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Liquefied natural gas in the world and Lithuanian perspective

Dalius Tarvydas,

Ramūnas Gatautis

Lithuanian Energy Institute,
Breslaujos g. 3, LT-44403 Kaunas,
Lithuania,
e-mail: gata@mail.lei.lt

The Lithuanian energy sector is very dependent on Russia: the power system of the Baltic States works in parallel with the Russian North-western power system and currently has no possibility to work separately; oil for the refinery is mainly imported through Russian oil pipelines; nuclear fuel is imported from Russia only; Lithuania has a single natural gas supplier which is Gazprom. Supply of natural gas can be limited or stopped at all in the case of some technical or political troubles.

These circumstances make Lithuania very vulnerable from the energy security point of view.

A liquefied natural gas (LNG) import terminal can be an alternative possibility for Lithuanian gas consumers – industry, electricity and heat producers. Is such LNG import terminal affordable for the Lithuanian energy sector?

The article presents a description of the LNG industry boom in the world fuel market in the past decade. Scenarios of the possibility to construct an LNG terminal on the Lithuanian coast is analyzed. A preliminary price calculation of natural gas imported through an LNG terminal is presented.

Key words: liquefied natural gas, import terminal, investment amount, LNG price in Lithuania

1. WHAT IS LNG?

Liquefied natural gas (LNG) is odorless, colorless, nontoxic, noncorrosive natural gas consisting almost entirely of methane (CH_4). LNG is kept at –161 ˚C at a pressure similar to atmospheric.

LNG has long been less popular than other, more traditional energy carriers. This situation arose due to a higher capital intensity along the whole LNG supply chain in comparison to natural gas transported by means of pipes. LNG was used only in the cases when gas fields were too far from consumers and building gas pipe networks was economically unreasonable.

Being not physically bonded to gas source, LNG supply chain increases supply diversification and provides increased security of supply. It is particularly relevant for the EU member states: according to forecast, 3/4 of gas consumption will be covered by imports in 2020 [1].

Over the last several years the situation has changed dramatically. Due to the progress in the technological development of LNG technologies (liquefaction, transportation and evaporation) the costs decreased considerably. On the other hand, the increase of natural gas price made LNG option more economically attractive: the bonuses paid for liquefaction–transportation–re-gasification contributed a lower and lower percentage of the final price, making possible to import LNG even from distant places. Appearance in the market of Freelance LNG tankers will help to increase competition and decrease prices in the future.

Historically, LNG projects were planned as whole supply chains starting with gas extraction and liquefaction and ending with degasification and consumption. In the early stages of LNG development, hardware costs were high, demand was low, and in order to achieve a high load factor (and make profit), it was necessary to have the whole chain under the same contract [2]. As a rule, a lifetime of LNG chain was planned for 20–25 years.

Currently, due to the fast development of LNG industry, a constantly increasing number of ships, import and export terminals, the role of full chain LNG projects is gradually decreasing. Therefore the market is getting more and more “liquid” and LNG supplies tend to have some extra non-contracted capacities which could be rerouted to the highest bidder. Consumers also have a possibility to choose the supplier at a lowest price in the market.

The global LNG markets can be divided into two main categories: a) Atlantic (Belgium, France, Italy, Spain, Portugal, Greece, Turkey and USA; b) Eastern Asia (India, Japan, South Korea, Taiwan, and China).

Losses in the LNG chain can be around 10–15%, depending on the liquefaction and regasification technology, transportation distances.

2. LNG IN THE WORLD

Natural gas could be transported by ships in the case when gas fields are far away from its consumers and/or construction of gas pipes is economically unreasonable.

