses its foreign policy arsenal. Therefore, it is wise to

[41] "*In the first quarter of the year Ukraine bought gas at the price of 305 U.S. dollars per 1,000 cubic meters, while in the second quarter this price increased to 330 U.S. dollars*" (IT 2010h).
[42] Russia's gas cut-off to Armenia at the end of April 2010 seems to have been caused by non-man-driven forces i.e. a mudslide (IT 2010i).

analyse the acceptability and politico-economic significance of Russia's foreign energy policy measures in more detail.

Table 8 describes some of Russia's foreign energy policy tools and approaches them from two dimensions, i.e. what is the acceptability of these measures from a Western perspective and what is their politico-economic significance to the recipients' economy or the Russian budget.

Table 8 Russia's foreign energy policy toolbox

	Insignificant politico-economic impact		Significant politico-economic impact
Unacceptable	Explicit or implicit political threats of non-supply; use of obscure agents as investors and traders on behalf of Russian energy giants	Hostile takeovers of energy-related firms abroad by Russian companies; reversal of PSAs in Russia	Dubious pipeline problems causing delivery cut-offs
Questionable	Recruit of foreign top politicians to Russia-dominated energy projects	Political gas pricing in CIS deliveries; use of energy-related loans and earlier debts in reaching Russia's foreign policy goals	Building of new terminals and overly expensive pipes to bypass natural transit countries; under-priced gas sales inside Russia; no free access of Central Asia states to Russian pipe system
Acceptable	Use of transparent middlemen as traders of Russian energy	Business-driven Russian energy investment abroad	Market-based sales of Russian energy abroad

As an example of those acceptable measures, one can take the use of middlemen in Russian energy trading, Russia's non-political energy investments abroad, and market-based sales of Russian energy abroad. Political threats of non-supply, hostile take-overs of foreign energy companies, and dubious pipeline problems causing cut-offs are at the other end of the acceptability scale. In this context, one should not be hypocritical since some foreign policy measures of some other countries do not always even fit into the acceptability scale used in the table above.

The essential message of the aforementioned table is to show that all Russian foreign energy policy measures do not fall into the same basket, and hence, they should not be treated as such. And of course, the acceptability is, at the end of the day, a rather debatable matter, though one should not end up at the conclusion that Spartan-type policies are acceptable and create a sustainable basis for a true partnership between Russia and the EU.

Larsson (2006, 182) concludes on the EU-Russia energy interdependence as follows: "*the deep-seated problem in energy relations between Russia and Europe is not technical in nature, but originates from disparate views on cooperation. While one of the core ideas behind EU is interdependence, Russia does not intend to become dependent on anyone or anything. It prefers an asymmetrical dependence on Russia, whereas others should be dependent on Russia while Russia stands independent. This is the most fundamental rationale behind Russia's energy policy*".

Lucas is also concerned about the asymmetric interdependence. He (2009, xxv) considers that "*while EU leaders believe that peace and stability are built through interdependence, Russia's leaders are working to create a situation where the EU needs Russia more than Russia needs the EU, particularly in the energy sector*".

Closson (2009, 89) goes even further when writing "*many Western scholarly works and analytical reports suggest that Europe is dangerously dependent on Russia. Some NATO members have even urged the creation of an 'energy NATO' or suggested that the alliance define a shutoff of energy by Russia as an attack justifying the invocation of Article V on collective defense*".

Russia's foreign energy policy measures can be regarded as political business as some researchers argue earlier in this section. On the other hand, energy business can also be pure geopolitics decorated with business objectives, and therefore, the question should not be whether energy is a foreign policy tool but more importantly how this tool is used. Using other terminology, a gun does not make its holder a murderer, and the possession of an energy weapon does not make Russia an outlaw. In this context, however, one should notice that Russia is constantly and systematically strengthening its energy arsenal and the country seems to be prepared to use it, if necessary. This may mean that foreign energy policy tools will be used less frequently in the future, but the consequences of their utilisation could be more dramatic to the consumers of Russian energy and the transit countries involved.

2.4 Strategic goals of Russia's foreign energy policy

The strategic goals of Russia's foreign energy policy described below are based on two assumptions: 1) Russia's inherited desire to regain leverage in the post-Soviet space in order to become a great power[43] and 2) a possible rise of Russia's neighbour, China, into the world's leading economic power house in the forthcoming decades (Appendix 15).

The strategic goals of Russia's foreign energy policy are naturally subjected to the larger objectives of the Russian foreign policy. Bugajski (2004) names six larger objectives in Russian foreign policy: 1) expanding foreign policy influences in order to regain at least a part of the leverage of the USSR; 2) promoting economic monopolisation via targeted foreign investments and strategic infrastructure buyouts; 3) consolidating political dependence on Russia's energy supplies and capital investments; 4) limiting Western enlargement in Russia's zone of interest; 5) rebuilding global influence by using Eastern Europe and former post-Soviet space as a springboard for rebuilding a larger sphere of predominant influence and a great power status; and 6) eliminating US unipolarity by restricting the Europe-USA relationship. On the basis of the aforementioned two assumptions and six core objectives of Russia's foreign policy, 12 strategic goals of Russia's foreign energy policy have been designed by the author.

1) In order to maintain its energy exports, Russia must consume less hydrocarbons and open new oil and gas fields: The underlying goal behind Russia's future foreign energy policy is to reduce its own hydrocarbon consumption, now representing ¾ of Russia's primary energy consumption. The reduction can mainly happen through energy savings and by increasing the share of nuclear power and renewables in the country's energy mix. New hydrocarbon field openings can be expected in the Arctic region and the

[43] "*Moscow is preparing to use the region [the CIS], especially the European CIS, as a springboard for rebuilding a larger sphere of influence and global status and reversing Moscow's decline as a major international player. Strategists calculate that this can be accomplished with the help of Western resources and by establishing a regional 'great power' status in Eastern Europe and Asia*" (Bugajski 2004, 31). "*When the West sets out to define its energy relationship with Russia, it will need to acknowledge Russia as a regional power with global ambitions, while at the same time taking into account Russia's fragile political and social state*" (Wenger 2009, 228). "*While maintaining its strategic nuclear deterrent, Russia is dropping the doctrinal pretence of global military strength in favour of a real capability to act regionally*" (EIU 2010a, 12).

Asian part of the Russian Federation. Without the opening of these Asian fields, Russia will be incapable of building its energy partnership with China (MT 2010d).

2) Russia prepares for China's economic dominance in the world: Russia tries to prevent losing the whole Central Asia to China, and therefore, it must seduce China with increasing energy deliveries from Russia[44]. This requires investments in energy production in the Asian part of Russia (the building of hydropower stations and nuclear power units and the opening of hydrocarbon fields) and investments in energy carrying capacity (constructing oil and gas pipelines, and electrical energy networks). Despite the deepening energy partnership between Russia and China, Russia does everything to prevent China becoming a major owner in hydrocarbon fields in the Russian Federation[45], particularly in those fields in the proximity of China. Despite the wild rumours, Chinese immigration does not seem to be an issue in Russia's Far East[46]. However, economic upheaval or ecological disaster on the Chinese side could alter the situation.

3) Russia wants to control Eurasian energy logistics: Russia increases the transit dependencies of energy producers in Central Asia but reduces its own dependence on transit countries in the Western CIS by building oil terminals on Russian soil on the Gulf of Finland, erecting bypassing gas pipelines[47], and constructing a nuclear power station in Kaliningrad.

4) Russia uses energy dependencies to strengthen its leverage in the Western CIS and Central Asia in order to build Russia into a post-Soviet regional power: The

[44] Russia may give a preferential treatment to energy deliveries to the East in order to push the Russian companies to enlarge their energy exports to Asia. As a recent example, the inter-ministerial working group on East Siberian crude exports recommended in the end of March 2010 waiving oil duties this year and cutting them by 60% starting from the beginning of 2011 (TD 2010d).

[45] A Russian researcher Nina Poussenkova (2009, 132) argues "*geopolitically, Russia also needs to develop a new type of relationship with China, since there is now serious concern that Russia's east may turn into a 'resource hinterland' for its rapidly growing neighbour*".

[46] Most of the studies and official estimates suggest that only less than a half a million Chinese live in Russia, though wildest speculations put the number of Chinese inhabiting Russia at 4 million. It is good to note that the majority of the Chinese reside in urban centres in European Russia, not in the proximity of China (Balzer – Repnikova 2010).

[47] A Russian academic Morozov (2008, 54) states that "*Moscow's persistence in advancing the Nord Stream gas pipeline project is also to a large extent explained by the desire to decrease Russia's dependence on the transit states (first of all, Ukraine, Belarus and Poland) and thus perhaps to acquire an additional tool for pressing them for geopolitical ends*".

dependence of Belarus on Russia is already at a critical stage and Ukraine is soon to follow, unless the current trend changes. Due to the new Customs Union, Kazakhstan may stay in Russia's orbit but it seems that remaining Central Asia may slide into the sphere of interest of China[48], which forces Russia to execute a CoCoCo-strategy in Central Asia, i.e. co-operate, co-exist, and compete with China. Caucasus and its destiny remains "*a riddle wrapped in a mystery, inside an enigma*", like Sir Winston Churchill would have phrased it.

5) Russia milks its Western energy cow: Although Russia is not desperately dependent on the EU, it nevertheless needs the EU's energy market to fill an essential part of the Russian state budget[49] and technology to modernise its economic structures. In addition, without the EU's counterbalancing effect, Russia would become extensively dependent on China, i.e. its eastern parts might slide into the 'near abroad' of China without the counterbalancing force of the EU. The West-bound pipeline system keeps the EU and Russia connected like Siamese twins. The relative importance of the EU as an energy partner may decrease due to the diversification of Russia's energy exports. However, the diversification of Russia's energy exports and the diversification of the EU's energy imports could ultimately be a positive outcome for the both parties in the longer run, as the overwhelming interdependencies tend to have an undesired end, if the twins cannot create a true and sustainable partnership, as it has been the case so far.

6) Russia aims at pushing gas prices up: It is in Russia's interest to slow down the development of unconventional gas production in the EU in order to maintain gas imports and prices in the EU high. Russia stays out of OPEC, but strengthens the Gas Exporting Countries Forum in order to lift the gas prices up[50]. Furthermore, Russia aims at breaking

[48] Rieber (2007, 261) writes "*Russia must deal with the growing power of China and its renewed interest in Central Asia as an energy source, a trading partner, and a potentially dangerous locus of support for Muslim separatism in Xinjiang Province. As the Russian population of eastern Siberia declines and the Russian diaspora shrinks in Central Asia, Chinese migration into the border provinces increases. As yet, there are no signs that China intends to expand territorially. But to replace Russian influence in Central Asia or Siberia, that may not be necessary*".

[49] Russia's hydrocarbons sales to the EU may fill 25-30% of the Russian budget.

[50] "*Any 'OPECization' of Russia's energy sector should be considered very bad news for everyone concerned. The Russian president [then Putin] is against this scenario of locking the national economy into a third world model. At the same time, the Government of Russia is against any sort of supranational control over the energy sector*" (Tkachenko 2008, 192). "*Russia, led by Putin, is presently attempting to make the Gas Exporting Countries Forum (GECF) a more aggressive body that would operate similarly to the OPEC cartel in setting natural gas export volumes and prices*" (Smith 2010, 9). There seems to be a certain controversy in Russia's views towards OPEC and the

the connection between oil and gas pricing[51]. Political pricing will remain in place in the countries of strategic importance, namely in Belarus and Ukraine, and probably in Kazakhstan, at least for the time being.

7) Russia intensifies energy investments abroad: European energy corporations are not allowed to acquire significant stakes in Russia's hydrocarbon fields, if Russian corporations are not allowed to penetrate into the ownership of these European corporations or their markets. A similar type of strategy is also used in the CIS, i.e. the CIS country can only guarantee its future energy deliveries from Russia, if the country in question allows Russian companies to enter its market and acquire the crown jewels of its industries, such as energy logistical units, national telecommunication companies, and other strategic assets. The sustainability of the bargaining power of the CIS countries vis-à-vis Russia can be questioned. Russia also tries to obtain access to the Iraqi, Iranian and Central Asian hydrocarbon fields. Entry into the South-American and the Indian energy sector seems to be a sub-objective.

8) Strategic goals of Russia's foreign energy policy continues to have a strong individual flavour[52]: Some powerful political figures and business clans are still strong shapers of Russia's energy policy despite the fact that the oligarchs of the 1990's have been thrown out of the political heights and the state has strengthened its grip over the oil industry. Russia's contemporary foreign energy policy is not only shaped by the presidential administration, the government, the army, and the state-run energy corporations but by key individuals with their own personal ambitions. Sometimes this may

GECF. Russia seems to accept supranational control over its gas production but it is not willing to give control over its oil production. One possible explanation for this controversy might be the position of Russia in these organisations. Russia is the most powerful player in the GECF, whereas its role in OPEC would be anything but a dominating one, if it would decide to join the oil cartel, which is highly unlikely. It seems that Russia is willing to join only those supranational organisations it can control, the UN Security Council being an exception inherited from the Soviet period.

[51] In March 2010, a German federal court ruled that local gas distributors should not pass on imported oil-linked gas prices to household consumers. The court ruling is a signal for greater competition and transparency on the gas market, but it does not threaten the gas-oil pricing linkage in short run (Troika Dialog 2010d).

[52] "*While the state has attempted to formulate a long-term energy strategy, its energy politics remain dominated by short-term personal gains and by the interests of competing elites, rather than by the long-term interest of the Russian people*" (Wenger 2009, 228). Leonard and Popescu (2007, 55) suggest that "*Moscow's economic reforms have consolidated political and economic power so that, as Dimitri Trenin argues, the people who run Russia are now the same people who own it; this makes it harder to disentangle Russia's national interest from the private interests of elites*".

cause unnecessary uncertainty and short-term actions, while in other occasions the individual interests of the Russian politico-economic elite may be easier to be integrated with those of their Western counterparts than the national interests of the Russian Government with the interests of the Western states.

