Estonian Foreign Policy Institute

ENERGY SECURITY OF ESTONIA IN THE CONTEXT OF THE ENERGY POLICY OF THE EUROPEAN UNION

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INTRODUCTION

Objectives

This paper analyses the energy security of Estonia in the context of the European Union common energy policy.

The objective of this paper is to evaluate the energy security of Estonia within the framework of the European Union common energy policy and to make proposals on how to better guarantee the energy security of Estonia and determine Estonia's interests in the energy policy of the European Union.

The paper concentrates on the aspect of Estonia's energy security which takes into account the dependence of Estonia's natural gas and electricity systems on external monopoly energy systems and suppliers.

Proceeding from the assignment, the paper shall answer the following questions:

1. How dependence on foreign monopoly suppliers can influence Estonia's foreign policy?
2. What Estonia can and should do to reduce the supply security risks arising from having a monopoly natural gas provider?
3. What are Estonia's interests in connection with common energy policy and energy market of the European Union?

Introduction of the paper defines the objective of the work and presents background information about energy carriers important to Estonia in international context.

After the introduction, the most important conclusions of the paper are set out separately.

The paper is divided into three chapters according to questions. Each chapter starts by giving an overview of the sphere connected with the question, then maps the possible risks and finally gives recommendations for minimising them.

This paper does not cover all aspects influencing energy security. Therefore we recommend the research to be continued in the future, with the first step being a research of the possible impact of foreign energy carriers on Estonia's energy sector and security. Especially the impact of possible oil and natural gas price changes on Estonian economy should be analysed.

Energy Carriers Important to Estonia in International Context

Stable and reliable availability of energy is especially important from the aspect of both economy and also the functioning of the whole society.

As regards energy, Estonia is relatively independent because about 70 % of its primary energy is of domestic origin. First of all oil shale, but also firewood and peat are the main domestic energy carriers. The role of wind and solar energy in energy sector is growing but still are of relatively modest importance.

At the same time Estonia's energy sector is largely dependent on foreign suppliers:

- most of the consumed liquid fuels are imported;
- all consumed natural gas is imported from a monopoly supplier;
- the stability of Estonia's power network depends on the functioning and cooperation of electric energy systems of neighbouring states;
- the functioning of Estonia's thermal power stations depends on the water level of Narva reservoir, controlled by a neighbouring state.

Failure in any of the above-mentioned points can cause great economic damage to Estonia.

In the import of gas and liquid fuels and in guaranteeing the stability of power network, potential dangers may arise both because of political and commercial problems. Regarding the latter, we should first of all keep in mind the availability of energy carriers or the situation where production and consumption are out of balance, either because of pricing policy or payment difficulties that have emerged as a result of it.

Keeping the water level of Narva reservoir is mainly connected with political risk and relatively unlikely disaster, like break-up of the dam of Narva reservoir.

The security of Estonia's energy sector depends on the availability of three energy carriers: oil, natural gas and electricity.

Oil

In spite of its relatively high price there is no fear that the shortage of resources could restrict the production of oil in the nearest future. High prices of raw materials are connected with global economic growth and insufficient investments into starting the exploitation of new deposits and expanding production. Low rate of investments in its turn is the result of the low level of oil prices in 1985–2002.

The extent of oil resources can be estimated through the ratio of resources and production value. In the case of oil, this ratio is 40 years (i.e. with the consumption rate of today, the known resources are sufficient for 40 years); in the case of natural gas 75 years and in the case of coal more than 150 years. During the last 20 years this ratio has continuously increased. For example, in 1980 the resources/production ratio of oil was 30 years.[1]

According to predictions the growth of oil production and consumption will grow at the present rate (1.5–2% in a year) until 2025–2030, when oil production will decrease because deposits are exhausted. It is assumed that then the demand for the so-called unconventional oil (oil sands of Canada, heavy bitumen of Venezuela) will increase.[2]

Estonia may experience shortage of oil products in twenty years time because the ratio of oil resources and production of our main supplier Russia is about 23 years and the domestic use there is increasing rapidly. Estonia should take into account the possibility that it has to rely more than before on the import of oil products from the West. Estonia's liquid fuel terminals have the necessary capacity but the transport costs may cause the price of oil products to increase by 20 – 30 €/t.

1 Putting Prices in the Spotlight, BP statistical review of world energy, June 1995

2 P.R. Odell, Why Carbon Fuel will Dominate the 21st Century's Global Energy Economy, 2004

Fuel components produced from oil shale are more suitable for the production of heavy fuel oil that is little used in the present market situation of Estonia.

Natural Gas

From the aspect of security, the most important difference between natural gas and oil is the fact that gas at present has no global market. Supply of natural gas and thus also the market is often determined by one monopoly provider because transport of natural gas depends on the existence of gas pipelines.

Because of the peculiarities of supplying and production, the price of natural gas is connected to long-term contracts; price formation of natural gas is determined by the prices of oil and other alternative fuels.

At the same time the importance of natural gas has steadily increased during the last 20 years, it is forecasted that soon the importance of gas as a source of energy will exceed that of oil. Therefore it is necessary that natural gas should have a global market that does not depend on oil. Otherwise oil that has lost its importance may start to determine the price of gas that has become the main energy carrier. Global gas market may come into being when the market share of liquefied natural gas (LNG) increases and the gas system is opened to competition.

The world's largest discovered deposits of natural gas are in Russia. If the ratio of gas resources and consumption is estimated to be 75 years on the world scale, in Russia this indicator exceeds 100 years.

The available total volume of natural gas is considerably larger than that of oil, therefore gas is considered the main replacement fuel when the oil resources are exhausted. According to the forecasts today, the top production capacity of natural gas is reached by 2060 or 30 years after the top capacity of oil. It is expected that with the exhaustion of natural gas resources and reduction of production capacities, secondary or alternative gas sources will be taken into use. Today it is still too early to speak about their extent, production technology and price.

Estonia's supply with natural gas may be considered good, if you take into account the large deposits of Russia. At the same time the investments made into the gas production infrastructure of Russia are not sufficient to satisfy the increasing domestic demand of Russia and export commitments simultaneously. Stocks kept in the natural gas storage facilities of Latvia will help to overcome short-term shortage and supply restrictions.

Electricity

For historical reasons Estonia's electricity system is closely connected with the electricity systems of North-Western Russia, Latvia, Lithuania, Belarus and Kaliningrad Region. At present the management of electricity systems of Estonia, Latvia and Lithuania is co-ordinated and we can speak of the electricity system of the Baltic states which also includes Kaliningrad Region because of its isolation from the main territory of Russia.

In the Baltic electric system the main part of electricity is received from base load power stations. Ignalina nuclear power plant and *Narva Elektrijaamad* are such power stations. In practice the energy blocks of *Narva Elektrijaamad* are partially used to regulate load because the regulated capacities of Latvian and Lithuanian hydroelectric power stations are not sufficient to maintain the stability of the whole system. Russia's hydroelectric power stations help to stabilise the work of the Baltic electricity system and maintain its frequency.

Short-term tests of independent work, during which the electricity system was disconnected from the power system of Russia by mutual agreement, have been carried out in the Baltic electricity system. Longer and continuous tests for checking the independent work of the Baltic power system have not been allowed by Russia because these would cut the Kaliningrad Region off from Russia's main systems and managing of that region's electricity system would be possible only through the Baltic power system.

Cable connection that is being established between Estonia and Finland enables the export and import of electricity but it is not possible to guarantee the regulation of frequency and stability in the Baltic power system with it. In order to integrate the electricity system of Estonia and the whole Baltic region totally with the NORDEL (Scandinavian region) electricity system, the electricity systems should be connected with alternating current connections. The stability of our electricity system could thus be ensured and its frequency regulated through the NORDEL system.

In conclusion, the connection of our electricity system with that of Russia helps to compensate the deficits from covering peak loads of Estonian and the whole Baltic electricity system but at the same time gives Russia the possibility to influence the functioning of our electricity system from the outside.

IMPORTANT CONCLUSIONS

Foreign relations and energy

Energy dependency from Russia can be reduced by creating additional energy connections between the Member States of the European Union, especially in the Baltic Sea area.

In cooperation with other Baltic states, Poland and Finland, we must consider:

- the expediency of building a branch pipeline to the Baltic Sea gas pipeline from Russia to Germany and the possibilities of establishing additional gas connections with Incukalns gas storage;
- the construction of common liquefied natural gas (LNG) terminal and system for conducting it to natural gas network; also signing a common supply agreement with an European company that liquefies North Sea natural gas.

As the largest exporter of energy carriers in the Baltic Sea region Russia should be included in observing the rules of energy carriers' shipment and environmental safety at the Baltic Sea.

While developing relations with Russia we should take into consideration that energy constitutes an integral part of Russia's security – it is used to justify Moscow's recourse to power while protecting its interests and resolving problems in relations with neighbouring states.

Domestic solutions

In the production of electricity we should implement new modern energy technologies that would enable to make oil shale energy more environment-friendly, and by establishing power stations producing both electricity and heat on the basis of biological fuels and peat we would disperse the production of electricity without excessively increasing the use of natural gas. Along with mitigating the negative environmental impacts accompanying the production of electricity we would also fulfil the respective European Union requirements.

Improvement of supportive measures by the state is a precondition for a more widespread use of renewable energy sources.

If gas supply is discontinued for any reason, Estonia has to start regulating the consumption of natural gas very operatively to limit the gas use by chemical industry and industrial consumers and to guarantee the gas supply to users who cannot use reserve fuels and in conditions where interruptions are not allowed. Reorganisation of gas consumption has to be prepared for both technically and legislatively.

Amendments that would oblige natural gas using large energy producers to create conditions for enabling transfer from natural gas to replacement fuels when necessary should be included in legal acts regulating the activities of energy enterprises.

The state policy of promoting energy saving should be made more effective, proceeding from the guidelines of the EU Directive on buildings' energy efficiency, and their observance should be guaranteed.

Since transport is the most important consumer of imported fuels, saving fuels in this sector would directly contribute towards reducing foreign dependency.

The agreements signed between *AS Eesti Energia* and the United Energy Systems of the Russian Federation should, when the electric energy market opens, be concluded at state level to guarantee Estonia's energy security.
Before the construction of gas turbine power stations necessary for additional electricity production, the risks of natural gas supply security and the impact of the price increase of imported natural gas on the production of electricity should be thoroughly analysed, and also the increase of dependence on monopoly supplier should be taken into account.

Estonia's interests in the context of European Union common energy policy

It is in the interests of Estonia to participate actively, competently and consistently in working out the EU common and coherent energy policy and linking it to the common foreign and security policy. The foreign relations of the Community require an energy component to represent the common interests of Member States in relations with Russia or other countries and enterprises exporting energy carriers.

It is in Estonia's best interests to prevent the possibilities where energy exporting states, including Russia, could use the energy sector to exert pressure in relations between states.

It is in Estonia’s best interests to stress the principle of solidarity in the common energy policy shaped by the European Union and support energy projects that are not based on solely business considerations.

It is in Estonia’s best interests to be an equal partner to Russia at negotiations. This can only happen through the cooperation of European countries and by expanding the authority of the European Commission.

It is in Estonia's best interests to draw attention to the energy security of the Baltic states that are far removed from the energy market of the European Union and to the need to connect Baltic energy networks with the networks of the European Union.

It is in Estonia’s best interests to support the completion of the Polish-Lithuanian energy connection as an important link in creating the so-called Baltic Energy Circle.

It is in Estonia's best interests to limit its electricity purchases from Russia to compensating only the deficits form covering peak loads.

It is in Estonia's best interests to avoid the situation where the absence of technology for landfilling of oil shale ashes in a way complying with the requirements set by the European Union would endanger the continuation of producing electric energy from oil shale.

It is in Estonia's best interests to keep 1990 as the base year for calculating greenhouse gases emissions because we need additional investments for developing sustainable energy sector and one source for them could be revenue from the sale of the emission quota.

1. HOW THE DEPENDENCE OF NATIONAL ENERGY ON FOREIGN MONOPOLY SUPPLIERS CAN INFLUENCE THE FOREIGN POLICY OF ESTONIA?

Through increasing mutual political, economic and ecological dependence caused by globalisation, Estonia's energy economy and security are inevitably connected with our foreign and security policy.

1.1 State of affairs

Estonia's energy security is determined by the country's geopolitical situation and orientation, dependence on foreign energy suppliers and our own capacity to produce energy.

1.1.1 Geopolitical situation and orientation

As a new member of NATO and the European Union, Estonia is one of the border states of both associations with Russia – the most important and ambitious neighbour who is still determining its place in the world and European policy.

After restoration of its independence, Estonia's relations with Russia have been cool. One of the reasons for that has been Estonia's determination to join the economic and security structures of the West, of which Russia sees itself as the opposite. The second reason is difference of views concerning the discontinuation of Estonia's sovereignty for fifty years because of Soviet occupation and annexation.

So far, tense relations with Russia have influenced Estonia's energy security only once – in the winter of 1992/1993, when energy deliveries from Russia were interrupted and the fuel necessary for producing heat was received as foreign aid. Later there have been no disruptions in energy deliveries, regardless of the threats of Russian politicians.

After the enlargement of the European Union to Central and Eastern Europe Russia has tried to show that new Member States, especially the Baltic states and Poland, are Russophobic countries tangled in history and have no constructive role in the European Union's relations with Russia. In this way Russia tries to diminish the possibilities of Central and Eastern European states to participate in the shaping of the EU policies.