2.1. Terminals

In the export terminals, natural gas is liquefied and loaded into ships. There where 34 export terminals in 15 countries in 2004. The total capacity of these terminals amounts to 197 Mt/year. Biggest exporters were Indonesia (29 Mt/year), Algeria (22 Mt/year), Qatar (25 Mt/year), Malaysia (23 Mt/year), Nigeria (17 Mt/year) and Australia (15 Mt/year). Till 2010 it is planed to build another 32 export terminals with total combined capacity of 236 Mt/year, increasing the number of exporting countries to 21. Biggest additions are planned in Qatar (51 Mt/year), Australia (35 Mt/year) and Nigeria (34 Mt/year). The biggest newcomers into LNG market are planned, such as Iran (39 Mt/year), Bolivia/Peru (11 Mt/year) and Russia (9 Mt/year) [1].

In 2004, there were 57 LNG import terminals in 17 countries with the total capacity of 237 Mt/year. The total volume of LNG tanks in these terminals was around 25 Mm^3. The biggest LNG market is in Asia, its total capacity of import terminals reaching 150 Mt/year and storage tanks 20 Mm^3. The biggest player in this market was Japan with 26 import terminals (capacity 88 Mt/year with 14 Mm^3 storage tanks). In Americas there were only 8 working LNG import terminals in 2004, of them 6 were in USA (total capacity 33 Mt/year with 1.7 Mm^3 storage tanks).

An extensive expansion of LNG import terminals is planned in the next five years. It is expected to build another 61 terminals in the world with the total capacity of 322 Mt/year and 17 Mm^3 storage tanks. More than half of these capacities should be build in the USA (174 Mt/year), some in Asia (81 Mt/year).

2.2. Transport

LNG is transported by water using special tankers – reservoirs. These reservoirs are made of cryogenic steal containing about 9% of nickel which can sustain extremely low temperatures. A specific feature of transporting LNG is cargo combustibility and extremely low temperatures, therefore safety requirements of these ships are extra high.

There were 180 LNG tankers with the total capacity of 21.6 Mm^3 in the world in 2004. The first LNG tanker was built in 1958. The oldest ship designed for LNG transportation and still in operation was built in 1965. Most of the ships built before 1975 have comparatively low capacities (40–70 thousand m^3) and were usually built for other types of cargo and later retrofitted for LNG transportation. Tankers designed specially for LNG transportation were bigger (around 130 000 m^3). Ships built after 1993 are even bigger, ranging from 145 000 m^3 to 210 000 m^3. Recently there were ordered and are in the process of building another 121 LNG tankers with the total capacity of 18 Mm^3. According to forecast, by 2015 the fleet of LNG tankers could consist of 350–400 ships [1].

3. LNG IN EUROPE

Currently there is only one LNG export terminal in Europe, which started operating in 2006 in Norway. The projected capacity of this terminal is 4.2 Mt/year. Natural gas for this terminal will be supplied from three sea deposits, each of which is estimated to contain around 300 Bm^3 of gas.

Eight countries in Europe had import terminals in 2004. Main data on them are shown in Table 1.

Table 1. **LNG import terminals in Europe in 2004 (including Turkey)**

Country	Number of terminals	Capacity	Storage capacity
		Mt/year	k m^3
Belgium	2	11.4	261
France	2	6.1	510
Greece	1	1.6	144
Italy	1	3.5	100
Portugal	1	4	240
Spain	5	16	1160
Turkey	2	8.6	535
United Kingdom	1	3.3	200
Total	15	54.5	3150

By 2010, construction of another 13 import terminals in Europe is planned, with the total capacity of 66 Mt/year and 3.9 Mm^3 storage tanks. Their biggest expansion is planed in the UK (4 terminals with 26 Mt/year capacity) and Italy (5 terminals with 30 Mt/year capacity). Other countries (Cyprus, Poland) are also evaluating LNG import options, but at this point there are no data about the planned capacities.

3.1. Import quantities

Europe is a big player in the natural gas market. The main suppliers in Western and North Europe is Russia, Norway and in the Mediterranean region Algeria. Some European countries have several natural gas suppliers, but others, like the Baltic States, Denmark, Ireland, Slovakia, Romania and Bulgaria, have only one. Some countries have their own gas resources: Austria (23%), Denmark (93%), Germany (18%), Ireland (16%), Italy (18%), Holland (88%), UK (92%), and Hungary (15%). Russian gas is covering about 25% of the total EU gas consumption. The biggest share of Russia falls on the

Baltic States (100%,) Poland (67%), Austria (55%), Hungary (40%), Germany (37%) and Italy (23%).