9) Russia strengthens its own hydrocarbon-carrying fleet: Russia supports the consolidation of the existing oil fleet and builds own LNG fleet. For this purpose, it will invest heavily in the shipbuilding industry. It is interesting to note that Russia's largest shipping company, Sovcomflot is under privatisation (EIU 2010c).

10) Russia's militarily involvement in its foreign energy policy increases: Russia has several types of military-related energy deals. It sells armaments to developing countries in connection with large energy deals (e.g. India and Venezuela). In addition, Russia provides privileges to some developed countries in order to receive modern military technology from the West (e.g. France). I foresee more the Ukrainian-type 'gas against garrison' deals in the CIS. As the Arctic Ocean[53] and the Baltic Sea are to increase their position in Russia's energy supply and exports, the Northern Fleet and the Baltic Fleet may become stronger. Russia also faces growing pressures to strengthen its troops in the vicinity of China and Central Asia (IB 1007; MT 2010l; WP 2010)[54].

11) Energy diplomacy will spread into other spheres: I would not be surprised to encounter the intensification of the activities of the Russians in international energy-related organisations and to witness more intelligence activity in the Western energy sector. The first mentioned measure is obviously executed in order to strengthen Russia's political

[53] According to Russia's Ministry of Natural Resources, a third of the country's initial gas resources and 12% of its oil resources are located on the continental shelf. Of this, 2/3 are said to be located in the Barents and Kara seas (Moe – Wilson Rowe 2009). "*The hydrocarbon greed, entirely understandable in a country that is so dependent on exporting raw materials, certainly plays a big role in shaping Russia's Arctic ambitions, but the essence of this evolving policy is not in getting there first with development projects but in establishing a claim that would effectively prevent anybody else from applying their superior technology to the increasingly accessible shelf. Military means, even if not very modern and more than slightly rotten, are quite instrumental in supporting that ambition*" (Baev 2009, 28).

[54] In April 2010, Russia signed an agreement with the South Ossetian authorities to open a Russian military base there. The agreement allows Russia to place its troops in South Ossetia for 49 years. It needs to be remembered that the international community has not widely recognised the independence of South Ossetia, and therefore, this small region still belongs to Georgia.

leverage in global energy decision-making and the latter is carried out to acquire the latest technology, such as the technology required in unconventional gas production.

12) Unless sustainable rules in East-West energy co-operation can be created and a major break-through between the Western energy companies and their Russian counterparts can be achieved during the Medvedev-Putin leadership, a risk of Russia's (foreign / energy) policies becoming more conservative is very high: Should Russia's energy policy become more conservative, it has several foreign policy implications. First, the position on foreign energy companies in Russia worsens, and hence, Western firms hesitate to participate in Russia's energy savings programme or unconventional gas production. Second, the entry of Russian energy companies into the EU market becomes more constrained. Third, Russia uses its foreign energy policy arsenal more frequently, particularly in the CIS, and the measures become heftier. Fourth, the mentality of energy collaboration changes along with the decreasing production volumes of hydrocarbons, i.e. energy turns out to be just a geopolitical bargaining chip instead of an integrative bridge.

A lot of uncertainty exists in the global scene, since the USA has become economically vulnerable and world history does not recognise a similar rise in the global economy, which China has experienced since the end of the 1970's. It remains to be seen how sustainable is the growth in China, and whether the Western world is prepared to give economic dominance to Asia, and ultimately what is the role of Russia's natural resources in the new world order (Appendix 15).

3 Conclusion

Russia's share in the planet's population is 2%, its share in the global economy is below 3% and its military expenditure is approximately 4% of the world's total military spending. Unless Russia would possess hundreds of nuclear warheads, it would be easy to conclude that Russia is nowhere near able to regard itself as a global superpower.

Since Russia's population, economy or its military do not give the country a chance to act credibly as a global super power, Russia has turned to its energy. Russia has recently become the world's leading exporter of energy. As Russia's oil reserves are not large enough and its coal and uranium exports can be replaced rather easily by other distributors, Russia's true energy power lies in natural gas. As Russia's gas exports are extensively dominated by the pipelines, Russia's gas pipeline policy has become an essential part of Russia's foreign policy. With its gas deliveries and pipeline policy, Russia is able to gain more leverage in the EU and the post-Soviet space. Russia is an important but not a dominant foreign trade partner to the former Soviet republics. However, Russia's energy deliveries make it a regional energy superpower (Table 9).

It is self-evident that Russia uses its energy in its foreign policy, as energy is one of Russia's most persuasive foreign policy tools. Even if Russia has the full right to use its energy as it desires, some energy-related foreign policy measures have been at least questionable, if not even unacceptable.

I argue that energy is too politically tradable to form an integrative bridge between Russia and the EU, and therefore, I recommend that the parties would search for more sustainable sources for integration, such as promoting industrial co-operation in non-energy sectors and intensifying contacts between SMEs and ordinary people. However, if Russia perceives the European integration as other great power's expansion towards its traditional sphere of interest, the declarations about the strategic partnership and the interdependence between the EU and Russia are just lip service.

Table 9 Russia's potential leverage in the ex-USSR (excl. Baltic States)

Country	Population (million)	Share of ethnically-Russians (%)	Number of ethnically-Russians
Armenia	3,0	0,5	15,000
Azerbaijan	8,2	1,8	147,600
Belarus	9,6	11,4	1,094,400
Georgia	4,6	1,5	69,000
Kazakhstan	15,4	30,0	4,620,000
Kyrgyz R.	5,4	12,5	675,000
Moldova	4,3	5,8	249,400
Tajikistan	7,3	1,1	80,300
Turkmenistan	4,9	4,0	196,000
Ukraine	45,7	17,3	7,906,100
Uzbekistan	27,6	5,5	1,518,000
Total	**136,0**	**12,2**	**16,570,800**

Country	Foreign trade turnover in 2008 (€ bn)	1. partner (share)	2. partner (share)	3. partner (share)
Armenia	3,7	EU (35%)	Russia (20%)	China (7%)
Azerbaijan	22,4	EU (54%)	USA (13%)	Turkey (8%)
Belarus	49,1	Russia (47%)	EU (32%)	Ukraine (7%)
Georgia	6,6	EU (32%)	Turkey (16%)	USA (9%)
Kazakhstan	64,6	EU (34%)	Russia (23%)	China (19%)
Kyrgyz R.	7,4	China (62%)	Russia 16%)	Kazakhstan (5%)
Moldova	5,4	EU (48%)	Russia (23%)	Ukraine (13%)
Tajikistan	3,1	Russia (23%)	China (21%)	EU (10%)
Turkmenistan	10,4	Ukraine (30%)	EU (23%)	Iran (11%)
Ukraine	113,8	EU (36%)	Russia (26%)	China (6%)
Uzbekistan	9,3	Russia (27%)	EU (15%)	China (12%)

Russia's investment to	2000		2005		2007		2008	
	$ 1000	%	$ 1000	%	$ 1000	%	$ 1000	%
Armenia	5	0,0	138 185	22,3	3 907	0,1	444 676	4,3
Azerbaijan	26	0,0	6 734	1,1	8 994	0,3	20 034	0,2
Belarus	77 238	59,0	102 438	16,5	1 314 092	48,7	5 945 951	58,0
Georgia	133	0,1	60	0,0	433	0,0	3 924	0,0
Kazakhstan	3 453	2,6	204 314	32,9	445 068	16,5	762 159	7,4
Kyrgyz R.	7	0,0	1 247	0,2	207 718	7,7	386 029	3,8
Moldova	31 224	23,8	4 904	0,8	4 248	0,2	22 377	0,2
Tajikistan	-	-	496	0,1	105 683	3,9	171 962	1,7
Turkmenistan	2 934	2,3	-	-	0,4	0,0	6 357	0,1
Ukraine	15 032	11,5	155 176	25,0	513 580	19,0	2 397 847	23,4
Uzbekistan	929	0,7	6 968	1,1	93 040	3,6	96 823	0,9
Total	**130 981**	**100,0**	**620 522**	**100,0**	**2 696 763**	**100,0**	**10 258 139**	**100,0**

Sources: Panibratov – Kalotay 2009; CIA 2010; European Commission 2010

The interdependence between the EU and Russia seems self-evident at first glance. The EU covers a half of Russia's foreign trade and even more of its FDI inward stock. Correspondingly, Russia satisfies 20% of the EU's total energy appetite[55], i.e. 100 million EU citizens are completely fuelled by Russia. However, a closer analysis of this interdependence reveals several asymmetries.

The main asymmetry at the EU-Russia level is imbalance in terms of time. Due to the EU's insignificant hydrocarbon reserves but their enormous consumption, Russia's energy cut-off is felt immediately in the EU, whereas Russia is able to await the energy-related incomes for long time. A small calculation exercise reveals the aforementioned imbalance. Russia's budget revenues were around USD 250 billion in 2009, whereof 40% of these revenues were generated by oil and gas. The share of the EU in Russia's energy exports is roughly 60-75%, i.e. Russia's budget receives around USD 60-75 billion from their energy sales to the EU. At the same time, Russia's foreign exchange reserves are at the time of writing (beginning of May 2010) USD 460 billion and the combined value of the Reserve Fund and the National Wealth Fund USD is 130 billion.

In the medium term, however, Russia needs the EU, its technology, and naturally the union's energy consumption. In the longer run, Russia needs the EU mainly to balance the growing dependence of Russia on China.

Despite the fact the imports play a rather important role in the Russian economy and that the EU covers close to a half of Russia's imports, I would not jump to a conclusion that Russia is strategically dependent on EU imports or any EU country involved in import transit[56], since the imported goods from the EU are, at least to a certain extent, replaceable with imports from elsewhere, particularly from Asia, or with domestic production within 20 years from now. In addition, the majority of the import flows can be re-directed to bypass traditional import transit countries. Obviously, such a manoeuvre would lead to a significant drop in imports, at least, temporarily and it would be very painful for

[55] The corresponding figure in the USA is less than 2% and in China less than 3%.
[56] The import-GDP ratio in Russia is around 16%, in China 19%, and in the EU and the USA around 10% (CIA 2010). In 2008, the EU covered 45% of Russia's imports, China 12%, Japan 7%, Ukraine 6% and the USA 5% (European Commission 2010). In fact, China is already Russia's largest single trade country. In 2008, the road transit via Finland to Russia represented 1/6 of Russia's total import value. In 2009, the road transit via Finland to Russia halved (Customs Finland 2010).

ordinary Russian consumers but nevertheless, I doubt it would create a societal upheaval in Russia.

The EU-Russia asymmetry does not become healthier in the future, but on the contrary, Russia with the help of considerable foreign investment will be able to compensate a certain part of their current imports, such as the majority of foodstuffs, consumer goods and automobile imports, with their own production. Simultaneously, the energy import dependence of the EU grows, and obviously, Russia's role as the EU's energy supplier increases.

The main asymmetry at the state level is the imbalance in terms of dependence. Russia does not need to worry about small Central East European countries as gas or oil customers, but those countries do need to worry about Russia as a supplier. The imbalance becomes emphasised in the majority of the CIS countries.

The main asymmetry at the enterprise level is the imbalance in terms of negotiation power. The asymmetry does not predominate in the oil business, since Russia's oil business is relatively privately-driven and it faces competition from elsewhere, whereas in the gas business the imbalance is blatant. Russia has the world's largest gas producer and state-controlled monopoly exporter, Gazprom, whereas the EU has many smaller units, which are in fiery competition with each other over hydrocarbon resources.

The supporters of the EU-Russia interdependence usually non-deliberately deceive themselves, and simultaneously, they deceive the EU decision-makers and citizens into believing that the current path leads to Russia's closer integration to the EU. I have to disappoint those who believe that by endlessly repeating the interdependence mantra, Russia will become more dependent on the EU or its political elite would genuinely start to believe in Russia's strategic dependence on the EU. In order to really balance this asymmetry, the EU should create a common foreign energy policy and support the integration of Russia towards the EU in the sectors, which are less politicised, i.e. support integration outside the energy sector.

Surprisingly, Finland is a great power in terms of importing electrical power from Russia. A half of Russia's electricity exports arrive in Finland. In fact, Finland imports more electrical energy from Russia than Fortum's two nuclear units in Loviisa produce. As more than a half of Russia's electricity is produced using natural gas and a half of Russia's total energy consumption is met with gas, it is worth looking into the country's future gas production. Three considerable uncertainties prevail in Russia's future gas production. First, Gazprom's current gas fields are depleting fast and the timely progress of the substituting Yamal and Shtokman fields is questionable. Second, Russia's gas imports from Central Asia, equalling close to a half of Russia's exports to the EU, are at risk due to China's increasing gas imports from Central Asia. Third, the scenario indicating the doubling of private firms' gas production in 10 years may turn out to be too optimistic.

As Russia has difficulties to maintain current gas production volumes and is unlikely to be able to change the energy consumption structure of the country in the following two decades, the energy savings programme is the most practical way to secure Russia's energy supply, and hence, the country's energy exporting capacity. In fact, Russia's energy savings programme could be a concrete project of mutual interest for the EU and Russia. A success in this strategic project could create the necessary goodwill and trust between the parties, which could enhance co-operation in other fields outside the highly politicised energy sector.

The EU should try two common actions: 1) common foreign energy policy inside the EU and 2) common projects with Russia. I am confident that it would be wiser to build one common bridge together than several half-way bridges alone, or otherwise, we will never be able to cross the river of mutual mistrust. Only with common projects are we finally able to reset the EU-Russia relations to meet the common challenges of the 21st century[57].