To a certain extent Estonia's attitudes in the beginning supported this, for example its lukewarm attitude towards strengthening the EU common foreign and security policy, by trying to protect its own sovereignty first of all and keep the NATO priority as a security guarantee.

Due to the experience gained after the accession – seeing how larger Member States prefer bilateral relations with Russia and ignore common interests of the European Union – Estonia has started to demand a common line of foreign policy from the European Union, especially in relations with Russia. Although a great part of Member States support this idea, the implementation of a firmer policy towards Russia is unlikely in the nearest future.[3]

[3] Liina Mauring and Daniel Schaer, Russian Energy Sector and Baltic Security, in Baltic Security and Defence Review vol. 8, 2006, pp. 66-80, p. 77

Interruption of Russia's gas deliveries to Ukraine in the beginning of this year was an event that forced the Member States of the Community to discuss publicly the need for stronger foreign policy in relations with Russia, consider widening the competence of the European Commission to energy sphere and connecting energy economy to common foreign and security policy.

1.1.2 Connection of energy systems with Russia

When the totalitarian system disintegrated, Estonia, like other Central and Eastern Europe Countries that had been controlled by the Soviet Union, received as "inheritance" a considerable dependency on oil and natural gas imported from Russia. In addition to gas pipelines, the Baltic states are also connected with the electric energy systems of North-West Russia and Belarus.

One may assume that strong integration would ensure good supply security: cross-border transmission lines enable Estonia to import large part of its electric energy and two times more natural gas than at present from Russia.[4] In practice the congestion of domestic lines in Russia and Belarus does not allow that. Larger import of electric energy and natural gas is harmful also from the economic and political viewpoint: this would have negative influence on foreign trade balance and weaken the security of the state as it would increase dependency on a foreign supplier. Besides that, Russia's energy producers have competition advantages on electric power market.

The peculiarity of gas and electricity systems of the Baltic states that belong to the European Union is their isolation from the systems of the Community. On electricity market this is only partially compensated with the direct power cable to Finland that will be completed this year. Gas market of the Baltic states is relatively small and no suppliers that would compete with Russia have appeared.

1.1.3 Estonia's efficiency in energy production

As regards energy, Estonia is relatively independent because about 65–70 % of its primary energy is of domestic origin. Estonia imports only about one third of the energy it needs – all natural gas and motor fuels used are imported.

Domestic energy production relies on the resources of domestic fuels – these are oil shale, timber and peat. There are 960 million tons of active consumption resources of oil shale, 560 million tons of it in mining fields.[5] There are enough resources for the production of electric energy for fifty years, which gives the state a certain strategic independence but leads to environmental pollution.

The Long-term National Development Plan for the Fuel and Energy Sector aims to increase the share of renewable electricity to 5 % of the total consumption by 2010. It is planned to increase the share of renewable energy sources to 13–15 % of the total consumption by 2010 (in 2000 it was 10.5%).[6]

The production of electricity from oil shale is concentrated in North-East Estonia, many large electric power consumers are located in Tallinn, Tartu and Pärnu. The location of producers is unreasonable both from the standpoint of economy and state security.

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[4] Einar Kisel, Energeetiline julgeolek - mis see veel on?, Diplomaatia, No. 1 (28) January 2006
[5] Mihkel Veiderma, Energy as Key Issue, academic lecture, 05.10.2005
[6] Long-term National Development Plan for Fuel and Energy Sector until the Year 2015, RTI, 23.12.2004

1.1.4 Estonia as transit channel to Russia's energy deliveries

In spite of the cool political relations between Estonia and Russia the economic contacts of the two states have been efficient (e.g. in 2005, direct investments from Russia to Estonia amounted to EEK 3.5 billion). Thanks to the openness of Estonia's economy Russia has been able to use the railroads and ports of Estonia for the transit of energy carriers to Europe also during times when access of Estonian goods to Russian market was restricted with high customs duties.

Estonia is one of the many transit channels of Russia's oil companies. Competition with neighbouring states over Russian transit has forced Estonia to keep its transit prices low.
The fact that Russia's energy companies want to get the whole transit chain under their control, especially in the states that are connected with Russia's energy systems is a peculiarity of Russia's energy carrier transit. When necessary, pressure is exerted by discontinuing energy supply, as by cutting deliveries of oil by pipeline to the port of Ventspils in Latvia, in the same way Russia has repeatedly tried to influence the government of Lithuania to sell Mažeikiai oil processing factory to Russia's oil companies.

No economic pressure through energy deliveries has been exerted on Estonia, but according to the opinion of Estonian businessmen Estonia's transit business is nevertheless completely under the control of Russian capital.[7]

Transit of oil products from Russia through Baltic Sea states and by tankers over the Baltic Sea has become an additional environmental risk that has to be beared by Estonia and other Baltic Sea states.

1.2. Risks

The impact of globalisation and the openness of markets, the connection of Russia's energy companies with political power, their capability as suppliers, the instability of Russia's internal policy and the impact of energy production and transit on environment should be considered risks.

1.2.1 Globalisation of energy sector and openness of energy markets

Increase of competition, concentration of energy companies and taking over of small enterprises to stay in competition are phenomena that accompany globalisation. Large state monopoly companies have become international concerns whose activities small states are unable to regulate. Energy markets are under the control of large energy companies, often with state participation, and the competition of suppliers has decreased as a result.[8]

In the conditions of open market economy it is becoming harder and harder for states to carry out energy policy aimed at diversifying energy sources, optimising the price, ensuring supply security and founding new energy connections, because governments cannot compete with large energy companies oriented towards economic profit.[9]

The possibilities of small states to enlarge the circle of suppliers are limited, especially when there is only one supplier due to energy connections, like with natural gas in the Baltic states. Open energy markets may weaken the rule of domestic monopoly companies but the insufficient number of actual energy connections forces the Baltic states, Members of the European Union, into en even greater energy dependency on Russia.

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[7] Vene karu raha', ÄP, 19.05.2006
[8] Einar Kisel, Energeetiline julgeolek – mis see veel on?, Diplomaatia, No. 1 (28) January 2006
[9] Ibid

1.2.2 Connections of Russia's energy companies with state power

a) *State participation.* Russian Federation has participation in all Russia's larger energy companies. Besides formal connections, people belonging to the political elite of Russia also have informal relations with the leaders of these companies.

Energy companies were brought under the control of central power gradually. By the beginning of 2003, a legal basis had been elaborated for the prosecution of companies. In the summer of that year, the merger of two large oil producers Yukos and Sibneft was stopped and twelve people from the leadership of Yukos were accused of tax fraud and arrested. Court convicted them in May 2005 and the production units of Yukos were sold to different companies. The demolition of Yukos started the smooth transfer of privately owned energy companies to semi-state structures.[10]

The process of taking over energy companies reached its peak with the resolution of the State Duma in 2006, which limited foreign participation in the so-called strategically important enterprises (including energy companies) to 49 %.

According to the director of Russian Energy Policy Institute Mr. Milov, the influence of the authorities over the energy companies of Russia is limited because of corruption and lack of discipline.[11]

b) *Mutual interests.* Russian Federation protects and promotes the business interests of Russian companies, especially energy companies, abroad. In their turn, Russian entrepreneurs help to protect the interests of the state in relations with foreign partners. Thus even the companies that have economic and not political aims are included in serving the interests of the state.[12] Russia tries to make maximum use of energy resources to increase the welfare of the state.

c) *Use of energy levers in political and economic interests.* R. Larsson, security expert at Defence Research Agency of Sweden, lists as such levers:

- partial or total disconnection of deliveries,
- covert or public threats to stop deliveries,
- manipulation with prices,
- manipulation with debts, or causing new debts,
- takeover of infrastructure necessary for the transit of energy carriers.

Although using such measures against the Member States of the European Union is unlikely, the Baltic states constitute a certain exception. According to Larsson, since 1991 Russia has been using energy levers in mainly economic but also political interests against Lithuania at least twenty times and against Latvia and Estonia at least two times.[13] Russia is capable of exerting pressure through natural gas deliveries alone because due to the peculiarity of energy connection, the consumers are more dependent on supplier than in the case of oil.

1.2.3 Russia's capability as supplier

Russia has been an important regional exporter of energy carriers because its gas and oil infrastructure is aimed only towards Europe. Russia needs very large investments to open new

[10] 'Another Yukos?', The Financial Times, editorial, 13 April 2005
[11] Vladimir Milov, "The Use of Energy as a Political Tool", The EU-Russia Review, Issue One, EuRussiaCentre, May 2006
[12] Robert L. Larsson, "Russia's Energy Policy: Security Dimensions and Russia's Reliability as Energy Supplier", Swedish Defence Research Agency, Stockholm, March 2006, p. 171
[13] Ibid., p. 264

export directions, for example to China. Threats to send gas deliveries to China have been voiced at the management level of energy companies. These statements show positions and attitude but they have no practical outlet yet.

The capability of Russia's energy companies as exporters is first of all limited by large demand on domestic market (in 2003, 405.8 billion m^3 of natural gas was consumed in Russia and 131.8 billion m^3 or about three times less was exported; the export and consumption of oil were in about the same amount[14]) which may hinder the carrying out of supply contracts, especially for natural gas.

Secondly, Russia's export of energy carriers is restricted by the shortage of investments for taking into use new oil and gas deposits which will be necessary for fulfilling the obligations of export agreements. Most of the oil and gas deposits in use at present have been exploited since the days of the Soviet Union. Russia's energy companies and financial institutions are too weak to finance the taking into use of new oil and gas deposits.[15]

Concerning electric energy, Russia has stably compensated the deficit of Estonia's peak loads, in spite of the current political relations of the two countries.

1.2.4 Political developments in Russia

Russia's problem is the lack of coherent foreign and security policy.

- Russia has not proven itself as a reliable and responsible partner;
- Russia is reluctant to take any kind of directions from outside;
- Russia aims to be an independent centre of power in a multi-polar world.

According to the security expert of the University of Tartu European College Mr. Goble, Russia is turning from the failed state of the 1990s into a weak state, and historical experience has shown that such process may be accompanied by violence towards the inhabitants of Russia and often also the neighbouring states. One of the characteristic features of Russia's renaissance is revisionism that is expressed in attempts to restore former influence, compensating the insufficiency of economic power by untraditional means – using corruption, mass media and economic pressure that constitute direct security threats to smaller neighbouring countries.[16]

Experts on Russia Roderick Lyne, Strobe Talbott and Koji Watanabe write in their report submitted to the Trilateral Commission[17] that reactionary change in Russia's politics started in the middle of 2003, became fixed with the elections to the State Duma in December of that year and was finalised with the presidential elections of 2004. Characteristic feature of this change is rejection of reforms and smothering free market economy and civil society through security agencies and bureaucracy, the reason for the change is the increase of oil and natural gas prices on world market that has effectively contributed to Russia's economic growth.[18]

Increasing income from the sale of energy carriers has increased the self-confidence of the

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[14] Robert L. Larsson, "Russia's Energy Policy: Security Dimensions and Russia's Reliability as Energy Supplier", Swedish Defence Research Agency, Stockholm, March 2006. 31-33

[15] Vladimir Milov, "The Use of Energy as a Political Tool", The EU-Russia Review, Issue One, EuRussiaCentre, May 2006

[16] Paul Goble, Eesti väljakutsed aastal 2050, EPL, 10.07.2006

[17] Trilateral Commission is a private organisation founded in 1973 that consists of more than 300 very influential private persons from Europe, Japan and North America, http://www.trilateral.org

[18] Engaging with Russia, The Next Phase, A Report to The Trilateral Commission; Washington, Paris, Tokyo, 2006, pp. 38

leaders of Russia, which is expressed in the new geopolitical approach where Russia is ready to use, and uses, energy-economic measures in addition to political means to influence neighbouring countries.

In 2006 Russia has at least once stopped natural gas deliveries to Ukraine, Moldova and Georgia. In all of these cases, political motive may be perceived behind interruptions, although formally the reason was a legal or a technical problem. In Ukraine and Georgia it was meant as a pressure measure against the new government supporting the West, in Moldova to influence the government to restore the former procedure of border crossing with the separatist Transnistria region.

Oil deliveries to the Latvian oil port Ventspils were stopped in 2002, and this year oil deliveries were stopped to Lithuanian oil processing factory in Mažekiai when it became clear that these infrastructural objects important to oil transit shall not be privatised to Russian companies.

Milov calls the behaviour of Russia's energy companies in Ukraine, Georgia, Moldova, Lithuania and Latvia a manifestation of the postimperialist syndrome[19] because by stopping energy deliveries Russia exerts economic and political pressure first and foremost in the post-Soviet space.

Russia has not been particularly consistent in exerting pressure with political and economic aims, e.g. in spite of its forceful pressure Gazprom has not got Ukraine's gas pipelines under its control, in the same way Russia could not prevent the victory of a presidential candidate who supports the West at the elections in Ukraine and Georgia. But Russia has shown that it is ready to use force for a short time to influence neighbouring countries (by stopping energy deliveries) and to ignore its long-term results (weakening its own reliability as a supplier of energy carriers).