4. COMPARISON OF LNG AND NG PRICES IN EUROPE

Traditionally prevails the opinion that LNG should always be more expensive than gas supplied through pipe network, and only in the cases when the gas field is more than 3000 km away from consumption LNG may be an economically reasonable alternative. This assumption was shaped in the early stages of LNG development when prices of natural gas were low and the added cost of the LNG chain was high. Currently the situation is somewhat different: on the one hand, natural gas is increasingly getting more and more expensive, on the other hand, the rapid development of LNG industry is decreasing cost in all steps of LNG chain.

Let's compare price dynamics of natural gas supplied by pipes and in the form of LNG in two European countries, Spain and Belgium, over the period 1997–2004. In both cases the import prices were considered as the gas price at export terminal plus insurance and transportation cost. No excise or other taxes were added (CIF price)*. These prices don't include any port taxes, unload or evaporation costs.

Spain is the top LNG importer in Europe. Figure 1 shows import prices in Spain over the period 1997–2004 [4]. It is obvious that LNG price is comparable with piped gas prices and in some cases is even lower.

It should be noted that Spain is importing both LNG and piped natural gas from Algeria. The observed tendency is obvious: the prices of gas imported from Algeria in the last years in both ways are almost identical, and in 2003 LNG was even cheaper. Transportation constitutes part of the final LNG price. Interestingly in the single market LNG price not directly depends on the transportation distance; for example, LNG imported from Australia is very similar in price to gas imported from Saudi Arabia, even when the distance differs several times. This means that the possibility to have several suppliers can reduce the market price of LNG. This may be one of the reasons why Spain has increased the number of LNG suppliers from 4 to 9 in the last five years.

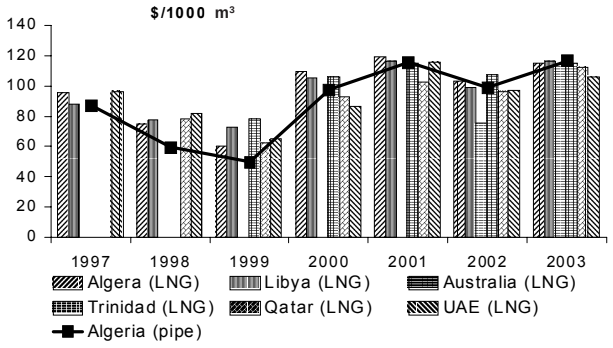

Fig. 1. Natural gas prices in Spain**. Columns are designated for LNG, and curves show natural gas supplied by pipes

The share of LNG in Belgium is considerably smaller than in Spain, but the same tendencies remain (Fig. 2) [4]. The price of gas, independently of the means of transportation, is similar. In the case of Belgium, the price of natural gas imported from Algeria is similar to the price of Norwegian piped gas, but during almost the whole period it was lower than the price of gas imported from the Netherlands.

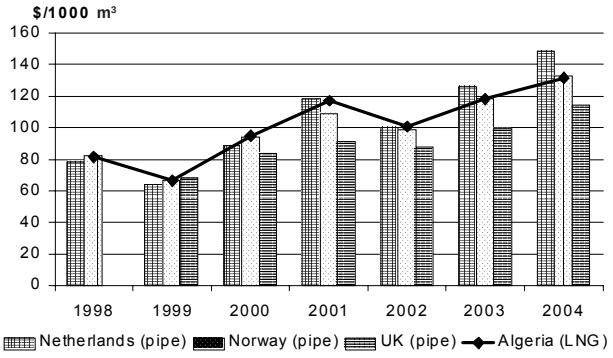

Fig. 2. Price of natural gas in Belgium

In both cases, Spain and Belgium, a similar trend can be observed: there is a direct correlation between the price of natural gas supplied by pipes and LNG. These examples show that prices drop of both LNG and piped gas in years 1999 and 2002, independently of import source. Meanwhile a similar price increase can be observed in 2000–2001 and 2003–2004. From these observations we can draw a conclusion that a correlation between these markets is very high and price changes in the piped gas market directly affect the prices of LNG.