[57] The USA seems to be ahead of the EU in resetting its relations with Russia (MT 2010j).

Epilogue

"*Russia is very lucky to have had him [Yegor Gaidar] in one of the most difficult times of its history. ... He saved the country from hunger, civil war and collapse.*"

Director General Anatoly Chubais,
Russian Nanotechnology Corporation (Rosnano)
(for reference see UT 2009)

"*I cannot forecast to you the action of Russia. It is a riddle, wrapped in a mystery, inside an enigma; but perhaps there is a key. That key is Russian national interest.*"

Sir Winston Churchill
Radio broadcast in October 1939

"*What is good for a strong Gazprom is good for the world.*"

Deputy Chairman Alexander Medvedev,
Gazprom's Management Committee
(for reference see Goldman 2008, 3)

"*Gazprom occupies a unique position in Russian politics and economy. Some experts called the company 'Russia's Ministry of Foreign Affairs for the 21st century'.*"

Professor Stanislav Tkachenko, St. Petersburg State University (2008) Actors in Russia's Energy Policy towards the EU, p. 184

"*Tsar Alexander III was famous for saying that Russia had only two true allies – her army and her navy. During the presidency of Vladimir Putin, Russia's true allies appeared to be oil and gas.*"

Senior Researcher Jeronim Perovic, University of Basel
(2009) Russian Energy Power and Foreign Relations, p. 6

"*Yet if production of either natural gas or petroleum should drop or even stabilize, Russia may be unable to meet all of its export commitments.*"

Professor Emeritus Marshall Goldman (2008)
Petrostate: Putin, Power and the New Russia, p. 187

Vita enim mortuorum in memoria vivorum est posita.

The life of the dead is placed in the memory of the living.

Marcus Tullius Cicero
106 BC - 43 BC

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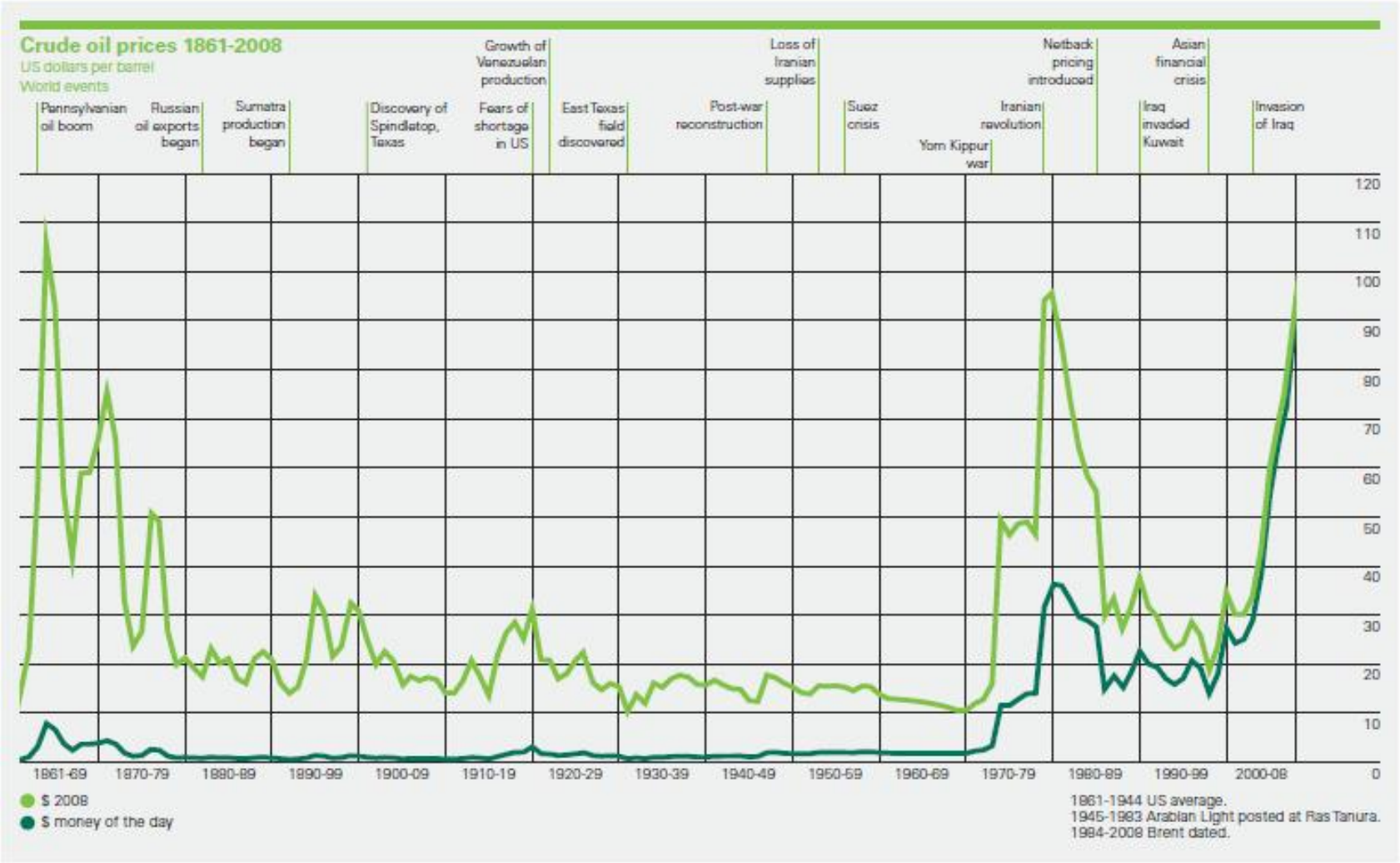
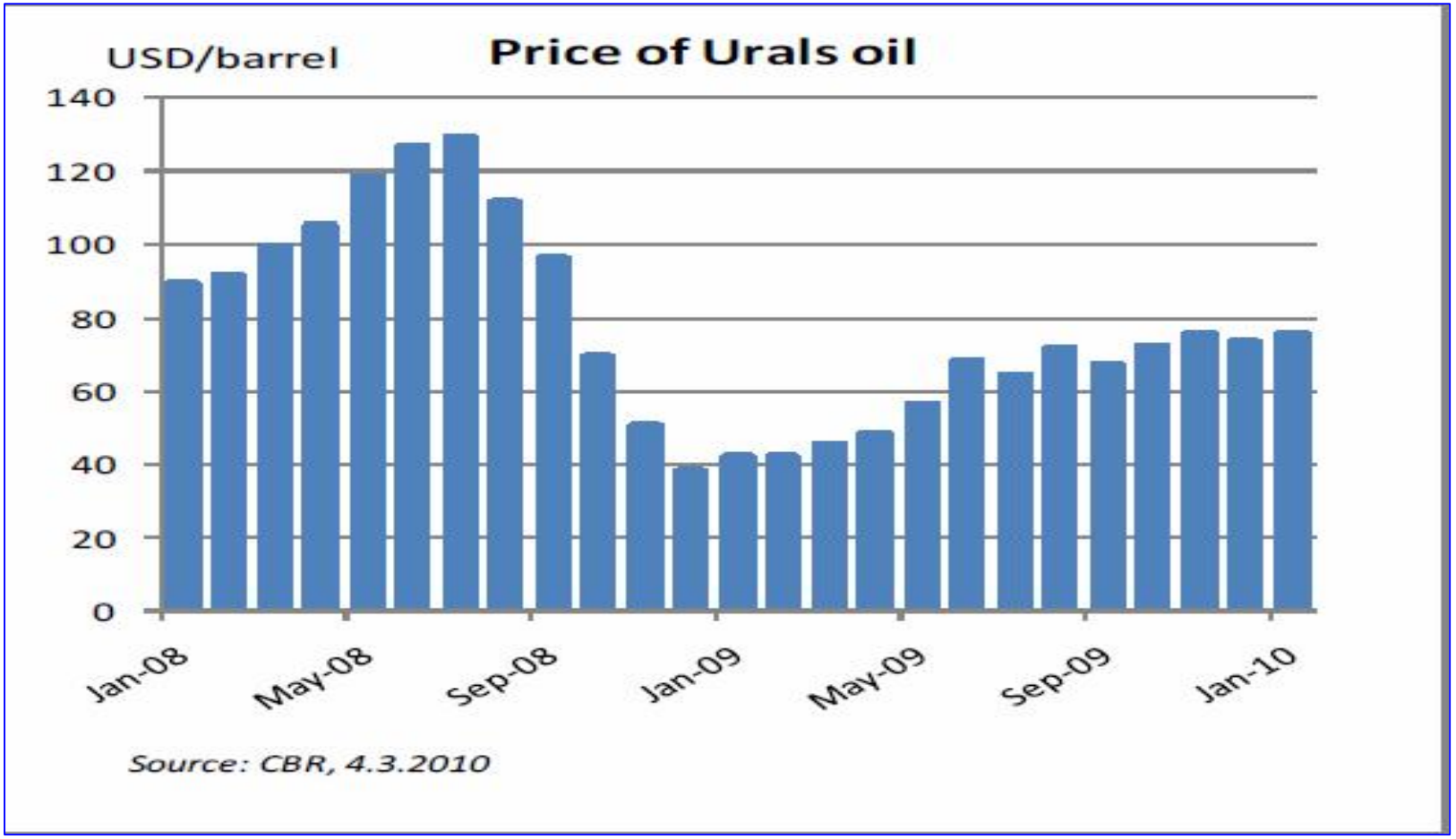
Appendix 1 The development of crude oil prices



Source: British Petroleum 2009

Appendix 1 Continued



Source: Mykkänen 2010

Appendix 2 Major corporations in the Russian oil and gas industry

Russian crude output, mln bpd

	Dec '08	Nov '09	Dec '09	m-o-m	y-o-y	12m08	12m09	y-o-y
Rosneft*	1.95	2.10	2.11	0.5%	8.3%	1.95	2.01	3.1%
LUKoil	1.82	1.83	1.82	-0.4%	0.2%	1.81	1.85	2.4%
TNK-BP	1.38	1.43	1.42	-1.0%	3.0%	1.38	1.41	2.4%
Surgutneftegaz	1.23	1.20	1.19	-0.5%	-2.9%	1.24	1.20	-3.1%
Gazprom Neft	0.59	0.60	0.60	-1.0%	0.6%	0.62	0.60	-2.5%
Tatneft	0.50	0.53	0.52	-0.2%	4.2%	0.52	0.52	0.5%
Slavneft	0.38	0.38	0.37	-0.4%	-2.1%	0.39	0.38	-3.2%
Gazprom	0.25	0.26	0.27	1.8%	8.0%	0.26	0.24	-5.2%
Bashneft	0.23	0.26	0.26	-2.8%	8.9%	0.23	0.25	5.4%
RussNeft	0.28	0.25	0.25	-2.3%	-10.6%	0.29	0.25	-10.7%
Russia - total	**9.66**	**10.07**	**10.05**	**-0.2%**	**4.0%**	**9.78**	**9.93**	**1.5%**

* consolidated production excluding associates

Russian gas output

	mln m^3/day			m-o-m	y-o-y	bln m^3		y-o-y
	Dec '08	Nov '09	Dec '09			12m08	12m09	
Gazprom	1,530	1,571	1,626	3.5%	6.3%	551	462	-16.1%
NOVATEK	89	97	103	5.7%	15.9%	31	33	5.8%
Russia	**1,863**	**1,927**	**2,016**	**4.6%**	**8.2%**	**665**	**582**	**-12.4%**

Source: Troika Dialog 2010a

Appendix 3 Position of Russian companies in global oil and gas business [lviii]