1.2.5 Environmental impact of energy production and transit

a) *Estonia's own energy production.* Estonia's energy sector, mostly based on the burning of fossil fuels, is the largest polluter of air and water in the country. The greatest polluters are enterprises burning or processing oil shale: about 80 % of total SO_2 emission come from them (SO_2 emission from new boiling layer furnaces is at least 25 times lower than from old dust burning furnaces). In the course of oil shale mining ca 100 million m^3 of ground water is pumped out of mines. 100 m^3 of cooling water is used in burning one ton of oil shale in power plants and pumped back into Narva River after it has been heated. European Union solid waste directive classifies as dangerous waste oil shale ashes and the so-called semi-coke that is formed as a by-product in the production of oil shale oil.

b) *Transit of Russia's energy carriers.* About 200 million tons of crude oil is annually transported through the oil terminals near the Gulf of Finland. By 2010 the risk of oil disaster in the region of the Gulf of Finland will double. The Baltic Sea, and especially the Gulf of Finland is shallow and any oil or gas pollution will have a destructive impact on the ecosystem of the region.

   Russia has joined the Baltic Sea Marine Environment Protection Convention that was signed in Helsinki on 22 March 1974 but has refrained from further toughening of environmental requirements, e.g. from banning single hull oil tankers on the Baltic Sea. Russia has also ignored the individual attempts of coastal states to force Russian oil

[19] Vladimir Milov, „The Use of Energy as a Political Tool“, The EU-Russia Review, Issue One, EuRussiaCentre, May 2006

exporters to observe the environmental protection requirements.

The European Union prohibited single hull tankers to enter its ports in October 2005 in spite of Russia's opposition. International Maritime Organisation followed the example of the European Union by classifying the Baltic Sea as a Particularly Sensitive Sea Area but excluding Russia's territorial waters around the Kaliningrad Region and in the eastern part of the Gulf of Finland.

1.3 Recommendations

We recommend the weakening of dependency on Russian energy deliveries, increasing support to domestic environment-friendly energy production, cooperating with the Member States of the European Union in the protection of the Baltic Sea environment and taking into account the instability of Russia in foreign policy relations with that country.

1.3.1 Reducing dependency on energy deliveries from Russia

Russia's interest in the revenue from the sale of energy deliveries, dependency on energy transit and fear to damage its international prestige are the obstacles that hinder Russia from stopping energy deliveries as political and/or economic means of influencing its neighbouring countries. I it obvious from the examples of Lithuania, Georgia, Moldova and Ukraine that these obstacles are not enough to ensure the energy security of states depending on energy deliveries from Russia. Russia's instable internal policy and opposition to joining the Energy Charter of the European Union will further lessen the influence of these obstacles.

We recommend increased support to the energy security increasing programmes of the Member States of the European Union for developing infrastructure and founding additional energy connections between neighbouring countries with the aim of reducing dependency on energy deliveries from Russia.

1.3.2 Promotion of environment-friendly domestic products

a) *Clean technologies.* It is in the interest of Estonia that the development of guidelines for a common European energy policy is oriented at technological solutions to help secure the requirements with regards to reducing the emission of greenhouse gases stipulated in the Kyoto Protocol in case follow-up conferences on climate change introduce stricter bases for calculating air pollution emissions. This would enable Estonia to continue having a more environment-friendly oil shale based and a more dispersed renewable fuels based electric energy production by means of constructing co-production power stations without fearing the EU pressure to reduce air pollution and to replace oil shale with natural gas being a cleaner fuel.
b) *Energy saving and biofuels in transport*. Since transport is the most important consumer of imported fuels, energy saving in this sector would directly contribute towards reducing foreign dependency. The only trend in this field is the envisaged use of liquid fuels. At the same time one can observe developments leading to increased fuel consumption in transport including:

   - railway transport giving way to coaches and automobile transport, decrease in the share of public transport leading to increased fuel consumption per passenger mile;
   - growing distance between places of residence and work and the concentration of service infrastructure in places convenient to reach by automobile transport.

Under the EU Directive on liquid fuels member states are obligated to replace a certain share of engine fuels with biofuels. The introduction of liquid fuels in most countries and, according

to all estimations, also in Estonia requires state support in the form of tax incentives or subsidies. Such methods would be much more efficient in conjunction with transport optimisation efforts.

1.3.3 Cooperation with the Baltic Sea States in the field of environment protection

It is in the common interest of the European Union and its Baltic Sea states to encourage Russia to adhere to the rules while shipping energy sources and ensuring environmental security. This requires a common and a clearly expressed political will.

Tension caused by unilateral steps could be relieved by conducting a common EU-Russia environment protection related project e.g. project aimed at completing the introduction of a common Baltic Sea Region monitoring system.

International prestige and treatment as a great power is crucial for Russia. This specificity can be taken advantage of in the interest of the Baltic Sea states by involving Russia as a formal leader of important environmental projects in the region.

1.3.4 Foreign relations with Russia

The objective of Russia's energy policy is to strengthen the security of the state by means of increasing economic growth, expanding spheres of influence and reducing geopolitical and macroeconomic risks[20]. Being an energy provider Russia hopes to reinforce its international prestige, to preserve the image of a great power, and to achieve maximal economical benefit from the permanently high energy prices.

At the same time Russian politics is once again characterised by Cold war rhetoric: Russia is described as being surrounded by enemy-states and subject to conspiracies aimed at weakening the country. A colourful example is a statement by Sergey Ivanov - Russian Minister of Defence[21]: „At present there is no confrontation or conflict outside Russia which could be considered as a direct military threat. /…/. In addition to the existing threats we must consider the effect of the uncertainty. What we mean by uncertainty is a political or military-political conflict or process which can directly threaten Russia's security or alter the geopolitical situation in a region of Russia's strategic interests. Our attention is focused on the internal political situation in certain CIS states, former Soviet Union Republics and the area surrounding them."

We recommend that it be taken into consideration while developing the relations with Russia that energy constitutes an integral part of Russia's security – it is used to justify Moscow's recourse to power while protecting its interests and resolving problems in relations with neighbouring states.

Estonia's share in the Russian export of energy is tiny and Russia has no economic argument in our respect. The experience of the last 15 years suggests that the discontinuation of energy supply presupposes a particularly severe political crisis in the relationship between Estonia and Russia. If Russia did not stop to export energy resources when Estonia joined NATO and the European Union, it is even more difficult to do so now that we are members of these two organisations. Russia's lack of stability and ambitions of its higher authorities, historical

[20] Harley Balzer, The Putin Thesis and Russian Energy Policy, Post Soviet Affairs, Volume 21, Number 3, July - September 2005, pp. 210-225

[21] The Wall Street Journal, 11 January 2006.

experience connected to Russia and the weak democracy and rule of law underlie the wish of Estonia and other neighbouring states to reduce their energy dependency on Russia.
Our recommendation as regards the development of relations with Russia is to bear in mind that the undemocratic developments and the structural instability and unpredictability render Russia a more unreliable long-term partner than it might seem at first glance.

2. WHAT ESTONIA COULD AND SHOULD DO TO REDUCE SUPPLY SECURITY RISKS ARISING FROM HAVING A MONOPOLY NATURAL GAS PROVIDER

2.1 State of affairs

Estonian gas market (along with that of Latvia and Lithuania) is characterised by its remoteness from the EU markets. The established inter-state gas connections are merely part of the Russian supply system.

2.1.1 Gas Supply

All the natural gas consumed in Estonia is brought in from Russia. Gas pipelines enter Estonia from three directions (Figure 1): directly from Russia – from the south-east (Irboska – Tartu) and from the east (Saint Petersburg – Kohtla-Järve; this part of the pipeline is currently used to transport the gas imported into Estonia through other pipelines to Narva, and occasionally to replenish the supplies of Leningrad oblast and of Saint Petersburg) and through Latvia from the south (Vireši-Tallinn). The data concerning the age and other parameters of Estonia's pipelines are presented in Table 1.

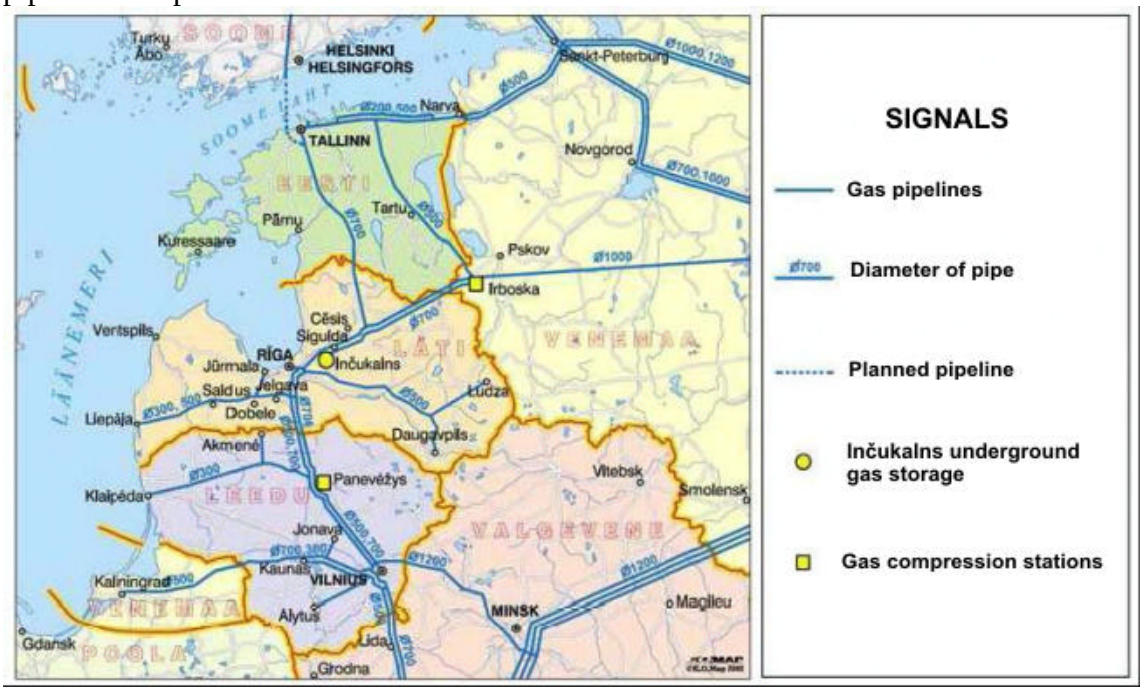

Figure 1. Natural gas pipelines in the Baltic States.
Source: AS *Eesti Gaas*

Table 1 Cross-border connections of the Estonian natural gas system (various sources)

Pipeline	Launch	Pressure, MPa	Length km	Diameter, mm
Saint Petersburg – Kohtla-Järve*	1949	2,0 -3,0	39	450
Saint Petersburg – Kohtla-Järve*	1957	2,0 -3,0	41	400
Irboska – Tartu	1975	2,5 -5,0	84	500
Vireši – Tallinn	1991	2,0 -5,0	208	700

* - not in use

Two companies deal with gas import: AS *Eesti Gaas* (OAO *Gazprom* – 37,02 %, E.ON *Ruhrgas Energie* AG – 33,66 %, *Fortum Oil and Gas* Oy – 17,72 %, *Itera Latvia* – 9,85 %, and minor shareholders – 1,75%) and AS *Nitrofert*. Gas transmission service is provided by AS *EG Võrguteenus*, gas distribution service is provided by 26 authorised companies. Natural gas is available for consumption in over 30 inhabited localities (Figure 2).

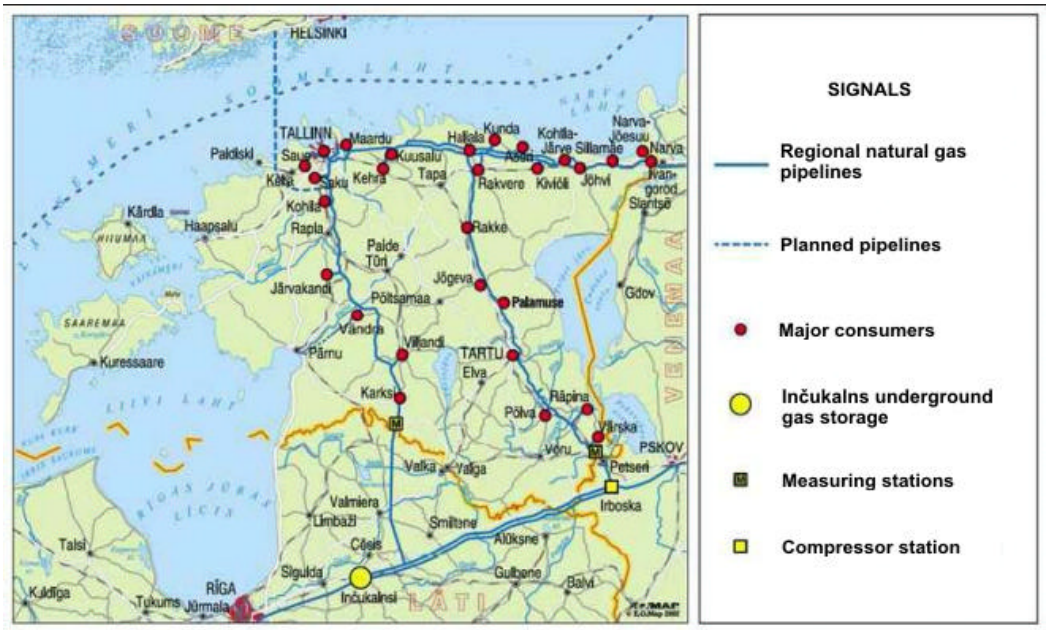

Figure 2. Natural gas piping system in Estonia. Source: AS *Eesti Gaas*

2.1.2 Gas Consumption

In 2002 natural gas constituted 11.1% of primary energy sources in Estonia. Although by 2004 it increased to 14.7% the share of natural gas in Latvia and Lithuania has consistently been 2.5 times higher than that in Estonia. Figure 3 gives an overview of the evolution in the consumption of natural gas. AS *Eesti Gaas* declared in September 2005 that natural gas market is open to all non-residential customers in Estonia, that is the openness of the market is up to 95%.