5. LNG AND PIPED NG PRICE DYNAMICS IN THE WORLD

When comparing LNG price dynamics in the world (Fig. 3) [4], it should be noted that LNG import prices in Europe are by 30–40% lower than import prices in the USA or South Korea. One of the reasons for these differences is the geographical position of importing countries. The larger the distance from exporting countries, the higher the average prices in these markets. The main reason for this increase is higher transportation costs.

The data do not include the last year, but tendencies are the same: an increase of natural gas price will

* The CIF price (i.e. cost, insurance and freight price) is the price of a good delivered to the frontier of the importing country, including any insurance and freight charges incurred to that point, or the price of a service delivered to a resident before the payment of any import duties or other taxes on imports or trade and transport margins within the country [3].

** Conversion factor 1 MBTU = 31.38 m^3 (natural gas) was used.

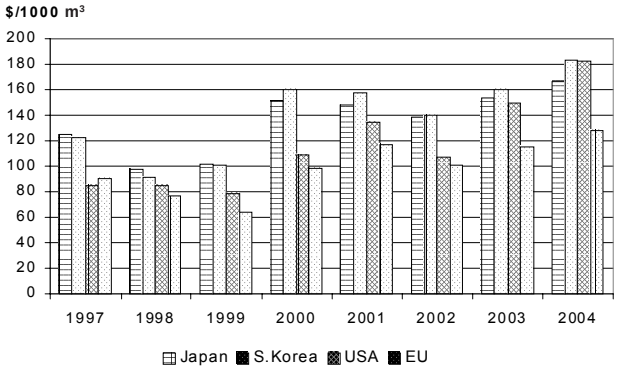

Fig. 3. LNG prices in the world [4]

invoke an increase in LNG price. In some cases there is a lag between these increases. The main reason is long-term contracts which were the basis for the LNG sector development in the past decades. In the future this tendency should change: the constant increase of contract-free ships and export capacities will allow more liquid LNG markets.

6. NATURAL GAS CONSUMPTION IN LITHUANIA

The development level of gas transportation networks in Lithuania is very high, and it is constantly increasing. Natural gas consumption since 2000 in Lithuania is shown in Fig. 4 [5, 6]. In the future, gas consumption is likely to increase in the industry (especially chemical) and energy sectors (especially after closure

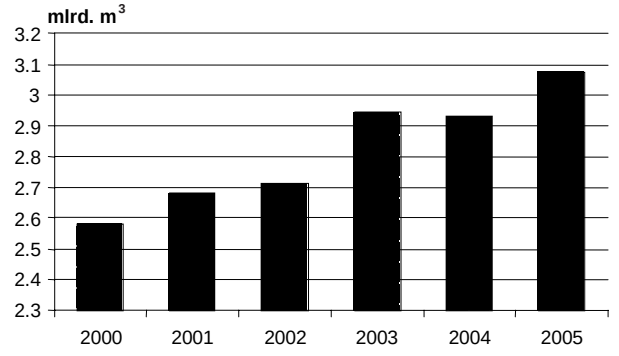

Fig. 4. Natural gas consumption in Lithuania

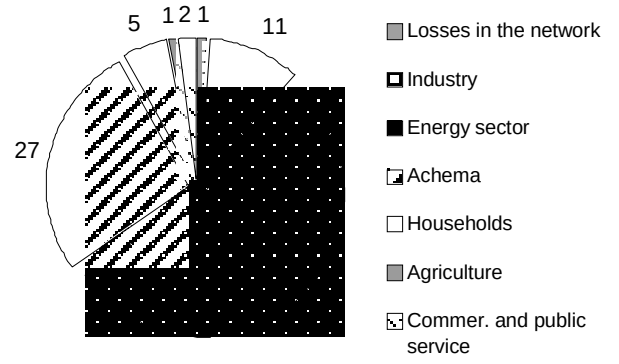

Fig. 5. Gas consumption structure (%) in Lithuania (2004)

of Unit 2 at the Ignalina Nuclear Power Plant). The energy sector and chemical industry are two biggest gas consumers in Lithuania. The structure of gas consumption in 2005 is shown in Fig. 5 [5].