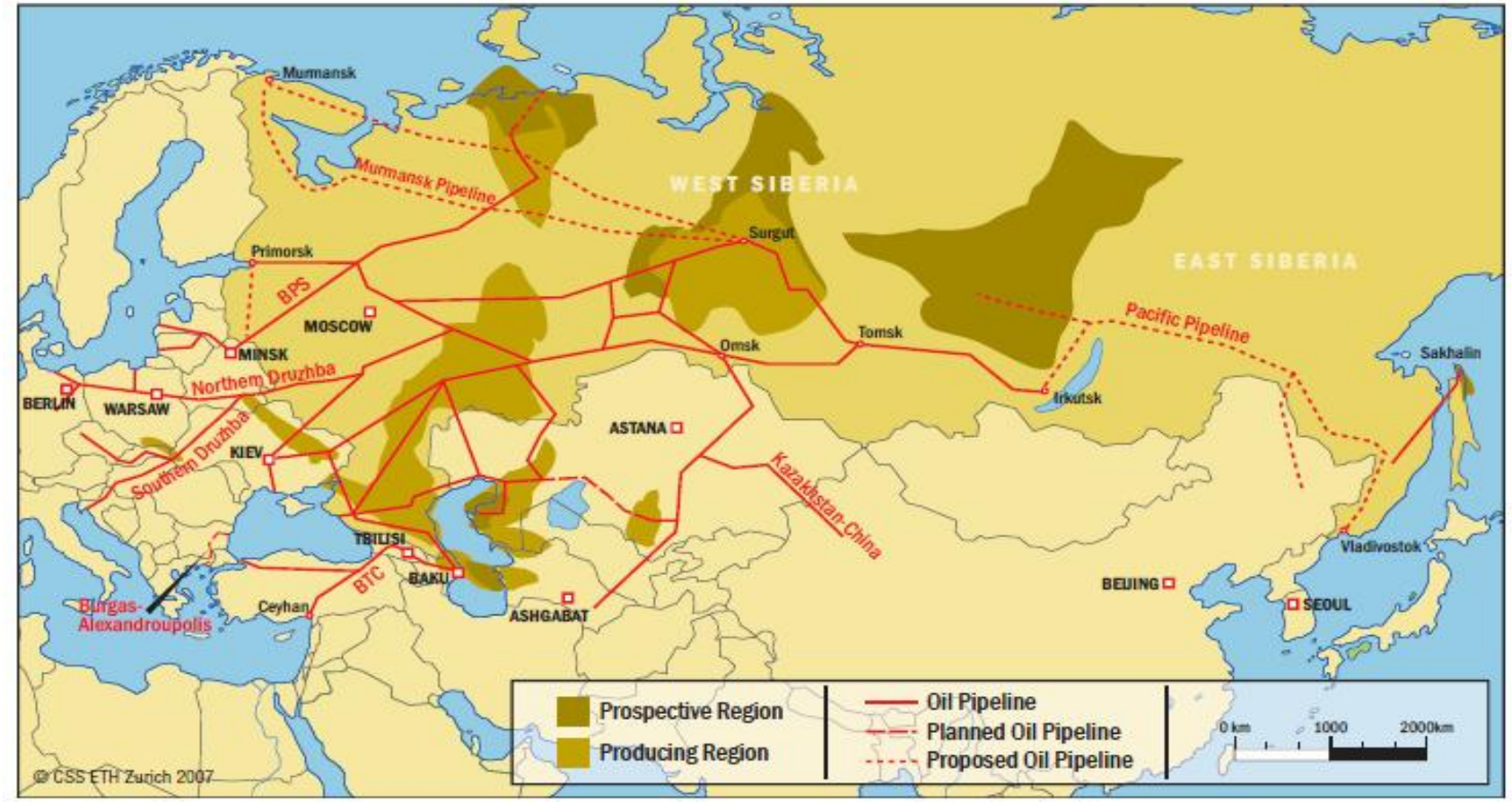
Rank by 2007 oil equivalent reserves	Company	Worldwide liquids reserves, million barrels	Worldwide natural gas reserves, billion cubic feet	Total reserves in oil equivalent barrels, million barrels
1	Saudi Arabian Oil Company (Saudi Arabia)	259,900	253,800	303,285
2	National Iranian Oil Company (Iran)	138,400	948,200	300,485
3	Qatar General Petroleum Corporation (Qatar)	15,207	905,300	169,959
4	Iraq National Oil Company (Iraq)	115,000	119,940	134,135
5	Petroleos de Venezuela,S.A. (Venezuela)	99,377	170,920	128,594
6	Abu Dhabi National Oil Company (UAE)	92,200	198,500	126,132
7	Kuwait Petroleum Corporation (Kuwait)	101,500	55,515	110,990
8	Nigerian National Petroleum Corporation (Nigeria)	36,220	183,990	67,671
9	National Oil Company (Libya)	41,464	50,100	50,028
10	Sonatrach (Algeria)	12,200	159,000	39,379
11	**Gazprom (Russia)**	**0**	**171,176**	**29,261**
12	**Rosneft (Russia)**	**17,513**	**25,108**	**21,805**
13	PetroChina Co. Ltd. (China)	11,706	57,111	21,469
14	Petronas (Malaysia)	5,360	82,992	19,547
15	**Lukoil (Russia)**	**15,715**	**28**	**15,720**
16	Egyptian General Petroleum Corp. (Egypt)	3,700	58,500	13,700
17	ExxonMobil Corporation (USA)	7,744	32,610	13,318
18	Petroleos Mexicanos (Mexico)	11,048	12,578	13,198
19	BP Corporation (United Kingdom)	5,492	41,130	12,523
20	Petroleo Brasilerio S.A. (Brazil)	9,613	12,547	11,578
21	Chevron Corporation (USA)	7,087	22,140	10,870
22	Royal Dutch/Shell (Netherlands)	3,776	40,895	10,767
23	ConocoPhillips (USA)	6,320	25,438	10,668
24	Sonangol (Angola)	9,035	9,530	10,664

[lviii] A barrel equals to 0,1364 metric tonnes and one cubic meter equals to 35,3 cubic feet (BP 2009). Gazprom's reserves in particular are dubiously low. According to Troika Dialog (2010g), Gazprom's proven gas reserves in 2009 were 18,600 billion cubic meters and proven liquids reserves 10 billion barrels (see also Deloitte 2008).

25	Petroleum Development Oman LLC (Oman)	5.500	30.000	10.628
26	Total (France)	5.778	25.730	10.176
27	Statoil (Norway)	2.389	20.319	5.862
28	ENI (Italy)	3.925	11.204	5.840
29	Dubai Petroleum Company (UAE)	4.000	4.000	4.684
30	Petroleos de Ecuador (Ecuador)	4.517	NR	4.517
31	Pertamina (Indonesia)	903	20.538	4.414
32	EnCana Corp. (Canada)	927	13.300	3.201
33	Occidental Petroleum Corporation (USA)	2.228	3.843	2.885
34	China National Offshore Oil Corp. (China)	1.490	6.232	2.555
35	Devon Energy Corporation (USA)	998	8.994	2.535
36	Anadarko Petroleum Corporation (USA)	1.014	8.504	2.468
37	Repsol YPF (Spain)	952	8.137	2.343
38	Canadian Natural Resources (Canada)	1.358	3.666	1.985
39	XTO Energy (USA)	308	9.441	1.922
40	Ecopetrol (Columbia)	1.450	2.439	1.867
41	Chesapeake Energy Corp. (USA)	124	10.137	1.856
42	Talisman Energy Ltd. (Canada)	749	5.464	1.683
43	Apache Corp. (USA)	1.134	2.446	1.552
44	EOG Resources (USA)	179	7.745	1.503
45	Romanian National Oil Co. (Romania)	863	3.550	1.470
46	BHP Billiton Ltd (Australia)	565	4.727	1.373
47	BG Group PLC (United Kingdom)	393	5.572	1.345
48	Hess Corp. (USA)	885	2.668	1.341
49	Marathon Oil Corp. (USA)	650	3.450	1.240
50	Shell Canada Ltd. (Canada)	808	1.400	1.047

Source: PetroStrategies 2010

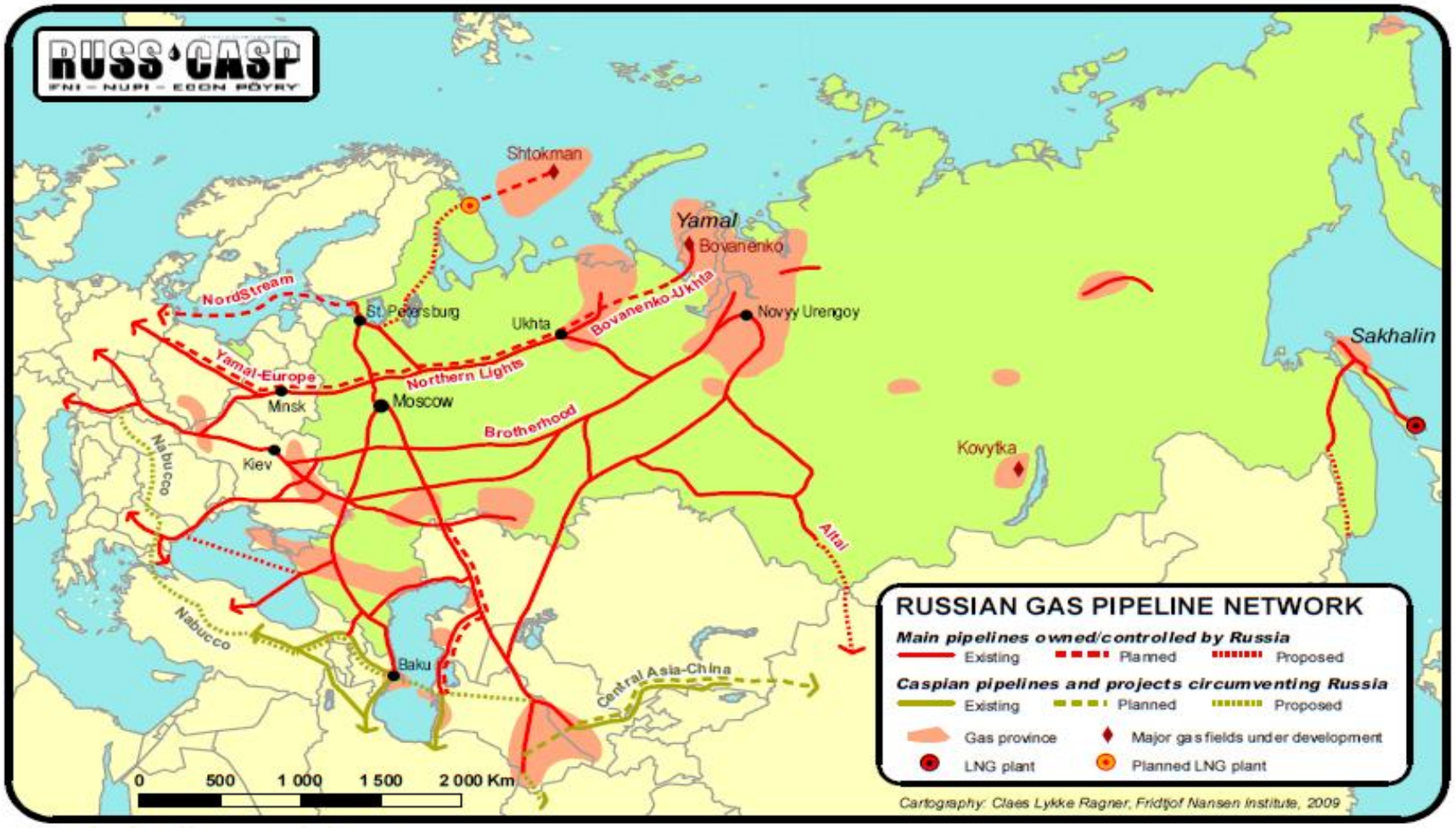
Appendix 4 Russia's main oil pipelines[59]



Source: RAD 2007

[59] The Baltic Pipeline System-2 (BPS-2) bypassing Belarus will end in Ust-Luga, a new terminal located some 110 kilometers west from St. Petersburg in the southern shore of the Gulf of Finland, not in Primorsk as the map erroneously indicates.

Appendix 5 Russia's main gas pipelines



Source: RAD 2009b

Appendix 6 The annual capacity of Russia's gas pipelines[60]

Pipeline	Route	Capacity in bcm (actual and planned)		
		2005	2010	2015
Brotherhood/Union	Russia-Ukraine-Central Europe	130	130	130
Northern Light	Russia-Belarus-Ukraine-Central Europe	25	25	25
Trans-Balkans	Russia-Balkan Countries	20	20	20
Finland Connector	Russia-Finland	20	20	20
Yamal 1	Russia-Belarus-Poland-Western Europe	28	28	28
Yamal 2	Russia-Belarus-Poland-Western Europe	0	0	0
Blue Stream	Russia-Black Sea-Turkey	16	16	16
NEGP/NS	Russia-Baltic Sea-Germany	0	28	55
South Stream	Russia - Balkans	0	0	31-47
		239	**267**	**325-341**
Export of Russian gas by pipelines to Europe in 2006		**151,5**		
Capacity / export surplus (2006)		**87,5**		

Gas transit via Ukraine (bcm)

Year	Total transit	Transit to the EU+ *	Transit to the CIS
2001	124.4	105.3	19.1
2002	121.4	106.1	15.3
2003	129.2	112.4	16.8
2004	137.1	120.4	16.7
2005	136.4	121.5	14.9
2006	128.5	113.8	14.7
2007	115.2	112.1	3.7**
2008	119.6	-	-

Note: * EU+ means the EU member-states + Turkey; ** - only transit to Moldova (the transit route from Russia to Russia through Ukraine does not work after the bypassing gas pipeline Sokhranovka – Oktiabrskaya was built)

Sources: Godzimirski 2009; Gonchar et al. 2009

[60] Based on the data of the Russian Ministry of Industry and Energy, Solanko and Ollus (2008, 17) wrote that the export capacity of Russia was 196 bcm in 2006, the annual capacity of Brotherhood being 120 bcm, pipe via South-West Ukraine 25 bcm, pipe via Belarus to the West 30 bcm, pipeline in Finland 5 bcm and Blue Stream 16 bcm. If the picture given by Solanko and Ollus resembles to the reality, the pipeline capacity surplus in 2006 was some 45 bcm, i.e. close to the full capacity of Nord Stream.