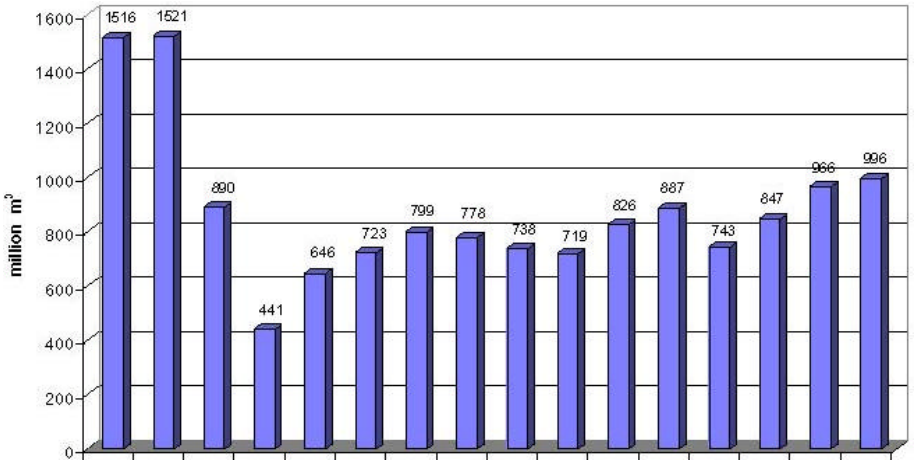

Figure 3. Natural gas consumption in 1990-2005. Source AS *Eesti Gaas*

The analysis of natural gas consumption in terms of application demonstrates that the largest sphere of energy consumption is heat production in district heating systems. Industrial consumption (conversion of energy) and the use as a raw material in chemical industry follow with roughly equal shares (Figure 4).

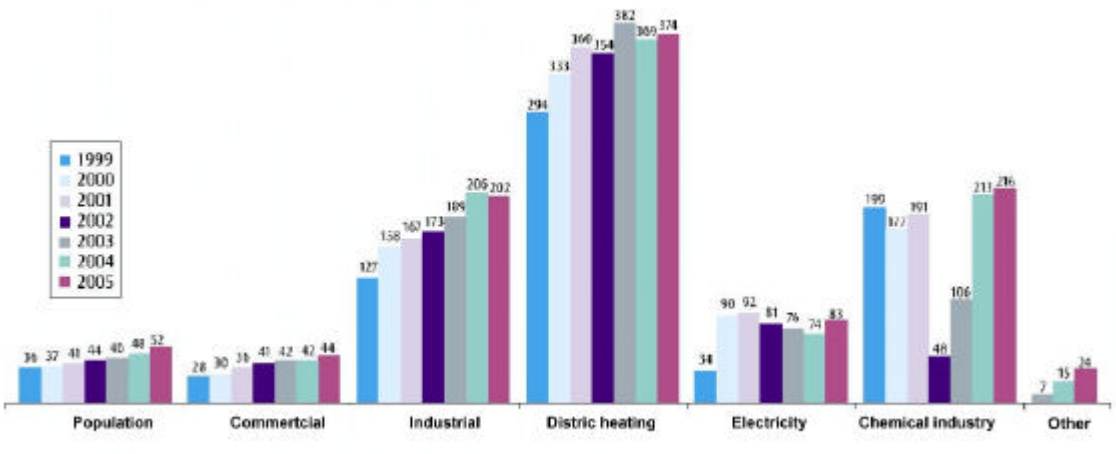

Figure 4. Natural gas consumption in Estonia in terms of groups of customers (mln m^3). Source: AS *Eesti Gaas*

It was in 1990 and 1991 that the greatest amount of natural gas was consumed as of now – consumption in those years reached 1.5 bln m^3 per year. Current consumption constitutes merely two thirds of this amount. Thus, no pipeline flow capacity limitations are to be expected in the nearest future in terms of gas consumption. This equally concerns the case of covering peak loads since the daily flow capacity of the gas network is about 11 mln m^3 whereas the greatest amount that has been required was 6 – 6.5 mln m^3 per day (at the exterior temperature –20 ºC). In colder weather (–30 ºC) Estonia's estimated necessity is 7.5 – 8.0 mln m^3 per day. Quantities stipulated in the contract might act as a limitation. For example, the maximal daily quantity stipulated in the supply contract of 2005 was 5 mln m^3 per day. *Eesti Gaas* seeks to increase the maximal quantity stipulated in the contract for 2007 to 6.0-6.5 mln m^3 per day[22].

[22] For comparison, the In?ukalns underground gas storage facility delivers up to 24 mln m3 per day.

2.1.3 Incukalns underground gas storage and pipeline connection to Latvia and Lithuania

A natural gas store established in sandstone constitutes an important part of the gas network of Estonia, Latvia and Lithuania. The capacity of the storage is 4.44 bln m^3 and 2.3 bln m^3 is in active use. There has been some increase in the use of the storage in recent years (1997 – 1.4 bln m^3, 2003 – 2.1 bln m^3). The capacity of the storage is to gradually be expanded to 5 bln m^3 in 2006 to cover the growing needs of gas transit running through both Latvia and Lithuania.

Incukalns storage could be enlarged even further. However, this solution would entail the necessity to put pressure on extra gas volumes difficult to reach after having been pumped underground. This extra volume of gas can realistically be obtained from Russia. Because of the pressure necessity the investment estimates for the construction or enlargement of an underground gas storage commissioned by the European Union propose 0.4 euros per 1 m^3 of gas contained in the storage facility.

The Incukalns gas storage is filled in in the summer (outside the heating season) and in the winter the stock is used in Latvia, in Estonia and in Russia itself. For example, only 616 bln m^3 of the 1, 621 bln m^3 consumed in Latvia in 2004 were imported directly from Russia. The remaining 1,005 bln m^3 originated from the Incukalns storage.

Similarly, 70% of the gas sold in Estonia travels through the Incukalns facilities since no gas is imported into Estonia from Russia between October and March because of the great consumption in Saint Petersburg and the exhausted capacity of the pipelines.

The pipeline connecting Latvia and Lithuania is currently out of use because of the lack of measuring equipment on the border between the two states. However, the use of this connection is technically possible and in case of emergency Latvia can partially be supplied with gas through Belarus and Lithuania by means of the other gas main pipe from Russia. It is practically impossible to supply gas to Estonia using this connection.

2.1.4 Finnish-Estonian natural gas pipeline

The interest of Finland towards the Estonian-bound pipeline arises from the wish to store gas supplies in the Incukalns underground gas storage (Figure 5). Estonia would win another connection. Yet, the gas would still be delivered from Russia.

Figure 5. The envisaged connection between the Baltic and Finnish gas systems.
Source: *Gasum* Oy

Preliminary studies of pipeline connection began in 2005 within the framework of the so-called Balticconnector – a common project of Finnish, Estonian and Latvian gas companies – and are expected to be completed in 2007. The preliminary studies are financed through the European Union TEN-E programme. In March 2006 the Finnish gas-supplying monopoly *Gasum* Oy (owned by *Fortum* (31%), *Gazprom* (25%), the state (24%) and *E.ON Ruhrgas* (20%)) proclaimed public procurement for assessing the environmental impact of the Balticconnector project. If the results of the studies are positive, the pipeline construction works are expected to be completed in 2010. Two pipeline route options currently (August 2006) remain for consideration: Paldiski – Inkoo and Paldiski – Vuosaari. The length of the underwater pipeline is 80-120 km (depending on the route). Construction cost is estimated at 100 – 120 MEUR, the flow capacity of the pipeline is 2 bln m^3 of natural gas per year. The necessity of constructing a Finnish-Estonian connection will decrease if Finland opts for the North European Gas Pipeline connecting Viiburi with Greifswald.

2.1.5 Liquefied Natural Gas (LNG)

The use of LNG in the Baltic Sea region is worth of consideration in a mid to long term perspective. Over 200 million tons – 138 bln m^3 of LNG is produced in the world annually[23], about a quarter of this amount is consumed in Europe.

LNG is produced by cooling natural gas at the temperature of -160°C, the volume of liquefied gas is ca 1/600 of the volume of gas in normal conditions. The density of LNG is ca 45% of that of water.

LNG production consists of liquefaction and transportation. Liquefaction is the most expensive part of the LNG production. The capacity of a modern liquefaction plant is 4.5 to 5.5 mln tons of LNG per year. The cost of one plant was estimated in 2003 at ca. 250 USD per ton per year (the cost increased by 30% by 2005[24]).

LNG is transported by sea in specially designed vessels. Older vessels carry 145 000 m^3 of LNG and the newer ones carry 160 000 and even 200 000 m^3. In 2002 a 145 000 m^3 vessel cost 170 to 190 mln USD. The number of vessels required depends on the distance. For instance, 5 vessels were used in 2002 to transport 5 mln tons of LNG annual production from Nigeria to Europe whereas only 2 vessels of the same size were required in order to transport the same volume from Algeria to Europe.

Regasification of LNG takes place at a reception terminal. LNG terminals cannot be viewed as gas storage since storing gas in liquefied form is particularly expensive. The cost of a regasification terminal in the Middle East LNG project was 300 to 400 mln USD.

Notwithstanding the high cost LNG has several advantages over pipelines:

- no transit agreements and costs;
- lesser threat to energy supply security;
- possibility of purchase from several providers;
- possibility to transport smaller volumes.

[23] The figures in this section were obtained from *The role of Liquefied Natural Gas (LNG) in European Gas Market, Clingendael International Energy Programme*, June 2003, CIEP 03/2003.
[24] Summary CIEP Gas Market Seminar on LNG Impacts on North West Europe, 3 February 2006, The Clingendael Institute, The Hague

Given the fact that LNG is considerably more expensive than other energy projects it would be purposeful for Finland and Baltic states to cooperate in this respect. Sea ice classification requirements of the big LNG tankers increase the price of LNG transport to Finland and therefore the most purposeful measure may be the construction of a regasification terminal, where the gas is stored and/or passed on into a pipeline, into one of the Baltic states.

While considering the use of LNG it should also be taken into account that advantages over natural gas start at 4000 km of delivery distance in comparison with the ground-based pipelines. While comparing to an underwater pipeline the advantages of LNG are visible at the distance of 1500 – 2000 km.

LNG's competitiveness is improving – several special expenses have decreased and specific required investments into corresponding infrastructure are expected to continue to decrease. Moreover, the favourable trend concerns all the stages of the LNG use. The effect of expenditure decrease can be observed in the usage of LNG – if 11 LNG terminals are currently operating in Europe, over ten new terminals, mostly in the Mediterranean countries and in Great Britain, are being constructed.

While devising the project it should be kept in mind that LNG deliveries are covered by contracts until 2010.

2.1.6 North-European Gas Pipeline (NEGP)

In cooperation with German energy companies *BASF* and *E.ON Gazprom* has started the construction of the so-called North-European Gas Pipeline which will run under the Baltic Sea to connect Viiburi to Greifswald. It is planned to place two 1200 km long pipelines, the envisaged annual capacity is 55 bln m^3. The first pipeline should start operating in 2010. NEGP affects Estonia in terms of environment protection and supply security.

a) *Environment protection.* The ecosystem of the Baltic Sea might first and foremost be affected by NEGP in terms of gas leakage. Moreover, it is equally important to consider the fact that the parts of the sea to be touched by the pipeline conserve sea mines and other blasting charges remaining from the Second World War; chemical and conventional weapons have been sunk in the sea, not to mention hundreds of ship and plane wrecks. As far as it is known there are about 80 000[25] blasting charges or sea mines in the Baltic Sea, most of them concentrated in the northern part or the Gulf of Finland. Up to 38 000 tons of Nazi Germany's weapons were buried in the Baltic Sea (including 12 000 tons of noxious gas). Chemical weapon dumping sites are indicated on Figure 6.

b) *Supply security.* NEGP affects gas supply security in the Baltic States since it is not planned to extend auxiliary lines to Estonia, Latvia and Lithuania from the Russian-German pipeline. For this reason Baltic States' markets being of minor importance and thus located away from the major pipeline connections are likely to experiences crises, breakdowns and delivery problems.

   The remoteness of the Incukalns underground gas storage from the NEGP similarly reduces its importance for other Baltic Sea states. Thus, it would be in the common interest of the Baltic States to at least connect the Incukalns storage to the NEGP.

   On the other hand Estonia could benefit from the construction of the NEGP during the heating season insofar as the continental part of the pipeline is envisaged to provide Saint

[25] Figures presented in this section were extracted from Mihkel Veiderma's report *Natural Gas in the Baltic Region* at the Baltic Assembly on 26.11.2005.

Petersburg with additional gas deliveries which would help reduce Saint Petersburg's demand for the Incukalns gas supplies.