7. LNG IMPORT TERMINAL IN LITHUANIA

Does Lithuania need an LNG import terminal? Lithuania, like other Baltic States (Estonia and Latvia), is still buying natural gas only from one source – the Russian state company Gazprom. Events of the last year (the Russian–Ukrainian intensive public disputes about gas price or an acident in the Georgian gas artery during the winter peak demand) clearly show that the technical and political reliability of this sole supplier is doubtful. Therefore, in order to avoid a possible economic shock resulting from interruptions of gas supply or price jump, Lithuania must search for alternative suppliers. One of the ways to increase significantly gas supply is an LNG import terminal, which could appear on the Lithuanian seaside or in neighboring countries with whom Lithuania already has strong gas network interconnections (Latvia, for example).

In this study, a possibility to build an LNG import terminal in Lithuania was analyzed. Possible prices of gas supplied from the LNG terminal were compared with the current and projected prices of Russian piped gas.

Gas demand in Lithuania is small in comparison with the world or even West European demand, therefore there is no necessity to build a full LNG chain: it is possible to use the already existing liquefaction, export and transport infrastructure. In the calculation done in this work, only costs of LNG import terminal were analyzed.

There are no publicly acknowledged criteria how to evaluate the security of supply, therefore in this work they are interpreted as explained below. The required amounts of gas where split by consumer types: energy sector (in the case of emergency it is absolutely necessary to provide gas to existing district heating systems and to CHP and other power plants during winter peak); gas demand in Lithuania (to supply gas to all local consumers, including the energy sector and chemical industry); energy sector gas demand of the Baltic States to meet gas demand of the energy sector of all three Baltic countries during the winter peak.

The following components were taken into account when calculating the price of gas supplied by the LNG terminal:

– *LNG price*. It is almost impossible to get a legit source with official LNG price at an export terminal (on the one hand, it heavily depends on negotiation, on the other hand, it is usually a commercial secret). In this work, LNG price provided in official IAE publications was used [4]: in 2004, the average LNG import price in Spain was 124.6 USD/1000m^3. Spain was chosen because it has highest number of LNG suppli-

ers, and it is relatively near to main possible LNG exporters like Algeria.

– *Transportation costs*. In order to get a more realistic LNG price at Lithuanian border, a possible transportation cost from the Spanish port Halva to the Lithuanian port Klaipėda were added to the average Spanish LNG price. According to a navigation routes calculator [8], the distance between these ports is 3922 km. Other assumptions: ship speed – 33 km/h, cargo size – 135000t [1], ships rent – 65000 $/day [9], the ship is fueled by the same transported gas and consumes 0.15% of shipment per day (or 3% during a 20-day trip [10]. Based on these assumptions, LNG transportation to Lithuanian seaside would cost 9.8 USD/1000 m^3.

– *Investments* (construction of the import terminal). The capacity of the import terminal was picked up using these assumptions:

a) the most investment-intensive part in the import terminal is LNG tanks. Data from 15 LNG import terminals (already built or still under construction) were aggregated, and it was found that the average LNG tank price is around 535 Euro/m^3. This figure was used in the calculations;

b) the maximum terminal throughput was calculated under assumption that the size of LNG tanks should guarantee at least 10 days of natural gas supply during the winter peak. Different demand levels for different scenarious are shown in Table 2 [7].

Considering these assumptions, the size of the LNG import terminal and necessary storage tanks were calculated. Other assumptions: discount 8%, minimal return on investment 8%, the economical lifetime of the terminal 20 years.

– *Terminal fix O&M cost:* Assumption was made that the fixed O&M cost should not exceed 1 Euro/m^3/year.