Appendix 7 Russia's natural gas balance in future (bcm)[61]

	2005	2008	2010	2020
Total supply	**650**	**668-731**	**740**	**915**
Russia's total production	**640**	**602-665 (1&3)**	**680**	**825**
Production of Gazprom	547	551 (3)	560	590
Other producers	93	114 (3)	120	235
Imports from Central Asia	**10**	**66 (2)**	**60**	**90**
Total demand	**650**	**701**	**740**	**915**
Domestic consumption	**445**	**420 (1)**	**475**	**540**
Total exports	**205**	**281 (2)**	**265**	**375**
Exports to Europe	150	189 (2)	180	200
Exports to CIS	55	92 (2)	55	55
Exports to Asia / USA	0	1 (2)	30	120

Sources: Götz 2006; author's calculations

Figures for 2008 have been collected by the author from the following sources:

(1) British Petroleum 2009;

(2) Gazprom 2010;

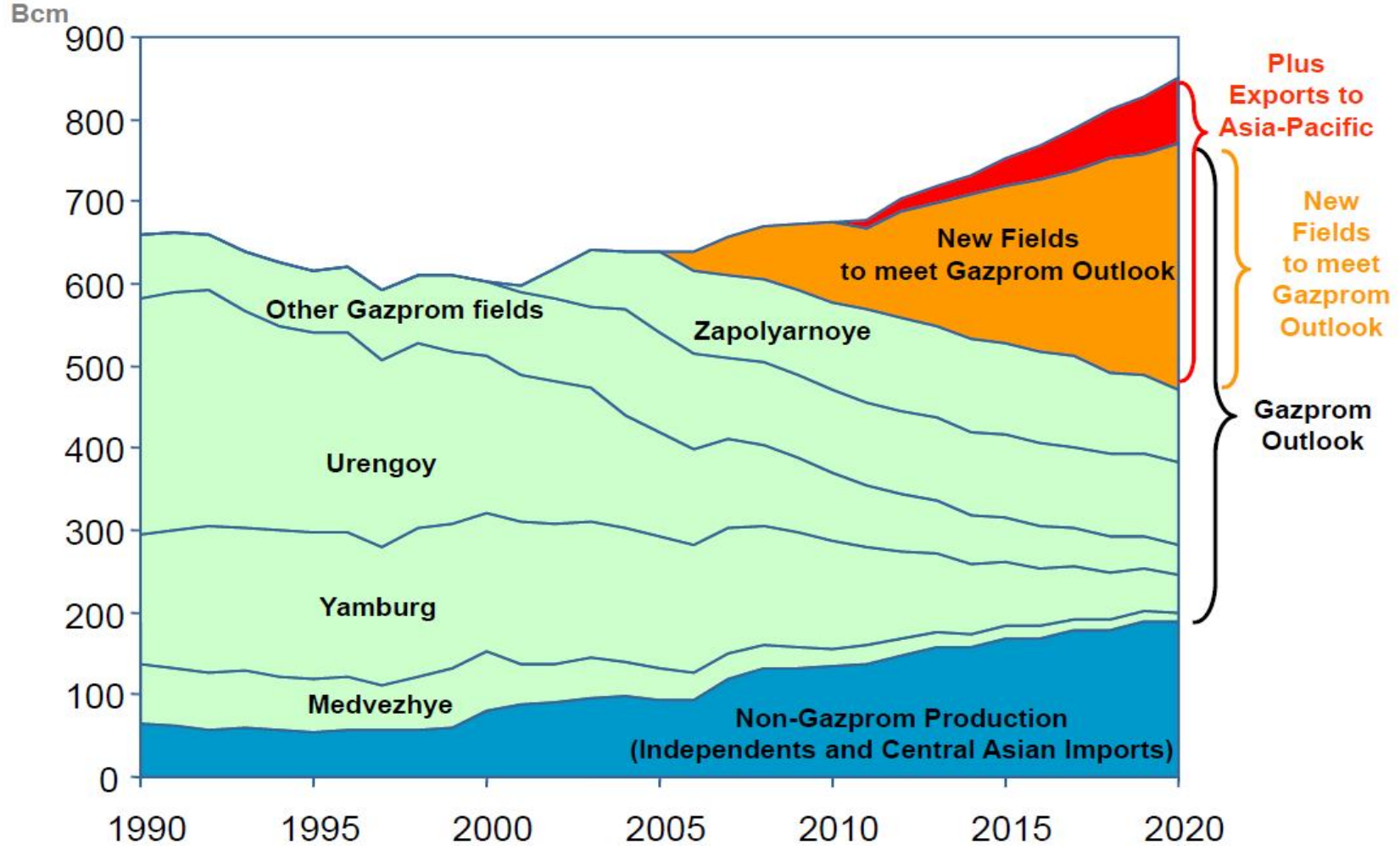
(3) RAD 2010;

(4) Troika Dialog 2010

[61] Russia measures natural gas at +18 degrees of Celsius, whereas the international practice is to measure the gas volume at +15 degree of Celsius. In other words, there are less gas molecules in the Russian statistics than in the international ones. This is obviously one of the reasons behind the differences in the gas statistics (Solanko – Ollus, 2008).

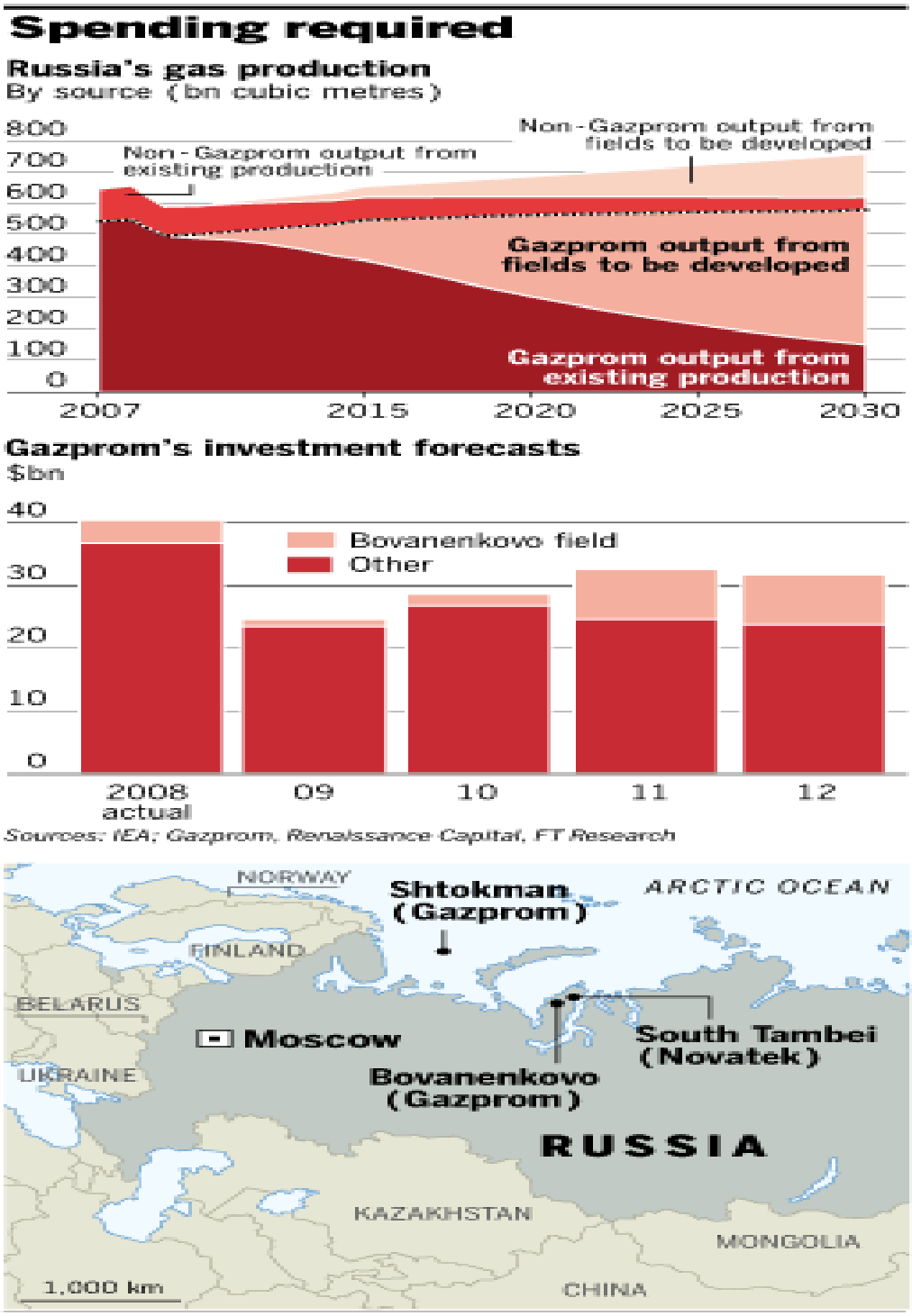
Fernandez (2010) estimates that Russia's total gas supply (including gas imports from Central Asia) to be in range of 850-900 bcm in 2020.

Appendix 8 Russia's gas supply outlook: A Western view



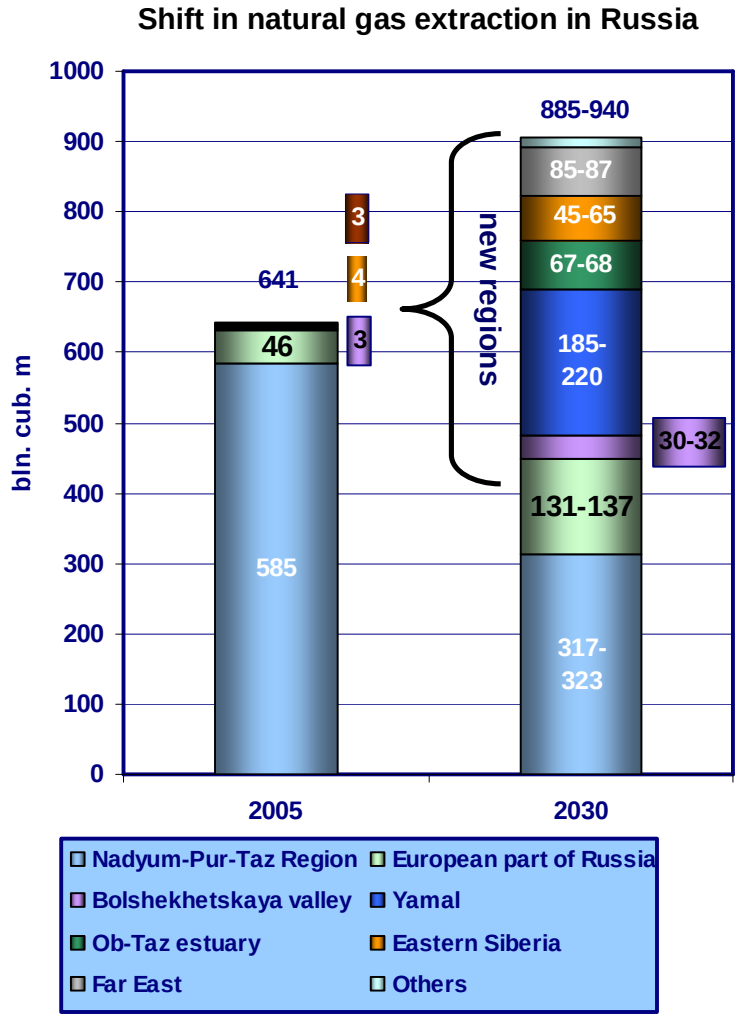
Source: Ramsay 2008

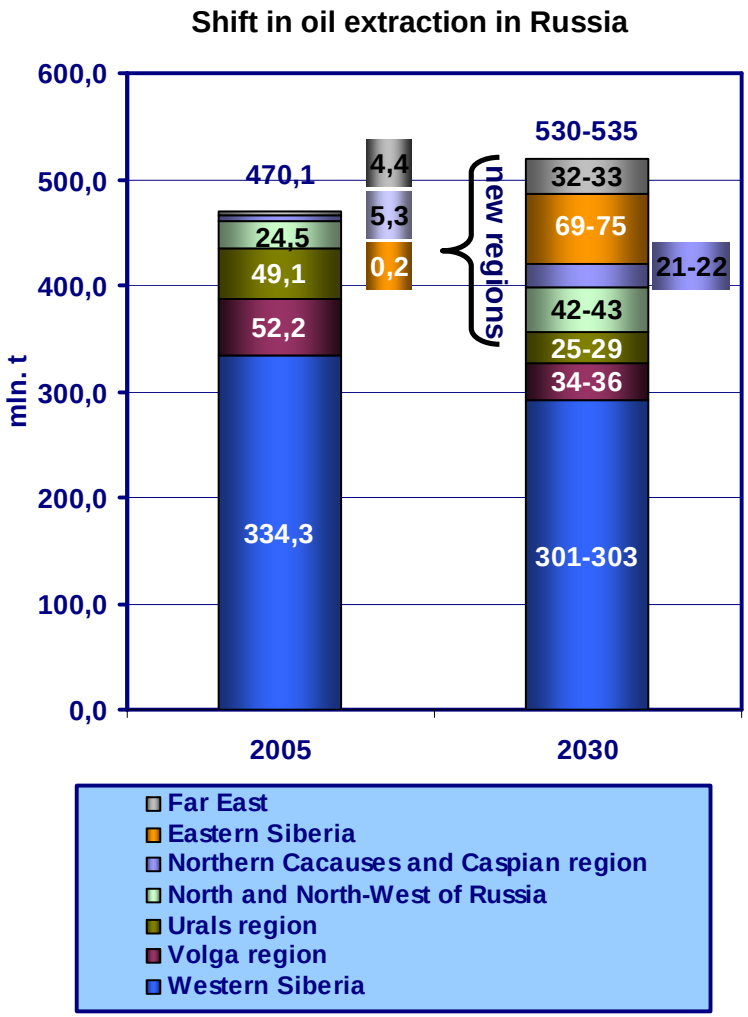
Appendix 8 Continued



Source: FT 2010

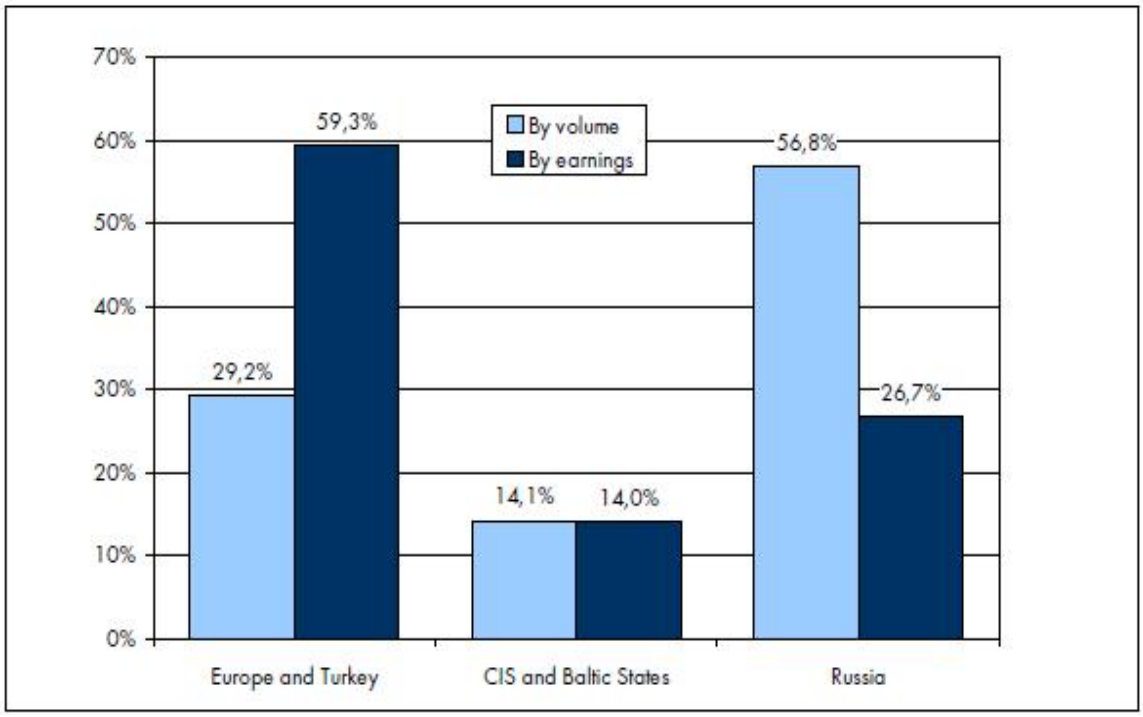
Appendix 9 Russia's gas supply outlook: A Russian view