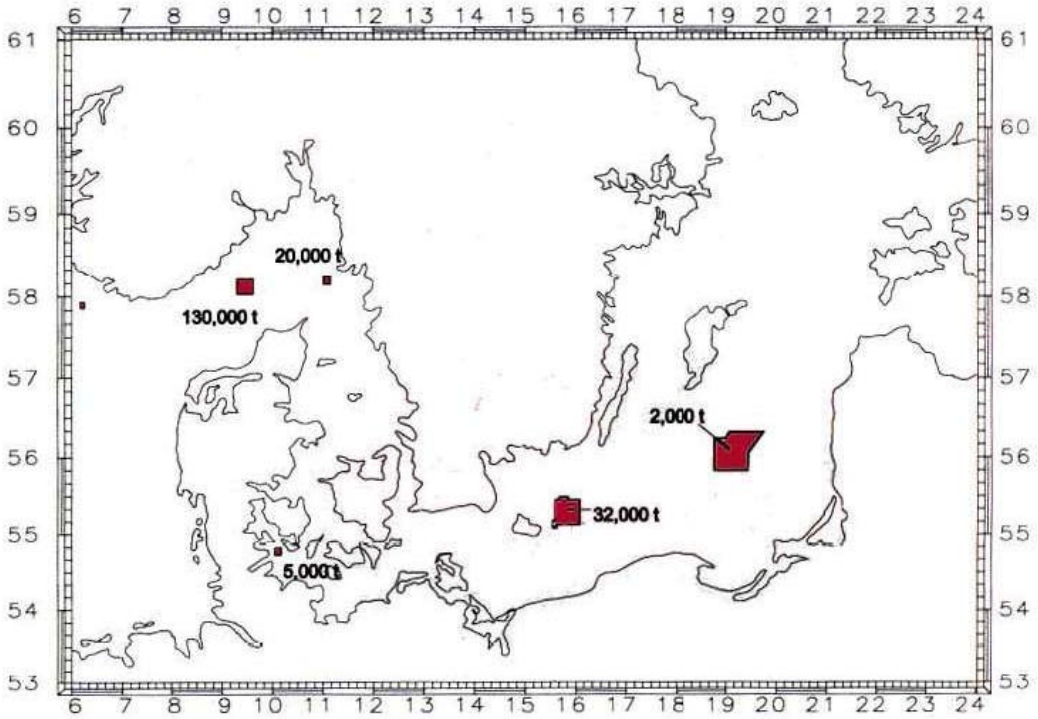

Figure 6. Location and quantity of chemical weapons sunk in the Baltic Sea. Source: Veiderma, Mihkel, *Natural Gas in the Baltic Region*, report at the Baltic Assembly on 26.11.2005

2.2. Risks

The focus of this chapter is on economical and technical threats amongst all risks related to a gas supplying monopoly: this group of threats includes delivery problems related to production capacity and pipelines, contracts and debts, price policy and the risks arising from the takeover of gas transit infrastructure facilities.

2.2.1 Pipeline-related risks

a) *Flow capacity.* Estonia and Latvia are supplied with gas by means of one pipeline running from Russia. In the east the pipeline is connected to a gas pipeline running to Leningrad oblast whose maximum flow capacity only allows for Saint Petersburg gas provision and is not sufficient to supply gas to Estonia and Latvia. This is the main reason why Estonia has not been provided with gas directly from Russia during the heating period in recent years but similarly to Latvia and part of north-eastern Russia has been obtaining its gas from the Incukalns storage supplies.

b) *Breakdown.* Regardless of the revenues from energy sales Russia has not been able to improve or modernise the outdated gas infrastructure (experts estimate that Gazprom requires ca 100 bln USD solely for the infrastructure[26]). This is likely to threaten the

[26] Robert L. Larsson, *Russia's Energy Policy*: *Security Dimensions and Russia's Reliability as Energy Supplier*, Swedish Defence Research Agency, Stockholm, March 2006.

security of Estonian deliveries since any breakdown or leakage of the only pipeline extending from Russia could deprive Estonia and Latvia of the Russian gas import. In this case in the summer consumers could be provided with gas contained in Incukalns gas storage and the gas stored in the pipeline system[27]. The use of Incukalns gas supplies in emergency situation is questionable since Latvia will equally be in crisis at the same and the country's constant gas demand several times exceeds that of Estonia.

2.2.2 Problems related to production capacity

Despite large gas supplies and numerous delivery obligations Russia has not invested sufficient funds into the expansion of gas infrastructure and the development of new gas fields, which jeopardises the meeting of Russia's growing demand and export obligations. For example, in 2004 Russia's domestic gas deficit amounted to 69 bln m3, by 2010 this can grow to up to 307 bln m^3.[28]

When experiencing delivery difficulties Gazprom can find large Western European markets more preferable in economic terms than the relatively small Baltic market. For instance, in 2004 Russia imported 133 bln m^3 natural gas to Europe, whereof 16.4 bln m^3 to Germany, whereas the total import into the Baltic states only reached 5.4 bln m^3 whereof 0.85 bln m^3 to Estonia, 1.63 bln m^3 to Latvia and 2.88 bln m^3 to Lithuania[29]. The small size of the market is also the major reason for other natural gas providers not having invested into alternative infrastructure for delivering gas to the Baltic States which would allow Estonia along with Latvia and Lithuania to increase natural gas supply security.

2.2.3 Debt, Price Policy and Takeover Requests

a) *Debts.* AS *Eesti Gaas* does not have considerable debts to *Gazprom*. Long-term delivery contracts secure protection from debts arising as a result of sudden price changes.

b) *Price policy.* According to the agreement between the European Union and Russia Gazprom will start to sell gas to European states at a more or less equal price. The harmonisation of prices is a compromise achieved during energy negotiations since agreements signed between *Gazprom* and EU states do not allow for the Russian imported gas to be resold beyond the borders of the state[30]. This implies for Estonia that the price of natural gas will rise up to the level of that in Finland, that is 170 to 180 USD/m^3. [31] For Estonia and other new member states of the European Union the harmonisation of prices minimises the risk of gas price manipulation.

c) *Infrastructure attracting takeover bids.* The piping in Estonia belongs to AS *Eesti Gaas*. Since Estonia is the final consumer of the gas imported from Russia and not a transit country, one can presume that Gazprom has no interest in taking local pipelines under control.

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[27] The volume of gas contained in the piping in SCM is relatively big and, if used rationally, in emergency situation it can continue to supply consumers for about a week or even longer

[28] Vladimir Milov, Russian Energy Sector and its International Implication, Moscow, Institute of Energy Policy, 30 March 2005, Discussion Paper.

[29] Veiderma, Mihkel, *Natural Gas in the Baltic Region*, report at the Baltic Assembly on 26.11.

[30] Riivo Sinijärv, *NEGP: the Estonian perspective*, Baltic Mosaic, Spring 2006; Andrei Belõi, New challenges for the EU-Russia gas relations, report at the HREI energy security conference on 19.07.

[31] Heido Vitsur: gaasi hind tõuseb lähimas tulevikus niikuinii (In any case gas price will increase in the nearest future), EPL, 3 January 2006

2.3 Recommendations

In the event gas supply is discontinued Estonia will have to promptly start regulating the consumption of natural gas. Reorganisation of gas consumption has to be prepared both technically and legislatively. We recommend starting these preparations as soon as possible.

AS *Nitrofert* importing gas directly from Gazprom is by far the largest industrial gas consumer. Discontinued gas supply would entail the cease of production within the enterprise. However, the disturbance would not spread any further. Similarly, in the case of other industrial consumers supply problems would mostly affect production alone.

Gas consumers can generally be divided into two groups (Figure 7):

- chemical industry, other types of industry and electricity production, they constitute ca 50% of gas consumption, the cease of their gas supply does not lead to any direct disturbances in the infrastructure;
- district and local heating (the population and commercial consumers) and other network companies (smaller companies selling gas and possessing market licences), which use gas mostly for heating purposes and constitute ca 50% of gas consumption. In cold season the lack of gas supply can lead to difficulties in heating buildings and efforts should be made to avoid the cooling of heating pipes and the overburdening of electricity network[32].

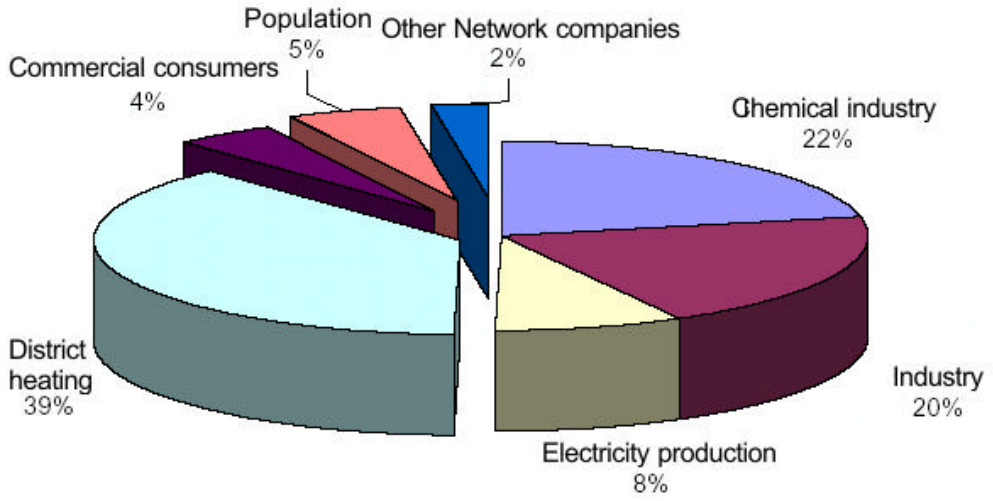

Figure 7. Natural gas consumption in terms of groups of customers.
Source: AS *Eesti Gaas*

2.3.1 Reserve fuel

The main technical solution to secure the operating reliability of gas-based heating systems in cold seasons is to use reserve fuels. Liquid fuel is mostly used as reserve fuel; its use is advantageous due to the existence of combined burners consuming both gas and liquid fuel. In the independence period no requirement was made to install combined burners and to make it possible to use reserve fuel and this was not done for reasons of economy. Authors of the present study lack data with regards to the extent to which gas can be substituted by reserve fuel. In larger boiler houses and power stations the possibility to use reserve fuel should be considered as an important opportunity to secure the operating reliability. The introduction of

[32] In case of heating failures electricity is immediately taken into use for heating. This, if no limits are established, can lead to the major failure of electricity supply caused by the overburden of the electricity system.

reserve fuel is generally impossible in the case of local heating appliances insofar as it would render the system technically complex and far too expensive in economical terms.

The use of heavy fuel oil (black oil fuel) or oil-shale oil as reserve fuel would be natural in larger boiler houses and power stations. A few years ago the facilities for heating heavy fuel oil were dismantled at the Iru Thermal Power Station and the possibility to use reserve fuel was reduced to bare minimum insofar as heavy fuel oil was considered to be unnecessary given the stability of gas delivery. The use of reserve fuels was badly needed at the Iru Thermal Power Station while there was a shortage of gas during the peak cold season in the winter of 2005-2006. However, only light fuel the use of which was to be avoided because of its high cost could be used at that point.

Light fuel oil is much more convenient for use as reserve fuel; however it is difficult to create sufficient reserves of a more expensive fuel for greater capacities.

Our recommendation is:

- to obligate large energy producers to implement technical measures (combined burners, reserve fuel storage etc.) when there is a need to substitute gas with reserve fuels and to create a certain reserve of the corresponding fuel (heavy or light fuel oil);
- to construct (or to conserve) boiler houses based on a different (non-gas) fuel in larger district heating systems, first and foremost considering biofuels and peat.[33]

Pursuant to the Accession Treaty Estonia along with all the other Community Member States have to create a 90 days' liquid fuel reserve (the transition period for the creation of this reserve lasts until 2010). There is no direct obligation to create natural gas reserves. Nevertheless, AS *Eesti Gaas* has created a certain reserve stored in Latvian natural gas storages.

2.3.2 Restrictions to Industrial Consumers

Risks emanating from the discontinuation of gas deliveries are season-related insofar as gas consumption for heating depends directly on temperature. Figure 8 demonstrates *inter alia* the variation in heating load in Estonia. Although there is no public information concerning the seasonal variation in gas consumption in Estonia (the figure demonstrates gas consumption variation in Lithuania) presumably gas consumption pattern is analogous to that of heating load.

[33] Simple use of natural gas can reduce the importance of the use of biofuel although the price of energy produced from either fuel should not differ greatly.

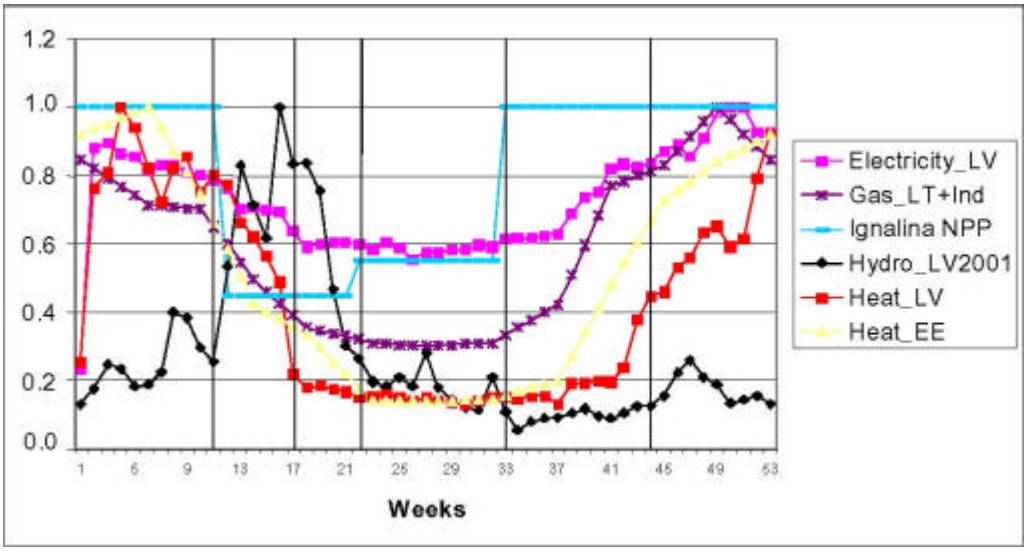

Figure 8. Variation in the load of energy sources in Baltic energy systems (vertical lines mark periods of distinct loads, EE-Estonia; LT-Lithuania; LV-Latvia).
Source: IAEA study RER/0/019

If the daily maximum quantity of gas stipulated in the new supply contract between AS *Eesti Gaas* and *Gazprom* remains at 5 mln m^3 per day, 20-30% of the gas required during the peak load periods will have to be substituted with other fuels or industrial gas consumption will have to be limited during peak cold seasons and during emergency interruptions of gas delivery.