– *Terminal variable O&M cost:* Variable cost depends on LNG flow through the terminal, therefore gas consumption in LNG transportation from ship to the re-gasification plant and re-gasification was used. In our case it was assumed to be 2% of the total processed amount of gas.

In this study, gas network strengthening or reconstruction were not taken into account. It is a very important part of the LNG import price, but this evaluation is possible only after a scrupulous analysis of gas consumption, of throughput of all gas network segments, compress stations and a possible location of the underground gas storages. Analysis of these components is left on the top of to-do list in the near future.

7.1. Scenarios

All scenarios were split into two groups: A and B. The main assumptions in both these groups are identical, the only difference being the Nuclear Power Plant (NPP): in group A scenarios all gas demands were taken under assumption that a new NPP will be built, and in group B scenarios gas demand was taken assuming that no NPP will be built. Other assumptions, common for all scenarios, were as follows: common electricity market in the Baltic States, no considerable interconnections to Western electricity grids, no import of orimulsion. Gas demand for all these scenarios is shown in Table 3 for the year 2010 [7].

Scenario No. 1. It is a marginal scenario, when the capacity of the import terminal will be designed to cover only minimum criteria on energy security (Lithuanian energy sector demand for 10 days under a peak load), and no LNG will ever be imported. This kind of situation may arise under a political decision to build a small LNG import terminal only to increase energy security in the gas markets. In this case, the supplier of Russian gas could adjust gas price to the levels when importing LNG becomes economically unreasonable, therefore no LNG will ever be imported. The result of this scenario is the minimum required size of the LNG terminal and investment. In other words, it shows how much it would cost for Lithuania to have some safeguard restricting the monopolistic gas supplier from rising gas prices based on this market power.

*Scenario No. 2***.** The size of the import terminal is the same as in Scenario 1, but in this case the demand of the Lithuanian energy sector is covered by LNG imports. This scenario also could be possible in the case when gas prices imported from Russia using pipes and from the LNG terminal is similar. In this case it could be sound for political reasons to cover part of the gas demand from an alternative source (LNG). The demand of other consumers is met by Russian gas.

Scenario No. 3. The size of the LNG terminal is sufficient to meet the demand of the whole Lithuanian gas sector: it could be reasonable to have an alternative in the case when import from the East will be techni-

Table 2. **Total and peak natural gas demand (year 2010)**

			Demand of Lithuanian energy sector	Full Lithuanian demand	Demand in the energy sector of the Baltic States
Nuclear power plant exists	Amount	bil. m^3	2.2	4.2	3.6
	Capacity	MW	4096	6228	4772
No nuclear power plant	Amount	bil. m^3	3.2	5.2	4.7
	Capacity	MW	5808	7940	6846

cally or economically unavailable. Gas demand is the same as in scenario 2 (Lithuanian energy sector only).

Scenario No. 4. Another marginal scenario: the size of the terminal is designed for the Lithuanian peak demand of 10 days, and all gas demand is met by LNG: no Russian gas is supplied to Lithuania.

Scenario No. 5. The LNG terminal is built to meet the demand of the energy sector of all three Baltic States (terminal capacity is calculated according to 10 days of winter peak demand, and the amount of imported LNG is equal to the total energy sector gas demand).

7.2. Results

The main calculation results are aggregated in Table 3.

Table 3. **List of LNG terminal parameters in all analyzed scenarios**

Scenario	Installed capacity bil. m^3/year	LNG storage capacity thous. m^3	Investment mln. Euro	Price of natural gas supplied through LNG terminal $/$km^3$
A new nuclear power plant exists				
1a	3.5	181	193	-
2a	3.5	181	193	154
3a	5.3	275	294	163
4a	5.3	275	294	151
5a	4.1	210	225	150
No new nuclear power plant				
1b	5	256	274	-
2b	5	256	274	154
3b	6.8	350	375	160
4b	6.8	350	375	151
5b	5.9	302	323	151

As we can see from the calculation results, overnight investments into LNG terminal seeking to cover Lithuanian needs vary from 193 to 375 mill. euro. In the case of scenario 1a, when the proposed capacity of the import terminal would be designed only to cover Lithuanian demand, investments distributed over 20 years, with 8% of discount and 8% of profitability, constitute 32 mill. euro per year (111 mill. LTL). Taking into account the fact that in 2005 in Lithuania gas spending was over one billion LTL, this kind of investment would be worth consideration.