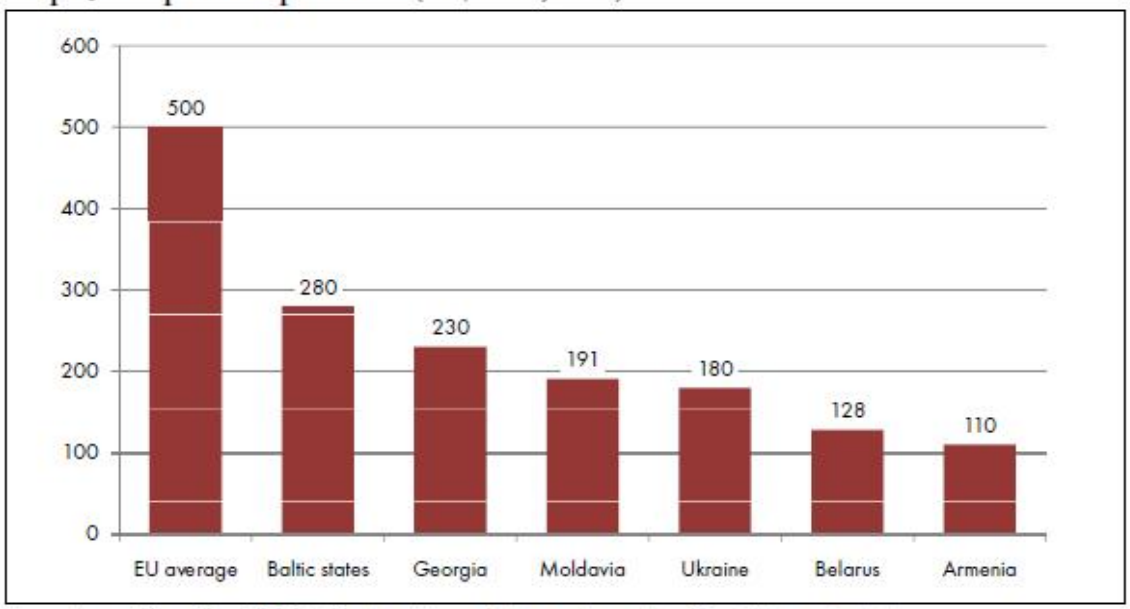


Source: Gromov 2009

Appendix 10 Gazprom's sales and prices (1Q-3Q/2008)



Graph 5: Gazprom's Export Prices (US$/mcm, 2008)



Source: Energy Information Administration, http://www.eia.doe.gov/emeu/cabs/Russia/NaturalGas.html

Source: RAD 2009c

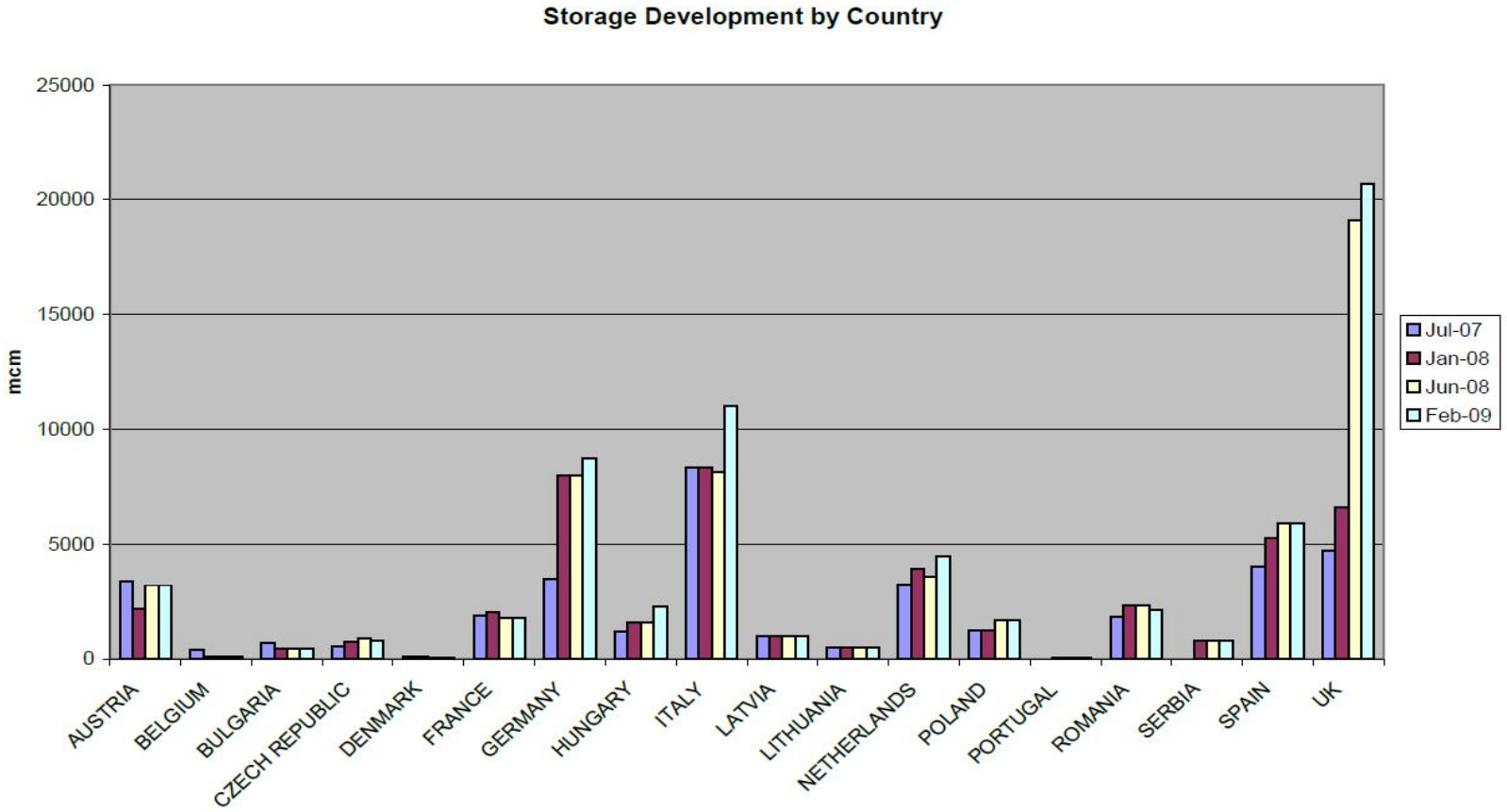
Appendix 11 Primary energy consumption in EU member states (2005; %)

	Coal and lignite	Oil	Gas	Nuclear	Renewables	Industrial waste	Imports-exports of electricity	Primary energy consumption (thousand TOE)
EU-27	17,7	36,7	24,6	14,2	6,7	0,1	0,1	1 811 324
Belgium	9,9	37,4	25,7	22,3	3,5	0,2	1,0	54 952
Bulgaria	34,7	24,4	14,1	24,2	5,6	0,3	-3,3	19 884
Czech Republic	**44,9**	21,8	17,2	14,2	4,1	0,3	-2,4	44 795
Denmark	19,0	41,6	22,5	0,0	16,2	0,0	0,6	19 538
Germany	24,0	35,7	23,4	12,2	4,8	0,0	-0,1	345 451
Estonia	**57,4**	19,6	14,4	0,0	11,2	0,0	-2,5	5 563
Ireland	17,8	55,5	22,9	0,0	2,7	0,0	1,2	15 121
Greece	28,7	57,5	7,5	0,0	5,2	0,1	1,0	31 240
Spain	14,4	48,4	20,8	10,3	6,1	0,0	-0,1	143 486
France	5,2	33,4	14,9	**42,3**	6,0	0,0	-1,9	275 438
Italy	8,8	44,5	**37,8**	0,0	6,5	0,1	2,3	186 766
Cyprus	1,5	**96,5**	0,0	0,0	2,0	0,0	0,0	2 461
Latvia	1,7	29,2	28,8	0,0	**36,3**	0,1	3,9	4 718
Lithuania	2,3	32,0	28,8	**31,0***	8,8	0,0	-3,0	8 592
Luxembourg	1,7	65,6	25,1	0,0	1,6	0,0	6,0	4 698
Hungary	11,1	26,6	**43,3**	12,8	4,2	0,1	1,9	27 920
Malta	0,0	**100,0**	0,0	0,0	0,0	0,0	0,0	953
Netherlands	10,1	39,6	**43,6**	1,3	3,5	0,0	1,9	80 969
Austria	11,9	41,6	24,3	0,0	20,5	1,0	0,7	33 980
Poland	**58,7**	24,0	13,0	0,0	4,8	0,5	-1,0	93 935
Portugal	12,5	57,8	14,1	0,0	13,4	0,0	2,2	26 677
Romania	22,4	26,0	**35,6**	3,7	12,8	0,2	-0,6	39 146
Slovenia	21,1	35,0	12,7	20,8	10,6	0,2	-0,4	7 305
Slovakia	22,1	20,8	30,5	23,6	4,3	0,2	-1,4	19 407
Finland	14,3	30,4	10,4	17,4	23,2	0,2	4,2	34 515
Sweden	5,1	28,4	1,6	**36,2**	29,8	0,1	-1,2	51 555
United Kingdom	16,4	35,6	**36,6**	9,1	1,7	0,3	0,3	232 259
Turkey	26,2	35,2	26,8	0,0	11,9	0,0	-0,1	85 159
Iceland	2,8	24,2	0,0	0,0	**73,0**	0,0	0,0	3 610
Norway	2,4	44,3	16,0	0,0	**40,4**	0,0	-3,2	32 190
Belarus (2008)	-	30,7	**68,9**	-	**-**	n.a.	n.a.	25 100
Ukraine (2008)	29,9	11,8	**40,9**	15,4	2,0	n.a.	n.a.	131500
China (2008)	**69,7**	19,3	3,7	0,8	6,5	n.a.	n.a.	2 026 300
Russia (2008)	14,8	19,0	**55,2**	5,4	5,5	n.a.	n.a.	684 400
USA (2008)	24,6	38,5	26,1	8,4	2,5	n.a.	n.a.	**2 299 000**

* At the end of 2009, Lithuania closed its last nuclear power unit in Ignalina.

Sources: EEA 2008; British Petroleum 2009

Appendix 12 Gas storage capacity in EU member states (million cubic meters)[62]



Source: GIE 2010

[62] Ukraine has the facilities to store 32 billion cubic meters of gas underground, the second-biggest capacity in Europe after Gazprom (MT 2010p).