Shall an increase be requested in the new contract between AS *Eesti Gaas* and *Gazprom* to raise the daily consumption during peak load periods beyond 5 mln m^3 per day it should be taken into account that Gazprom will agree to increase the peak consumption limit only if the price of the gas consumed in peak periods is superior to the regular one. Thus, the price of the gas additionally consumed during peak periods will equal that of substitute fuels (e.g. liquid fuel).

We recommend that legislative instruments be created to put restrictions on the gas consumption of industrial and chemical industry consumers (including companies with the right to import gas such as AS *Nitrofert*) in emergency situations (peak cold seasons or breakdowns) with the objective to provide gas supply to consumers who cannot use reserve fuels or tolerate interruptions.

2.3.3 Cooperation of the Baltic Sea States

Although the energy sector is rather diverse in the three Baltic States they share the common dependency on Russian deliveries in terms of the use of natural gas.

We recommend, in cooperation with other Baltic States, Poland and Finland, to analyse the expedience of constructing branches from the new gas pipeline running from Russia to Germany under the Baltic Sea and the possibilities to create additional connections with the Incukalns gas storage.

We recommend starting negotiations with neighbouring states in connection with the construction of a common liquefied natural gas (LNG) terminal and a system for conducting a natural gas network, also to sign a common supply agreement with a gas liquefying company in the Baltic Sea region.

2.3.4. Energy saving

In the international comparison Estonia has a rather high rate of energy saving measured against the GDP. The long-term state development plan for energy and fuel sector demonstrates full understanding of the importance of energy efficiency and the necessity to put restrictions on the end-use of energy. The objective expressed in the development plan is to achieve in 2010 the level of primary energy consumption of 2003. In order to actually attain this objective the state needs to demonstrate decisive action and to engage more deeply in the direction of processes on fuel and energy market.

From the gas consumption point of view an important energy saving opportunity emanates from analysing gas consumption in terms of application which demonstrates that the largest energy consumption is in district heating production systems or, in other words, heating houses and apartments.

Although there are no exact calculations of housing energy saving potential, presumably heat consumption can be reduced by 20-25% in houses whereas the reduction of energy consumption is deemed practically impossible. Thus, as a rule heat saving by more efficient housing heating is implied while discussing energy saving.

In order to increase the intensity of energy use, to reduce the domestic consumption of energy and to better use energy resources the above-mentioned development plan mostly recommends to stimulate the implementation of energy saving measures at the end-use. This objective is similarly targeted in several European Union directives including the Directive 2002/91/EC on buildings' energy efficiency, the implementation of which seems to be problematic in Estonia.

Recent years have seen a gradual rise in consumption of energy in connection with the fast economic development and the growth of income. We have entered the period when the rise in prices for energy and heating does not lead to consumers making efforts to save energy. People with low to medium income living in apartment blocks are the ones most concerned about the increase in energy expenditures.

In terms of energy saving we recommend to follow the guidelines of the EU buildings' energy efficiency directive. Until present Estonia's progress in implementing the directive has been modest and mostly directed towards formal as opposed to essential implementation.

2.3.5 Electricity production

a) *Gas-based electricity production* Long-term fuel and energy sector development plan until 2010 envisages the construction of stations of fast regulated electricity production capacities including gas turbine power stations. More precisely, the construction of new gas turbine facilities is discussed in the Estonian electricity sector development plan for 2005-2015. According to the latter in ten years the share of oil shale electricity will decline from the current 90% to 67%. This would enable to increase gas-based electricity production over a quarter from the current 5%. We recommend to further analyse these aspects of the development plan taking into account the above-mentioned risks of gas supply security and the considerable price growth of imported gas; the growing dependency on the gas-supplying monopoly should equally be taken into account.

b) *Electricity production based on renewable sources.* The specificity of Estonia's electricity system is the lack of peak loads. The actually used renewable sources will not help improve the situation. Firstly, the use of biofuels to produce electricity (especially in combined production) would provide extra capacity to cover the base load and the not

peak load since stations working on biofuel are difficult to regulate and their load must be maximal at all times in order to be economically expedient, which in the summer would lead to energy (remaining heat) wasting.

Secondly, a large electricity station consuming biofuels would start to compete in terms of fuel supplies with all the boiler houses situated in the supply area, presumably some of them would not be able to compete because of the shortage of fuel. The emergence of a major consumer would also lead to an increase in biofuel prices on domestic market.

It would be purposeful to increase by 2010 the wind energy based electricity production to ca 3.3% of brutto electricity consumption. The actual growth of wind station capacity depends on the implementation of benefits (obligation to purchase and a higher purchase price), flow capacity of the electricity network in windy regions and on the existence of regulative capacity of the entire electricity system.

Narva Hydroelectric Power Station (capacity 125 MW), which currently entirely belongs to Russia helps to cover the shortcomings of the Estonian electricity system. According to international traditions a border river resource should be shared between the states proportionally to the division of the water intake. On this basis it should be possible for Estonia to claim about 1/3 of the Narva Hydroelectric Power Station capacity.

Our recommendations in terms of measures aimed at reducing the necessity of constructing gas turbines:

- to consider the common use of the border river Narva resources with Russia;
- to increase the flow capacity of the power cable between Estonia and Finland;
- to support the construction of a power cable between Latvia and Sweden;
- to support the construction of electricity connections between Lithuania and Poland, and Poland and Sweden.

c) *Contracts with Russia concerning electricity.* Many contracts (agreements relative to network voltage balancing, purchasing electric energy to cover peak loads, the use of Narva reservoir etc.) have been concluded between AS *Eesti Energia* and the *United Energy Systems of the Russian Federation*. With the opening of the electric energy market AS *Eesti Energia* will transform into one electricity producer amongst many others and will not have the obligation of representing the state energy policy. Thus, the above-mentioned agreements should in the interest of Estonia's energy security be concluded at the state level.

2.3.6 Heat production

In terms of producing heat from renewable energy sources Estonia has had good experiences with biofuels. We can recommend the use of bio fuels as a substitute for natural gas only if the economical situation changes or on the prerequisite of implementing subsidies which would create a basis for expanding the biofuels resource by cultivating energy scrub and expanding biomass.

3. WHAT ARE ESTONIA'S INTERESTS IN CONNECTION WITH THE COMMON ENERGY POLICY AND THE ENERGY MARKET OF THE EUROPEAN UNION?

3.1 State of affairs

As a EU Member State Estonia has certain obligations relative to the energy sector arising from the accession treaty and Community legislation. At the same time it enjoys a whole range of new opportunities, in particular in terms of international cooperation and programmes designed to support the development of the sector. The interests of Estonia are affected by the energy policy of the European Union, its links with the environmental policy and the EU relations with Russia in the field of energy.

3.1.1 Duties arising from membership status

a) *Energy production.* Estonia already assumed duties concerning energy sector during the accession process to the European Union, proceeding from the 2001 „2001-2006 Action Plan for Restructuring Estonia's Oil Shale Energy" which provided among other things for increasing the efficiency of electric power production and decrease of harmful effects of mining and burning oil shale[34].

   All functioning energy blocks of the *Eesti Elektrijaam* were fitted at the end of 2002 with up-to-date electric filters for catching fly ash[35].

   In order to improve the efficiency of electric power production, two 215 MW energy blocks of the *Eesti Elektrijaam* and the *Balti Elektrijaam* were renovated by 2004. The renovation improved the environmental-friendliness of electric power production from oil shale. Increased efficiency of energy blocks decreased the fuel consumption per block per year by nearly one fifths, as well as considerably reducing the amount of atmospheric emissions. Pursuant to the energy sector development plan, another 2 blocks should be completed in Narva power stations in 2010 and further 3 blocks in 2015. In addition, Ahtme power station is to be renovated in 2010 and Kohtla-Järve station in 2015.[36]

b) *Liberalisation of energy markets* In the European Union the complete opening of energy markets was provided with the 2003 internal electricity and gas market directive. Only its provisions on electricity apply to Estonia, as the liquid fuel market has been opened a long time ago and the natural gas market will open completely by 1 July 2007, pursuant to the Natural Gas Act (at the moment, the market has not been opened with regard to household consumers). Pursuant to European Union Accession Treaty, at least one third of Estonia's electricity market must be opened by the end of 2008 at the latest. The electricity market will be opened to all consumers by the end of 2012 at the latest.[37]

c) *Strategic fuel stocks.* Strong dependency of Community on external liquid fuel and gas sources (Russia, North-African and Middle Eastern countries) poses a risk to the economies of Member States. More than 70% of liquid fuels consumed in the European Union is imported and the forecasts show that dependency on imported liquid fuels might

[34] 2002-2003 Action Plan of the Government of the Republic for the Integration into the European Union, State Chancellery European Integration Bureau, Tallinn 2002, part II, p. 8.
[35] Ibid., p. 9
[36] Ibid., p. 26
[37] Ibid., p. 16

reach 90% by 2020. Accordingly it is deemed necessary to implement measures to ensure uninterrupted energy supply to Member States also in a situation of external supply difficulties. For this reason, every Member State must have collected a minimum liquid fuel stock, corresponding to at least 90 days' combined average quantity of national consumption of the relevant fuel in the preceding year. Estonia was obliged to gradually form liquid fuel stocks, reaching the required level by the year 2010.

d) *Renewable fuels.* In 2001 the European Union adopted the Directive 2001/77/EC on Electricity Production from Renewable Energy Sources, according to which the so-called green energy production in the year 2010 must make up 22% of the total electricity consumption in the Community.
Since the transport sector is responsible for a considerable percentage of the EU energy consumption, EU Directive 2003/30/EC obliges the Member States to ensure the increase of the share of biofuels used in transport to 5,75% by the end of 2010. EU Energy Taxation Directive enables the biofuels to be taxed on the basis of a lower excise duty. Estonia has confirmed its commitment to follow through.[38]

e) *Support programmes.* A range of support programmes and financing mechanisms, concentrated into research and development framework programmes, have been created to achieve the objectives of the EU energy policy, above all in the use of renewable energy sources and energy conservation. The programme currently in force is the 6th, for the years 2002-2006. The 7th framework programme will comprise the financial years 2007-2013. Estonia participates actively in the general programme "Intelligent Energy for Europe", which consolidates many earlier sub-programmes.[39]
Estonia might also be interested in a sub-programme concerned with energy efficient renovation of old, mainly public buildings and council housing, and construction of new energy efficient buildings. Assistance may also be applied for to elaborate energy calculation methods, measure and certify energy consumption of buildings, train experts.

f) *Environmental protection.* Proceeding from the EU Directive 2003/96/EC, the environment use remuneration and pollution charges will be reorganised on the following principles:
- charges imposed on energy sector, based on environmental impact, are directed back to the modernisation of the energy sector and alleviation of environmental problems;
- tax rates of energy carriers must direct the consumers and the producers to using energy carriers preferred by the state, and favour a more efficient use of energy.

A new taxation system for 2008 regulating energy sector and environment is being elaborated in Estonia, whereby heating will be taxed according to the fuel used. In the case of electricity, as well, the fuel used in production and the amount consumed would come under taxation. In both cases the fuels will be taxed on the basis of their carbon content.[40]

In addition to decreasing atmospheric emissions, more attention should be paid to alleviating the environmental impact of solid waste from oil shale energy production. Pursuant to the Accession Treaty, the EU Directive 1999/31/EC on the landfill of waste will be fully implemented as of 17 July 2009, which means that oil shale ashes can no longer be landfilled in a way not complying with the requirements.[41]

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[38] Long-term National Development Plan for Fuel and Energy Sector until the Year 2015, RTI, 23.12.2004, p.23
[39] http://www.mkm.ee/index.php?id=8079
[40] Long-term National Development Plan for Fuel and Energy Sector until the Year 2015, RTI, 23.12.2004, p.34
[41] Keskkonnanõuete mõju Eesti elektriturule ning elektri tootmishinnale aastatel 2005-2015 (Impact of Environmental Requirements on Estonia's Electricity Market and Production Price of Electricity in 2005-2015), Tallinn Technical University, Estonian Institute of Economics, research report, Tallinn 2004, p.9

From 2010 onwards, pursuant to the EU Directive 2001/80/EC on the limitation of emissions of certain pollutants into the air from large combustion plants, the limit of 25,000 tons will be imposed on the SO_2 levels of oil shale electric power stations, which constitutes a direct and, compared to restrictions imposed on the emission of other pollutants, primary restriction to electricity production.[42]

A solution must also be found for landfilling the so-called semi-coke, a by-product of thermal treatment of oil shale, as well as reducing the atmospheric emission of sulphur compounds present in producer gases.[43]

The duty to limit air pollution also proceeds from the Kyoto Protocol, which Estonia ratified in 1997, assuming the commitment to voluntarily reduce, between 2008 and 2012, emissions of greenhouse gases by 8%, compared to the year 1990. For Estonia, this means the requirement to limit, by 2012, the summary emissions to 34,2 M tons a year.[44] The actual level of emissions is around half of the 1990 level and *AS Eesti Energia* made EEK 97 M in 2005 and EEK 1,1 bln in 2006 from the sale of the so-called pollution quotas.[45]

3.1.2 Energy policy of the European Union

The European Union founding treaties do not include provisions directly regulating the energy sector, as the Member States have not entrusted supranational institutions with managing the energy sector. In order to achieve the common objectives in the energy sector, the principles of the Treaty establishing the European Community and Community policies are therefore followed, applying the principle of free movement of merchandise, as well as provisions on competition, taxation and harmonisation of legislation on the energy sector. In addition, goals of environmental policy and consumer protection requirements of the Community must also be taken into account.