Looking at the main results of this study – comparing prices of the gas imported to Lithuania through the LNG terminal and via pipe from the East – it is possible to note that this cost increase is not overwhelming.

In the case of scenario 5, in which the LNG import terminal would cover the energy sector demand of all three Baltic countries, a terminal with one jetty would be too small. In this case, it would be more reasonable to build several LNG import terminals in different points of the seaside. This approach would minimize problems with capacity limitations in the existing gas network and would reduce the pressure on one single port.

When evaluating the future of LNG in Lithuania, several factors are especially significant:

The price of Russian gas imported through gas pipelines. From the official Gazprom statements it is evident that the price of Russian gas will increase sharply in the near future. Figure 6 shows a comparison of LNG (2004) and Russian piped gas (2006) prices. A two-year shift makes this comparison not very correct, but it is obvious that an increase in LNG price was lower that an increase of Russian piped gas price in Ukraine [11] during this period.

Political decisions. Taking into account the current situation in the Lithuanian natural gas sector, for any commercial venture not associated with Gazprom, building of an LNG terminal and the associated infrastructure could pose an increased risk, unless Lithuanian government provides some way of support in the form of investment subsidies or assurances. However, LNG definitely should be regarded as a viable alternative to gas supplied from Russia, especially having in mind the increased security of supply in the natural gas sector or as a ceiling point of price spikes.

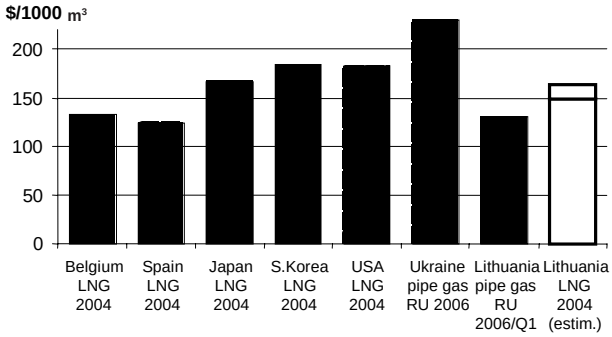

Fig. 6. Comparison of LNG and Russian piped gas prices

7.3. Sensitivity analysis

Sensitivity analysis was made of the main driving factors that could directly influence the price of supplied gas: a) a 100% increase in investment cost (compared to the base case scenario). This situation may arise with an increased cost of building materials (for example, steal), unexpectedly high cost of junction to the existing gas network, necessity to upgrade existing gas networks in order to accommodate different routes, etc.; b) a 100% increase in transportation cost from 65000 to 130 000 $/day; c) a 50% increase of LNG import price. A summary of impacts of all these three sensitivity scenarios is provided in Table 4.

From the sensitivity analysis results shown below it is evident that an increase in LNG terminal investment cost does not affect gas prices much (increase only by 14%), while increase in LNG price itself will influence

Table 4. **Changes in price of natural gas imported through LNG terminal in different sensitivity assumptions**

In the case	Change of gas price on terminal output versus basic assumptions
Terminal investment cost increases by 100%	8–14%
Ship freight increases by 100%	6–10%
LNG import price increases by 50% (up to 200 \$/k m^3)	32–34%

gas price considerably (a 50% increase in LNG price will increase gas price by 34%).

8. CONCLUSIONS

In the last decade, influenced by constantly increasing energy prices, a fast development and innovations in the LNG sector were observed, and LNG is economically attractive in the world energy markets. In the next five years LNG capacities should increase more than 2 times. This tendency is lowering the cost of all LNG infrastructure and makes it as an attractive option in the constantly increasing number of applications.