Appendix 13 Some Gazprom-owned units in Europe

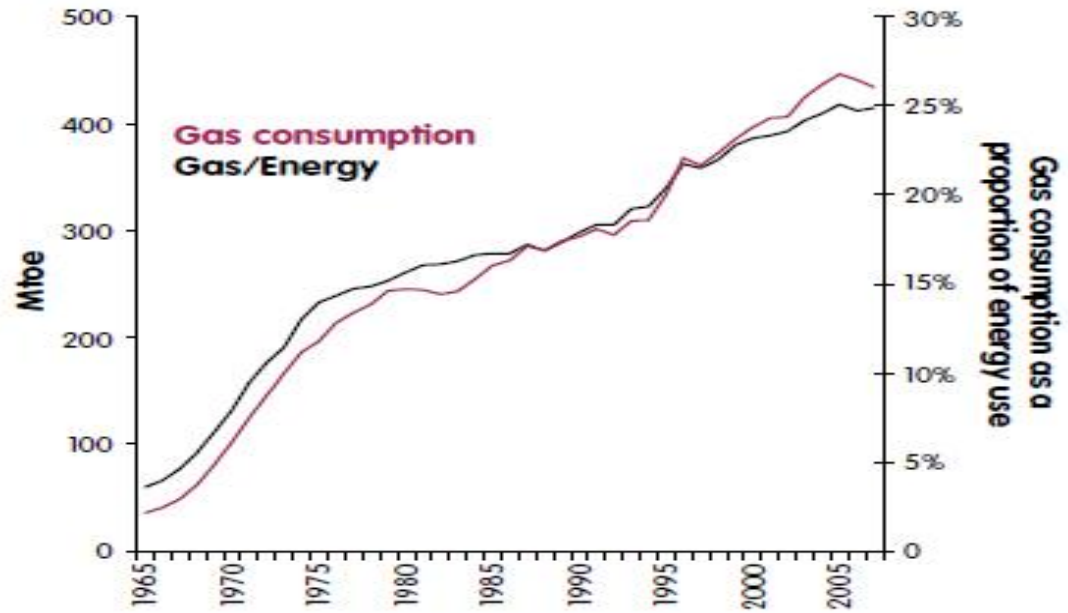
Country	Company	Type of operations	Gazprom's share, %
Armenia	Armrosgazprom	Gas distribution	45
Austria	Gas und Warenhandelsgesellschaft	Sale of gas	50
Belarus	Beltransgaz	Gas distribution	50≤
	Belgazprombank	Financial activities	100
Bulgaria	Overgaz Inc.	Investing	50
	Dexia Bulgaria	Gas marketing	51
	Topenergo	Gas distribution	100
Cyprus	Leadville Investments Ltd.	Investing	100
Czech Rep.	Gas Invest	Investing	n.a.
Estonia	Eesti Gaas	Gas distribution	37
Finland	Gasum	Gas distribution	25
	North Transgas OY	Gas transportation	100
France	Fragaz	Gas trading	50
Germany	Gazprom Germania Group	Gas distribution	100
	WIEH		50
	Wingas		35
	ZMB		100
Greece	Prometheus Gas	Foreign trade	50
Hungary	Panrusgaz	Sale of gas	40
	General Banking and Trust	Investing	26
Italy	Promgaz	Gas distribution	50
	VOLTA S.p.a	Gas trading	49
Latvia	Latvijas Gaze	Gas distribution	34
Lithuania	Lietuvos Dujos	Gas distribution	34
	Stella Vitae	Gas distribution	50
	Kaunas CHP	Electricity	99
Moldova	Moldovagaz	Gas distribution	50
Netherlands	Gazprom Finance B.V.	Investing	100
	Gazprom Netherlands B.V.	Asset management	100
	Blue Stream Pipeline Company	Construction, gas transportation	50
	West East Pipeline Project Investment	Construction, investing	100
Poland	EuRoPol GAZ	Gas distribution	48
	Gas Trading	Sale of gas	16
Romania	Wirom	Gas distribution	51
	WIEE	Gas distribution	100
Serbia	Progresgaz Trading Ltd.	Gas distribution	25
	NIS	Gas distribution	51
Slovakia	Slovrusgas	Gas trading	50
Slovenia	Tagdem		n.a.
Switzerland	WIEE	Gas marketing	50
	Gas Project Development Center Asia AG (Zug)	Development activities	50
	Nord Stream AG	Construction, gas transportation	51
Turkey	Turusgaz	Sale of gas	45
UK	Gazprom Marketing and Trading Ltd	Gas distribution	100
	Gazprom UK Ltd	Investing, banking	100
	Interconnector (UK) Ltd	Gas trading	10
	Wingas	Gas distribution	50
Ukraine	Int. Gas Transmission Consortium	Gas distribution	50≤
	RosUkrEnergo	Gas distribution	50

Source: Ehrstedt – Vahtra 2008

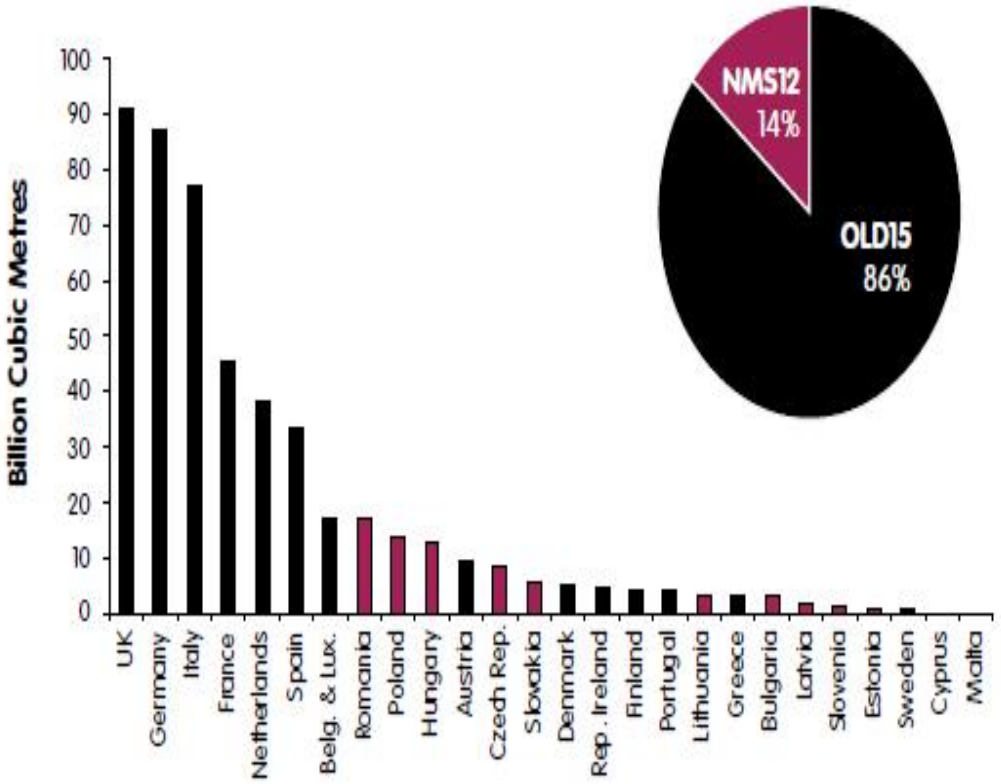
For more detailed information, see Loskot-Strachota (2009).

Appendix 14 EU's gas consumption-related indicators

Consumption volumes and importance of gas in energy use

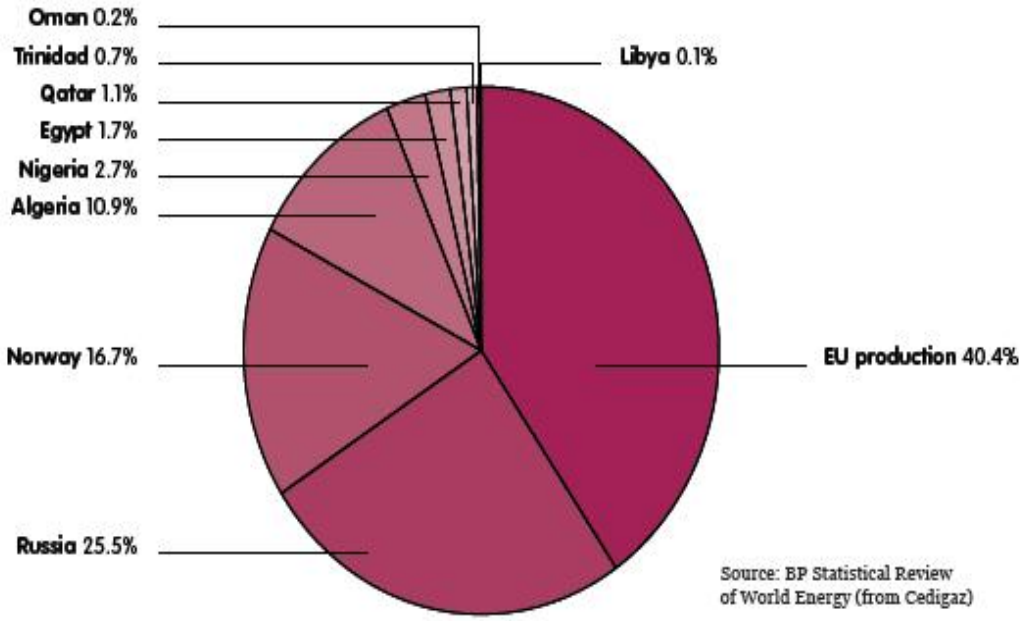


Gas consumption volumes by EU member in 2006



Appendix 14 Continued

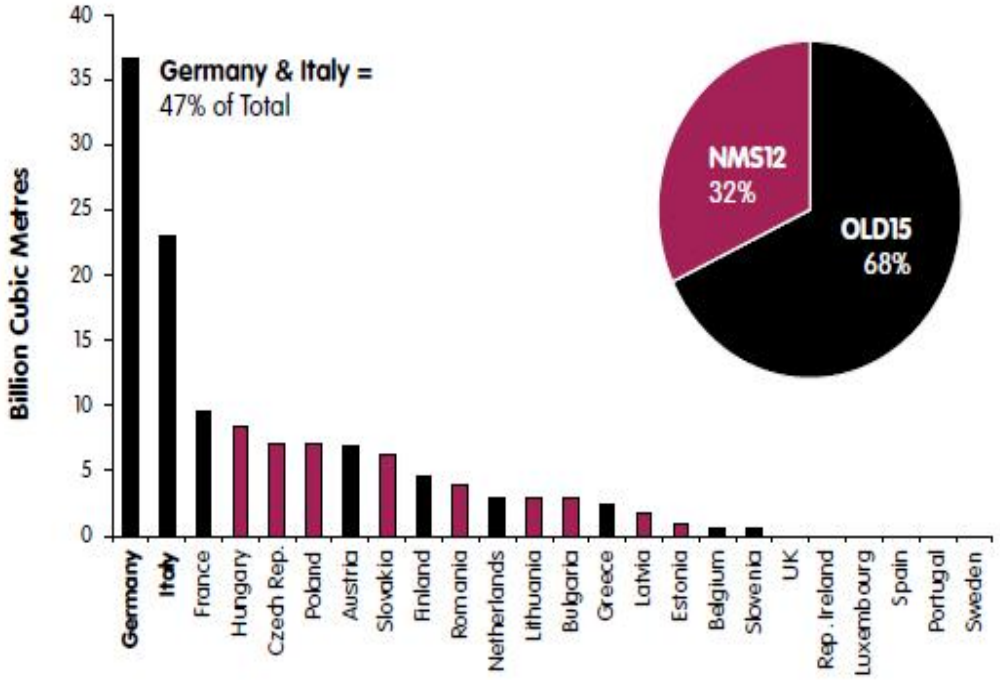
EU's gas supply in 2006



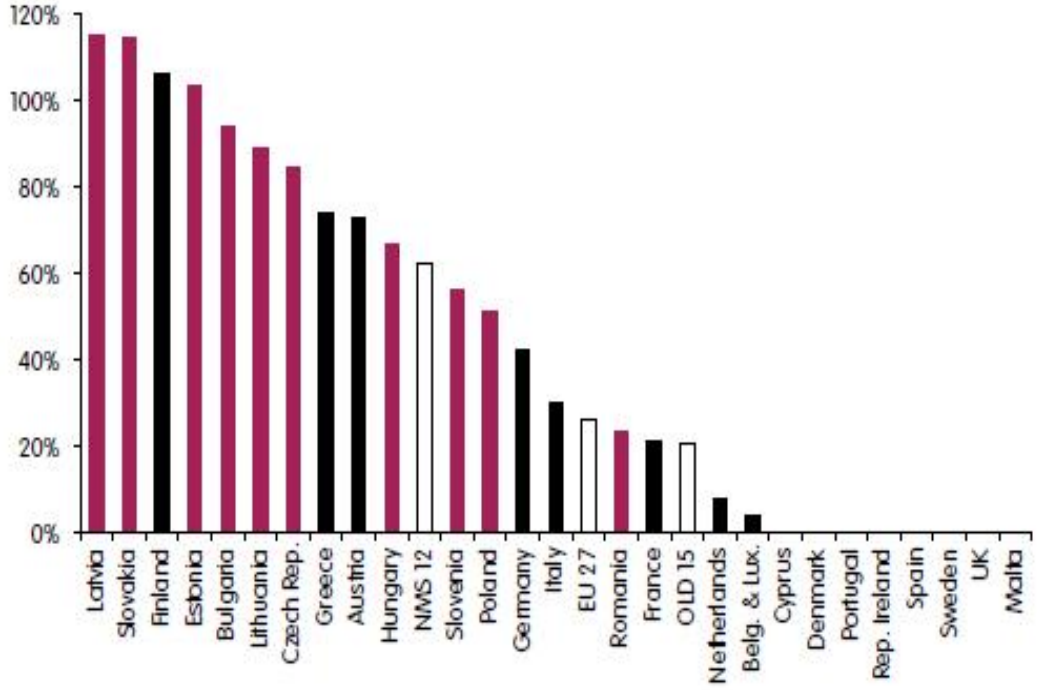
EU's dependence on Russian gas

Appendix 14 Continued

EU countries' gas import volumes from Russia



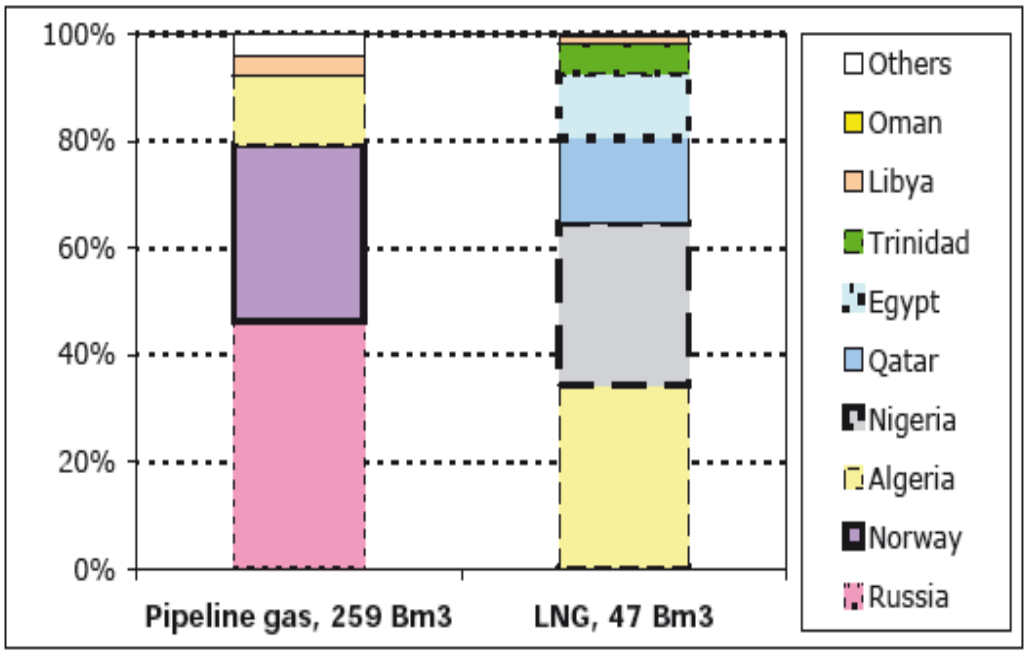
Russia's share in EU members' gas supply