The green paper of the European Commission "A European Strategy for Sustainable, Competitive and Secure Energy", published in March 2006, admits the inter-dependency of the world's economic areas in ensuring security of energy supply, and states the need to cooperate on the international level in the context of increased demand, high and fluctuating energy prices, increased dependency on import, and global warming.

The green paper defines six priority fields:

- creating a competitive internal market;ensuring solidarity on the internal market;
- increasing the diversity of energy sources;
- combating global warming;
- implementing more competitive energy technologies;
- elaborating a coherent foreign policy in issues of energy.[46]

a) *Internal market.* According to the plan, a competitive internal market should evolve out of interconnection of energy networks, enforcement of the rules of energy network, establishment of a supranational body regulating the energy market and initiatives meant to create equal opportunities. Estonia must observe in this context that the opening of markets does not weaken the position of the countries whose energy sector depends on a monopoly provider and who have no energy connections to the EU energy networks.

[42] Ibid.
[43] Estonian Electricity Sector Development Plan 2005-2015, Regulation No. 5 of the Government of the Republic of 3 January 2006, p. 27
[44] Long-term National Development Plan for Fuel and Energy Sector until the Year 2015, RTI, 23.12.2004, p. 35
[45] „Eesti Energia Made Record Profits", Postimees 25.4.2006
[46] http://ec.europa.eu/energy/green-paper-energy/doc/2006_03_08_gp_document_et.pdf

b) *Solidarity*. A European Energy Supply Surveillance Centre is planned and existing Community legislation on oil and gas stocks reviewed to ensure the solidarity of the Member States and minimise the impact of provision failures.

Many Member States, lead by Great Britain, doubt the need to establish strategic gas stocks, considering it a market distorting measure.[47]

c) *Diversification of the use of energy sources.* Member States are encouraged to diversify energy sources in the interests of a stabile energy supply. Impact on neighbouring countries arising from the choices made by Member States are to be minimised through a strategic outline of Community energy policy analysing energy-related issues and energy sources, and establishing common objectives on the EU level on this basis, stipulating the general proportional share of different energy sources. At the same time, there is no definition of the framework and objectives of the strategic overview, which creates uncertainty in planning investments and makes it necessary to conduct yearly negotiations on provisions of the common energy policy.[48]

d) *Global warming*. The first step is to create an energy efficiency action plan, with the goal to consume a fifth less of energy in 2020 compared to the amount consumed in the Community today. The second step is to elaborate the 2020 renewable energy sources action plan, analysing the ways to improve competitiveness of renewable energy and make the necessary investments.

e) *Energy technology.* The European Commission must launch a strategic action plan for introducing new and competitive technologies via joint enterprises. Central and Eastern European Countries have the possibility to apply for the EU assistance from the Research and Development framework programmes for developing new, environmentally more sustainable technologies.

In addition to energy related programmes, the EU plans to participate in research programmes carried out by the Member States. Up to now, the activities of the Member States and the Community have followed parallel paths, failing to form a coherent whole. However, the European Union has set itself the objective of creating a common European research area. Such a borderless area allows the research potential to be used more efficiently, with the hoped result of improving European competitiveness.

f) *Foreign relations on the field of energy.* The European Union needs harmonious foreign policy action for protecting its energy interests on the international level. For this purpose, delivery security priorities are to be agreed upon, a Community mechanism for reacting in a co-ordinated way to outside energy crises is to be elaborated and a common approach to EU external energy providers is to be achieved in the context of increased interdependency.

The Council of the European Union report on foreign relations of the Community on the field of energy nevertheless stresses the need for a differential approach to energy exporter countries: thus, strategic partnership in the field of energy with Norway and Algeria is to be continues, bilateral cooperation agreements are to be concluded with North-African, Caspian, Central Asian and Middle Eastern countries, while a complete integration of energy markets is envisaged regarding Russia.[49]

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[47] http://www.parliament.uk/documents/upload/Centrica written ev 18 April 2006.doc

[48] http://www.parliament.uk/documents/upload/Centrica written ev 18 April 2006.doc

[49] Council of European Union and the Secretary-General/High Representative joint report 9971/06 "An external policy to serve Europe's energy interests", Brussels, 30 May 2006, http://register.consilium.europa.eu/pdf/en/06/st09/st09971.en06.pdf

3.1.3 Energy dialogue between the European Union and Russia

The European Commission estimates that the dependency of the Union on energy import will increase from the present 50% to nearly 70% during the next 25 years. The majority of this is made up by natural gas whose import might increase to 80%.[50]

Considerable dependency on energy import has added value to the relations between the EU and Russia – one of the leading oil and natural gas exporters in the world. Western Europe has bought Russian oil and natural gas since the USSR days. From the EU perspective, Russia is an important alternative to the even more unstable Middle East.

The EU-Russian energy dialogue was launched on 30 October 2000 when the EU-Russian summit in Paris agreed to start discussing strategic partnership in the field of energy. Despite numerous meetings no concrete results have been reached: Russia has not agreed to ratify the Energy Charter Treaty – a precondition of cooperation set by the European Union – nor to join the so-called Transit Protocol. Some of the provisions in the named documents, such as the increase of energy prices on Russia's internal market and transit of energy from Central Asian countries, were resolved at the EU-Russian negotiations over the WTO accession conditions of Russia.

In 2005, the European Union (so-called EU25) imported from Russia ca 50% of imported gas and 30% of oil. 80% of Russia's oil export and 60% of gas export enters the European Union. The share of Russian gas deliveries in 2003 is presented in Table 2 country by country.

Table 2. Russian gas deliveries to European countries in 2003. Source: Robert L. Larsson, "Russia's Energy Policy: Security Dimensions and Russia's Reliability as Energy Supplier", Swedish Defence Research Agency, Stockholm, March 2006, p. 179

Country	**% of total import**	**% of total gas consumption**
Austria	77	65
Netherlands	17	6
Italy	32	26
Greece	76	76
France	24	23
Germany	37	33
Finland	100	100
European Union (15 countries)	**28**	**18**
Poland	85	58
Romania	91	29
Slovakia	100	97
Slovenia	60	60
Czech Republic	74	73
Hungary	86	66
Central and Eastern European Countries (12 countries)	**87**	**60**

[50] http://ec.europa.eu/energy/green-paper-energy/doc/2006_03_08_gp_document_et.pdf

According to the International Energy Agency (IEA), in 2004 the share of Russian gas deliveries increased to 74% of total gas consumption in Austria, 30% in Italy, 81% in Greece, 26% in France, 39% in Germany and 63% in Turkey. In Eastern Europe, the importance of Russian gas increased the most in Slovakia – to 100% of the total gas consumption.[51]

Although many Central and Eastern European Countries are not critically dependent on Russian energy deliveries (e.g. Poland and the Czech Republic have coal, Estonia oil shale deposits, etc.), accession of new Member States into the European Union considerably increased the dependency of the European Union as a whole on Russian energy deliveries (cf. Figure 9).

Despite the stability of energy deliveries, the EU is in doubts about the political dependability and delivery capacity of Russia. The EU-Russian relations are tinted with a deepening mutual distrust, which in its turn obliges the parties to seek new cooperation partners.[52]

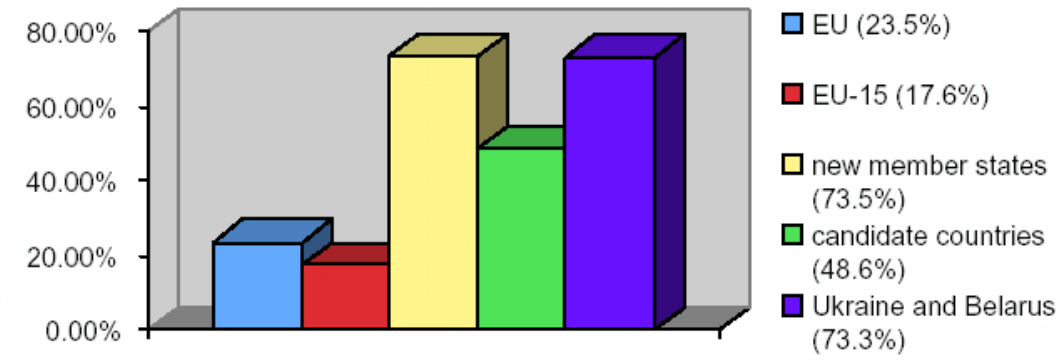

Figure 9. Dependancy on import of Russian natural gas on 2003.
Source: Agata Loskot, Security of Russian Gas Supplies to the EU -the Question of Infrastructural Connections, Centre for Eastern Studies, February 2005, http://www.osw.waw.pl/en/epub/epunkt/2005/02/gas.htm

a) *Political problems.* As concerns its relations with Russia in the field of energy, the European Union proceeds from the position that the best way to ensure stable energy deliveries is to extend the internal market rules of the Community to include Russia.[53] It is the objective of the Union to guarantee a better fulfilment of the Community's growing energy needs by abolishing monopolies in Russia's energy sector and by opening it up to international capital.

With this, the EU hopes to anticipate price cartels and politisation, open Russia's pipelines to energy deliveries from Central Asia and the Caspian region, and improve the efficiency of domestic consumption in Russia.

From the Russian point of view such an approach is narrow-minded because Russia sees the acceptance of the EU *acquis* – the only possible basis for creating an integrated energy market and establishing good relations – as assuming a shared identity with the West. This is something the Member States of the Union, particularly the Central and Eastern European Countries, do not wish.

[51] http://news.bbc.co.uk/go/pr/fr/-/1/hi/world/europe/4578350.stm
[52] Andrew Monaghan, Russia-EU Relations: an Emerging Energy Security Dilemma, Pro et Contra, Vol. 10, Issue 2-3, Summer 2006, Carnegie Moscow Center, p. 2
[53] Vjatšeslav Morozov, Energy Dialogue and the Future of Russia: Politics and Economics in the Struggle for Europe, to appear in Pami Aalto (ed.) The EU-Russian Energy Dialogue: Securing Europe's Future Energy Supply, Aldershot: Ashgate, 2007 (to be published soon)

In reality, the parties view each other as separate units that are geopolitically destined to compete[54]. Unlike small CEECs Russia considers itself an independent centre of force and influence in the world, with global competition raging over its energy supplies. Russian energy carriers attract USA, China and India.

Despite pressure from the EU, Russia has not given up the strategic control over energy production and export. At the WTO accession negotiations, the Union could not force Russia to open its pipelines to Central Asian natural gas exporters[55].

The state control over Russia's energy production increases the risk of investors to have the enterprises they participate in used for political goals or in a way damaging their economic interests. Russian-Ukrainian conflict of winter 2005 over gas deliveries showed that such fears are justified. Russia's dependability as an energy exporter is eroded by its increasing state controlled energy sector and exploitation of energy deliveries for political goals.

Assistant Professor Vyacheslav Morosov of the Institute of International Relations of the St. Petersburg University sees the cause of political differences between the Union and Russia in the fact that the Union is trying to force Russia into conditional frames without understanding Russia's global ambitions – its wish to lead the world energy market with the aim to regain its position among the great powers of the world.[56]

b) *Interdependency.* The European Union is the most important trade partner for Russia: in 2005, 52% of Russia's import went to the Union, with 67% of it made up of energy deliveries.[57] But Russia is not the only energy provider for the EU Member States. The Community is sufficiently wealthy to ensure energy deliveries from many exporters, such as North Africa and Middle East in addition to Russia. Oil deliveries into the Union are shown according to the country of origin and quantity in Tables 3 and 4, respectively.

   Although the demand for natural gas is increasing in the Union, the increase in demand for oil products has halted. While the EU consumed 3,8 M barrels of motor fuel a day in 1994, by 2004 the consumption had fallen to 3,5 M barrels a day, with the corresponding figures for fuel oil being 1,95 and 1,65 M barrels a day.[58] The decrease in demand has lessened Russia's importance as a provider of oil products. In 1999 the EU imported 16% of the consumed oil from Russia, in 2004 only 14%. Although the importance of the Union has almost doubled in the total export of Russian oil products since 1991, the importance of Russia in total import of the EU has not increased during the same period. Researcher Andrew Monaghan of the Conflict Studies Research Centre of the Defence Academy of the United Kingdom draws the conclusion that Russia depends more of the EU market that the EU of Russia's energy deliveries.[59]

c) *Delivery problems.* Russia's gas deposits are estimated to reach 47 trillion m^3 (a quarter of global deposits) and oil deposits to 100 bln barrels.[60] The actual size of the deposits is unknown.