Constantly rising fossil fuel prices (including gas), evolving LNG technologies, expanding LNG export capacities make this kind of fuel more and more competitive in the market. The higher competition among LNG suppliers and transporting companies will induce price decrease in future.

The capacity of LNG import terminal designed to cover Lithuanian needs varies from 3.5 to 6.8 bil. m^3/year. Investments to this terminal would vary from 193 to 375 mill. Euro, depending on whether or not a new nuclear power plant is built.

The price of natural gas imported through an LNG terminal could be competitive in the Lithuanian market (taking into account LNG price in the EU, Spain, and all cost additions arisen from incorporating an LNG terminal into Lithuanian gas infrastructure).

In the light of closure of the Ignalina NPP, concerns about energy security are increasing. LNG is one of the options that should be thoroughly examined while formulating the Lithuanian energy policy.

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Dalius Tarvydas, Ramūnas Gatautis

SUSKYSTINTOS GAMTINĖS DUJOS PASAULYJE IR JŲ PERSPEKTYVOS LIETUVOJE

Santrauka

Lietuvos energetikos sektorius iki šiol labai priklauso nuo Rusijos: Lietuvos elektros tinklai dirba lygiagrečiai su Rusijos Šiaurės–Vakarų elektros energetikos sistema ir savarankiškai funkcionuoti negali, nafta iki šių metų buvo importuojama tik per Rusijos naftotiekius, branduolinis kuras perkamas tik iš Rusijos, visas gamtines dujas tiekia vienintelis tiekėjas – *Gazprom*. Esant techniniams ar politiniams nesklandumams, gamtinių dujų tiekimas gali būti sumažintas ar visai nutrauktas. Tai Lietuvą daro itin pažeidžiamą energetinio saugumo požiūriu.

Suskystintų gamtinių dujų (SGD) importo terminalas suteiktų alternatyvą tiek Lietuvos elektros, tiek šilumos, tiek pramonės vartotojams. Ar Lietuvai yra realiai pasiekiama ši alternatyva – suskystintų gamtinių dujų importo terminalas?

Straipsnyje apžvelgiama SGD technologijos plėtra pasaulyje bei nagrinėjama SGD importo terminalo atsiradimo Lietuvoje galimybė. Pateikiami išankstiniai skaičiavimai, kiek galėtų kainuoti importuotos SGD Lietuvoje.

Raktažodžiai: suskystintos gamtinės dujos, importo terminalas, investicijos, SGD kaina Lietuvoje

Далюс Тарвидас, Рамунас Гатаутис

ИСПОЛЬЗОВАНИЕ СЖИЖЕННОГО ПРИРОДНОГО ГАЗА В МИРЕ И ПЕРСПЕКТИВЫ В ЛИТВЕ

Резюме

Сектор энергоснабжения Литвы до сих пор тесно связан с Российскими энергетическими системами. Система электроснабжения стран Балтии работает синхронно с Российской Северо-Западной энергосистемой и самостоятельно действовать не может. Нефть на нефтеперерабатывающий завод *„Мажейкю нафта“* поступает через российские нефтепроводы. Топливо для Игналинской атомной электростанции поступает только из России. Единственный поставщик природного газа в Литву –

Газпром. В случае технических неполадок или политических осложнений снабжение природным газом может быть сокращено или совсем прекращено. Такое положение делает Литву очень уязвимой с точки зрения безопасности и надежности энергоснабжения.

Терминал импорта сжиженного природного газа (СПГ) у литовского побережья Балтии может стать альтернативной возможностью получать топливо для литовских потребителей, в т. ч. производителей электроэнергии и тепла. В состоянии ли Литва построить терминал импорта сжиженного природного газа?

В статье рассматривается резко возросший спрос на СПГ на мировом топливном рынке, а также оцениваются возможности строительства в Литве терминала импорта сжиженного природного газа. Рассчитаны возможные цены на газ, импортируемый в Литву через терминал СПГ.

Ключевые слова: сжиженный природный газ, терминал импорта, инвестиции, цена СПГ в Литве