Source: Noel 2008

Appendix 14 Continued

EU's gas import volumes via pipeline and LNG by country in 2007

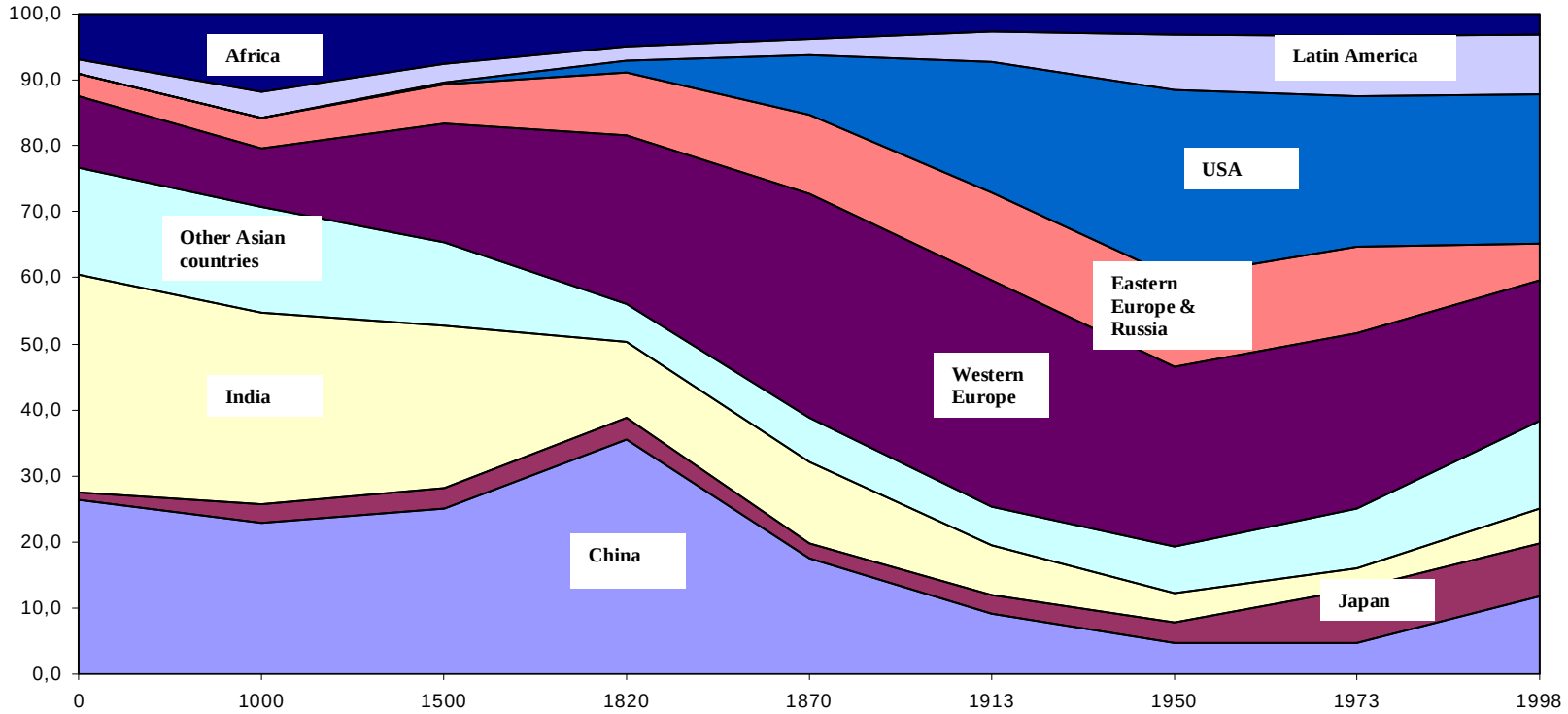


LNG exporters and significance of the EU for them

LNG exporters 2007	World share, %	Share of export to the EU, %	Middle East	OPEC	GECF
Qatar	17.0	19.4	X	X	X
Malaysia	13.2	0.0			X
Indonesia	12.3	0.0		X	X
Algeria	10.9	65.2		X	X
Nigeria	9.3	68.1		X	X
Australia	8.9	0.0			
Trinidad & Tobago	8.0	14.4			X
Egypt	6.0	42.0			X
Oman	5.4	1.0	X		
Brunei	4.1	0.0			X
United Arab Emirates	3.3	0.0	X	X	X
Equatorial Guinea	0.6	0.0			
United States	0.5	0.0			
Libya	0.3	100.0		X	X
Norway	0.1	100.0			

Source: Kavalov et al. 2009

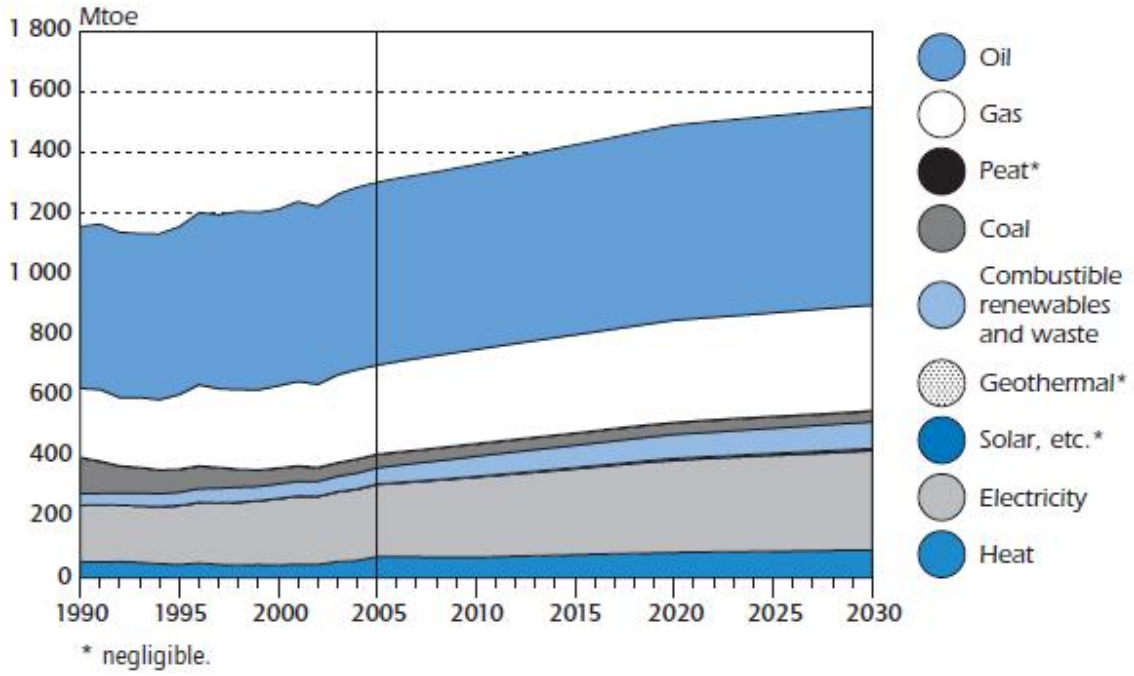
Appendix 15 The distribution of the global GDP during the past two millennia



Source: Frank – Bernanke 2007

Appendix 16 The EU's energy mix until 2030

Total Final Consumption by Source, 1990 to 2030



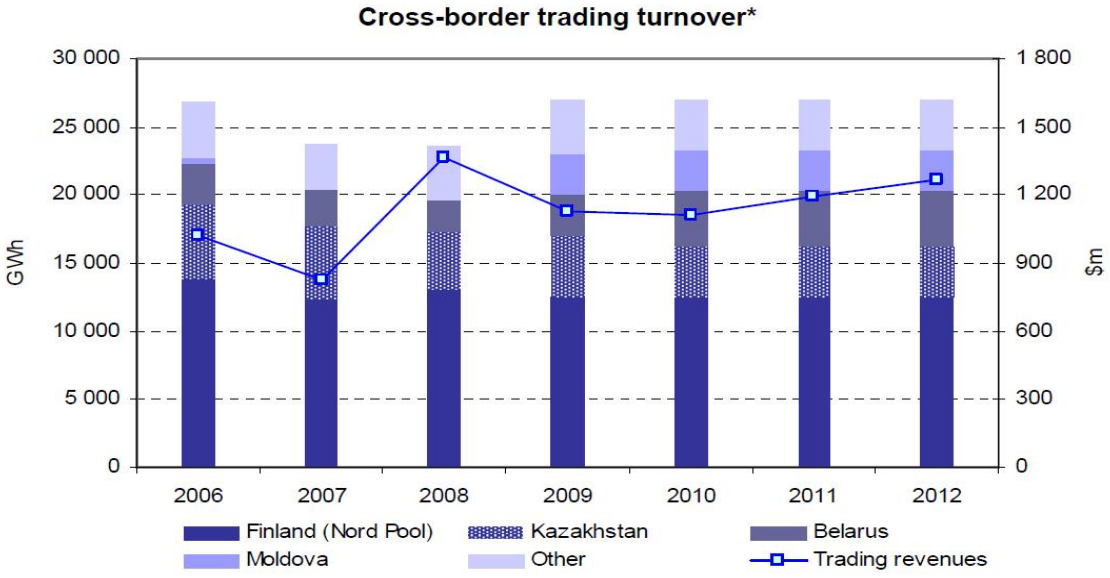
* negligible.

Production Volume and Share of Fossil Fuels in the EU27, 1990 to 2030

	1990	*2005*	*2010*	*2020*	*2030*	*2005/ 1990*	*2020/ 2005*
Production volume			**Mtoe**			**%**	
Coal	361	192	162	138	123	-47	-28
Oil	132	132	105	53	41	1	-60
Gas	162	188	168	115	85	16	-39
Total fossil fuel production	655	513	435	307	248	-25	-45
Total fossil fuel in TPES	1 372	1 431	1 455	1 548	1 560	4	8
Production share by fuel				**%**			
Coal	81	61	51	41	37	-24	-33
Oil	21	20	16	8	6	-6	-62
Gas	55	42	36	23	16	-23	-46
Total	**48**	**36**	**30**	**20**	**16**	**-25**	**-45**

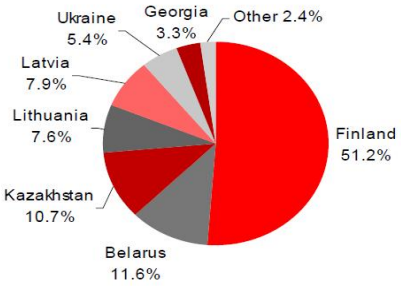
Source: EIA 2008

Appendix 17 Russia's exports of electrical energy (Inter RAO[63])



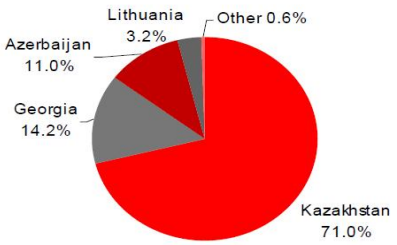
* does not include trading on the Russian domestic spot market
Source: Company data, RMG estimates

Figure 7: Electricity export make-up, 2008



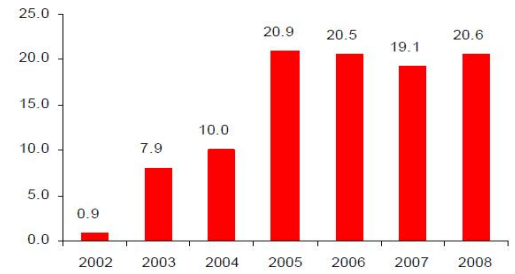
Source: Company data

Figure 8: Electricity import make-up, 2008



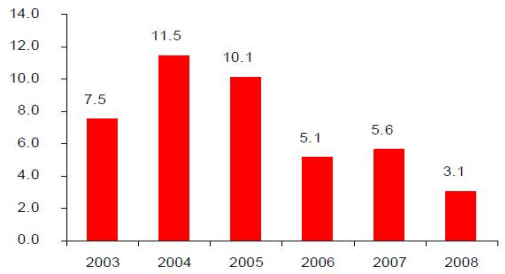
Source: Company data

Figure 9: Export performance, bln kWh



Source: Company data

Figure 10: Import performance, bln kWh



Source: Company data

Sources: Alfa-Bank 2009; RMG 2009

[63] Inter RAO accounts for more than 90% of Russia's total power imports and exports (RMG 2009).

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