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[54] Ibid.
[55] Ibid.
[56] Vjatšeslav Morozov, Energy Dialogue and the Future of Russia: Politics and Economics in the Struggle for Europe, to appear in Pami Aalto (ed.) The EU-Russian Energy Dialogue: Securing Europe's Future Energy Supply, Aldershot: Ashgate, 2007 (to be published soon).
[57] Vjatšeslav Morozov, Energy and Russian Foreign Policy: A New National Idea?, report in University of Tartu, EuroCollege, April 2006
[58] Andrew Monaghan, Russia-EU Relations: an Emerging Energy Security Dilemma, Pro et Contra, Vol. 10, Issue 2-3, Summer 2006, Carnegie Moscow Center, p. 5
[59] Ibid.
[60] John D. Grace, Russian Oil Supplies: Performance and Prospects, Oxford 2005, p. 213

Russia's delivery capacity is viewed with concern by the European Union. Firstly because oil and natural gas are drawn from large deposits whose stocks are decreasing in productivity. Secondly because huge investments are necessary for starting the exploitation of new depositories and the revenue from selling Russian energy is not sufficient to cover this.[61]

Table 3. Import of crude oil into the European Union (EL15), M tons.
Source: OECD

Country of origin	**2000**	**2002**	**2003**	**2004**	**Share 2004 (%)**
Former USSR	89,5	123,2	140,7	158,5	30,8
Norway	114,8	101,6	104,6	104,0	20,2
Saudi-Arabia	65,1	53,1	61,5	66,1	12,9
Libya	45,5	38,8	45,7	49,6	9,7
Iran	35,5	25,9	34,7	35,9	7,0
Middle-East	13,1	19,6	11,7	9,0	1,7
Other	121,5	110,7	94,5	91,0	17,7
Total	**485,0**	**472,9**	**493,5**	**513,9**	**100,0**

Table 4. Import of natural gas into the European Union (EL15), bln m^3.
Source: OECD

Country of origin	**2000**	**2002**	**2003**	**2004**	**Share 2004 (%)**
Russia	78,5	68,8	74,2	76,7	32,5
Norway	46,7	61,3	66,7	67,2	28,5
Algeria	56,6	53,1	52,1	49,9	21,2
Nigeria	4,3	6,3	8,7	10,5	4,5
Qatar	0,3	2,1	1,9	3,8	1,6
Other	8,7	18,8	20,4	27,6	11,8
Total	**195,0**	**210,6**	**223,9**	**235,7**	**100,0**

According to the International Energy Agency (IEA) Russia needs nearly a trillion dollars during the next 25 years for maintaining and developing Russia's energy sector infrastructure.[62] This is caused by the geographic position of depositories: difficult climatic conditions and distance from the consumers. These factors increase production costs in Russia as compared to other oil producers: thus, in Middle East the production of a barrel of oil costs 1-1.5 dollars, while in Russia it costs around 12-14 dollars.[63] Transport capacities are another inadequate factor which does not correspond to the expectations of energy producers. Discords between private enterprises and state monopolies has hindered the construction of new pipelines and modernisation of existing ones.

[61] Andrew Monaghan, Russia-EU Relations: an Emerging Energy Security Dilemma, Pro et Contra, Vol. 10, Issue 2-3, Summer 2006, Carnegie Moscow Center, p. 8
[62] www.iea.org/textbase/papers/2005russia.pdf
[63] Ibid

According to A. Monaghan the present structure of Russian energy sector does not allow smaller enterprises to spring up beside the big production companies to start exploit smaller oil depositories or export natural gas produced as by-product of oil production[64].

3.2. Risks

Possible risks to be taken into account are the impact of the EU on Estonia's energy sector, which might jeopardise Estonia's security interests, lack of common energy policy in the Union, Russia's bilateral relations with Member States of the Community and Russia's relations with other oil and gas exporter countries.

3.2.1 Impact of the European Union on Estonia's energy sector

Estonia's energy sector feels the impact of the Community requirement to open the electricity market and minimise environmental damage caused by energy production.

a) *Opening of the electricity market.* Considering the tight links between Estonia's and Russia's electricity systems, the opening of the electricity market brings along the threat of becoming dependent from Russian electricity because the age and the environmental restrictions of Estonia's power stations contribute to causing a great deficit in the production of electricity in ten years time. The Electricity Sector Development Plan predicts that only 25-30 % of the current electricity production capacity will still be available in 2016[65]. This deficit cannot be compensated for even with the underwater power cable between Estonia and Finland.

   Estonia's electricity system allows for an important part of the needed electricity to be imported from Russia, but as different environmental and nuclear safety requirements apply to Russian producers and the EU producers, the Russian producers enjoy a marked advantage. Furthermore, energy carriers (oil, natural gas, coal) are priced lower on the Russian domestic market than in the EU. Competitive advantages of Russian producers and Estonia's connectedness to Russia's electricity networks would increase our dependency in the field of energy. The fact that electricity is imported from only one country cannot be considered a means for ensuring sustainable electricity supply[66].

b) *Environmental requirements.* Pursuant to the Accession Treaty, the EU Directive 1999/31/EC on the landfill of waste will be fully implemented as of 17 July 2009, which means that oil shale ashes can no longer be landfilled in a way not complying with the requirements. Although Estonia committed in the Accession Treaty to gradually discontinue landfilling oil shale ashes in a way not complying with the requirements, this commitment has not been fulfilled (thus, in 2003, nearly twice the allowed amount of ashes was landfilled), due to the lack of the necessary technology[67].

   When the Directive is implemented in full and Estonia has not fulfilled the assumed commitments (the new landfilling technology must be introduced by 15 September 2009 at the latest), this may result in an abrupt increase of the electricity price and problems in continuing the production of oil shale electricity[68].

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[64] Andrew Monaghan, Russia-EU Relations: an Emerging Energy Security Dilemma, Pro et Contra, Vol. 10, Issue 2-3, Summer 2006, Carnegie Moscow Center, p. 5

[65] Estonian Electricity Sector Development Plan, Regulation No. 5 of the Government of the Republic of 3 January 2006

[66] Ibid

[67] Keskkonnanõuete mõju Eesti elektriturule ning elektri tootmishinnale aastatel 2005 – 2015, (Impact of Environmental Requirements on Estonia's Electricity Market and Production Price of Electricity in 2005-2015), Tallinn Technical University, Estonian Institute of Economics, Tallinn 2004

[68] Ibid

3.2.2 Lack of common energy policy in the European Union

Lack of common and coherent energy policy in the EU clearly reflects the differences between the energy strategies of the Member States. This creates a vicious circle, because without a common policy the Members States must look for possibilities to protect their interests on their own. At the same time, the Member States have not entrusted to the European Commission the competence to represent their common interests[69].

By emphasising the energy security of Western European countries, the interests of the new Members States have been ignored completely. While elaborating the guidelines of the common energy policy of the Community, the European Commission has not taken into account the close ties between the Baltic and the Russian energy systems, and their remoteness from the energy systems of the EU[70]. Yet the inclusion of the interests of the Baltic states would strengthen the energy security of the rest of Europe.

3.2.3 Russia's relations with individual Member States of the European Union

The leitmotif of Russia's relations with individual Member States of the Community (Germany, France, Italy) is ignoring common interests of the European Union for the benefit of bilateral agreements. These countries have close energy ties with Russia ever since the USSR days, but despite this long tradition the Member States are not protected against delivery interruptions when Russia has decided to stop deliveries to a certain transit country, as happened with Ukraine in winter 2005[71].

With bilateral relations Russia has managed to create competition between countries on joining the planned Northern European gas pipeline. This factor contributes to further impeding the attaining of a consensus in elaborating the EU energy policy.

Bilateral relations open opportunities for Russia to manoeuvre in relations with the EU by taking advantage of discords between individual Member States and the European Commission.

3.2.4 Russia's relations with other oil and natural gas exporter countries

It is in Russia's interests to keep oil and natural gas prices stable and as high as possible (2 % of the 7 % economic growth was due to raw materials export, while export of energy carriers makes up more than a half of Russia's total export[72]). Russia's increased income, due to oil and gas revenue, enabled it to pay off the lion's share of its foreign debt to the so-called Paris Club.

Russia needs a steady income from the export of energy carriers also in the interests of economic stability, because in 2005 the import increased three times faster than the 5,6 % export growth. According to Vyatcheslav Morozov this might lead to trade deficit in the near future, with the exact date of this crisis to be determined by changes in oil and gas prices[73].

In their attempts to stabilise the energy prices, Russian gas and oil enterprises are looking for cartel agreements with energy producers from other countries. In March this year, Gazprom

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69 Guillaume Durand, Gas and electricity in Europe: the elusive common interest, European Policy Centre, policy brief, May 2006

70 Robert L. Larsson, "Russia's Energy Policy: Security Dimensions and Russia's Reliability as Energy Supplier", Swedish Defence Research Agency, Stockholm, March 2006, p. 183

71 Ibid., p. 3

72 Ibid. pp. 33-34

73 Vjatšeslav Morozov, Energy and Russian Foreign Policy: A New National Idea?, report in University of Tartu, EuroCollege, April 2006

concluded an agreement with Sonatrach, the biggest gas producer of Algeria. Algerian press described this as the first step in launching a powerful energy cooperation which will provide all the tools for forcing concessions out of the European Union[74]. Experts are warning against the same kind of agreements between Russia and Iran[75].

The possibility to conclude cartel agreements is the main reason why Russia needs access to the gas distribution networks of the EU Member States for its enterprises and why it is willing to construct new pipelines to bigger consumers. This is all in the name of controlling the demand and keeping the alternative energy projects as expensive as possible through pricing policy.

3.3 Recommendations

3.3.1 Support to the formation of the common energy policy of the European Union

It is in Estonia's best interests to support the elaboration of a common and coherent EU energy policy and its linking to the Common Foreign and Security Policy (CFSP). The foreign relations of the Community need to include an energy component because any other situation would not enable to represent the common interests of Member States in relations with Russia or other countries and enterprises exporting energy[76].

It is in Estonia's best interests to prevent situations where energy exporter countries, incl. Russia, can use the energy sector for exuding pressure on international relations.

It is in Estonia's best interests to stress the principle of solidarity in the common energy policy shaped by the European Union and to support energy projects that are not based on solely business considerations.

It is in Estonia's best interests to be an equal partner to Russia at negotiations. This can only be possible through the cooperation of European countries and by expanding the authority of the European Commission.

3.3.2 Connection of Estonian energy networks to the European Union networks

The European Commission will present, by the end of this year, the priorities for interconnecting European energy networks, the basis for filling in the missing links, to promote coherence of regional energy markets, ensure the development of Community energy market and guarantee delivery security.

It is in Estonia's best interests to draw attention to the Baltic states, who are far removed from the EU energy market, and to the protection of their interests in shaping the listed priorities, as Estonia's, Latvia's and Lithuania's energy would be better secured if the Baltic electricity networks would be connected to the EU networks via the Union for the Co-ordination of Transmission of Electricity (UCTE) and the Organisation for the Nordic Power Cooperation NORDEL. Natural gas systems should also be connected.

It is in Estonia's best interests to support the completion of the Polish-Lithuanian energy connection as an important link in creating the so-called Baltic Energy Circle.

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74 C. Mortishead, Algerians and Russians in Gas Talks, The Times, 24 April 2006

75 Claus Dietwald, Getting a Grip on Gas: The possibility of a Russian-Iranian Gas Cartel for Europe, 8 June 2006, JRL 2006-133 #31

76 Raul Mälk, Energiajulgeolek: hunt ikkagi tuli metsast, Diplomaatia No 1(28) January 2006

3.3.3 Impact of the European Union on Estonia's energy sector

a) *Opening of the electricity market.* Opening of the electricity market presupposes the presence of several equal producers, as the lack of competition would mean that the dominant producer can determine the price of the product offered. Estonia must stay clear of the situation where external electricity producers who use market distorting competitive advantages weaken Estonia's supply security. The underwater power cable between Estonia and Finland will allow electricity to be exported and imported but it does not ensure the stability of the Estonian electricity system, as can only be done by Russian power stations. Estonia has previously limited its electricity purchases from Russia (compensating only the deficits from covering peak loads) proceeding from the reciprocity principle and based on the difference of environmental and pricing principles in energy production. It is in Estonia's best interests to continue this practice and to solicit relevant political support from the European Union.

b) *Environmental requirements. AS Eesti Energia* has developed a preliminary schedule for organising the landfill of bottom ash from *AS Narva Elektrijaamad*, referring to the elaboration of the plan and the project for closing down *Eesti Elektrijaam* and *Balti Elektrijaam* landfills. *AS Eesti Energia* has not kept in schedule because of lack of technology complying with the requirements.

   It is in Estonia's best interests to avoid situations where *AS Eesti Energia* can use the lack of technology as an excuse to forgo its duties to landfill oil shale ash, or where production of electricity from oil shale would be jeopardised because of neglecting duties stipulated in the Accession Treaty or through the EU sanctions.

3.3.4 Permitted Greenhouse Gas Emissions

Countries who acceded to the 11 December 1997 Kyoto Protocol of the Framework Convention on Climate Change voluntarily assumed the commitment to reduce between 2008-2012 the emissions of greenhouse gases by 5% compared to the year 1990. Estonia ratified the Kyoto Protocol on 14 October 2002 by assuming the commitment to reduce emissions of greenhouse gases by 8 %.

The valid Kyoto agreement is in force until 2012. Negotiations on further reduction of emissions lie ahead.

It is in Estonia's best interests to keep 1990 as the reference year, as the remarkable reduction in atmospheric emissions started in Estonia towards the end of the 1980s as a result of a significant economic slump. Estonia's economy has picked up considerably over the recent years, but we need supplementary investments to develop a sustainable energy sector, and one possible source of revenue is the sale of the quota of greenhouse gasses emissions.