

Creation of regional gas market in the Baltic States and Finland: Challenges and opportunities

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Abstract

In the last 10 years, the Baltic States have considerably increased security of gas supplies by diversifying infrastructure as well as moving away from total dependence on one gas supplier. Despite significant progress, the creation of gas market in the region still faces several important political, economic and technical challenges. In this article, we will elaborate on key achievements and challenges towards the creation of gas market among the Baltic States and Finland. We will also explore the importance of Poland as well as the role of gas supplies from the Russian Federation for the development of an effective and efficient gas market in the region.

Keywords

Gas market, liberalisation, energy security, Balticconnector, GIPL, Inčukalns Underground Gas Storage, BEMIP, LNG

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Table of contents

1. Introduction.....	4
2. Unified Market: from idea to the practical implementation	5
2.1. Liberalisation and diversification of energy markets	6
2.2. Current and new infrastructure.....	7
2.3. Gas Interconnection Poland – Lithuania (GIPL).....	7
2.4. Balticconnector	8
3. Challenges for the creation of gas market.....	9
3.1. Disagreements over market design.....	9
3.2. Internal market discrepancies.....	10
3.3. Uncertainty over gas demand	12
3.4. Disagreements and uncertainties over Inčukalns UGS.....	14
4. Importance of Poland as a gas hub.....	14
5. Role of Russian gas.....	16
6. Conclusions.....	16
References.....	17
Earlier publications in the BSR Policy Briefing series.....	21

1. Introduction

The Baltic States and Finland are often considered as 'energy islands' in the EU. This concept of the 'island' implies exclusion and isolation. As 'energy islands' these countries are physically disconnected from EU energy market, meaning there are no interconnecting energy infrastructure between those countries and the rest of the Europe. And in the case of energy, this includes as well the factor of dependence either from single supplier or from a single type of fuel. This issue of single supplier is especially crucial in the gas sector. Until recently, the Baltic States depended almost entirely on Russia for their natural gas imports¹. (Eurostat, 2019) (Directorate-General for Energy, 2018). Even though gas markets in the Baltic countries are liberalised, Russia's Gazprom still plays a major role in domestic gas markets in the region.

Nevertheless, in the last half-decade, the three Baltic States, namely Estonia, Latvia and Lithuania, have made dramatic progress towards diversifying their energy supplies, especially of natural gas. This progress was brought about as a result of remarkable political will as well as improved regional cooperation has resulted in considerable economic benefit while decreasing the three countries' vulnerability to outside pressure.

Gas supply security in the Baltic region has improved since 2015 as the result of the construction of the LNG terminal 'Independence' in Klaipeda, Lithuania. In addition, important internal gas infrastructure projects were implemented to increase the security of supply. For example, with the opening of the liquefied natural gas (LNG) terminal in Klaipeda and enhancement of the Klaipeda-Kiemenai pipelines' capacity (which is essential for trading gas between Lithuania and Latvia), the Russian gas monopoly in Lithuania and the whole Baltic region has been broken. In addition, LNG raised a feeling of the consumer's self-confidence.

However, the LNG saga had a side effect as well; the burden of the infrastructure maintenance compromised the whole idea of the gas consumption (Molis, 2016). The problem is that despite of huge investments in gas infrastructure, the consumption of natural gas in the last 3-5 years was gradually falling in the region due to the comparatively high prices and increased consumption of biofuels in the heating sector. Moreover, new gas pipelines and terminals, as well as old storages and other type of infrastructure will only be preserved in the long term if it is shared and jointly used (Molis, 2016). Sharing infrastructure and related benefits or burden could become acceptable for Estonia, Latvia, and Lithuania only if consumers accept related costs naturally. According to Molis (2016:93), *"This would be possible if LNG terminal in Klaipeda, Inčukalns underground gas storage and other facilities offer services or commodity (natural gas) under acceptable conditions or there is an agreement to use and maintain infrastructure jointly"*.

Despite the evident progress in ensuring the security of energy supplies, much remains to be done to complete the three countries' internal gas markets into one competitive regional market. There is certainly signs of excellent cooperation on a working level among the three Baltic States as well as Poland and Finland. On the other hand, there is a lack of consensus on some of important steps that need to be implemented. For example, the Baltic States and Finland need to find an agreement over market design of the regional gas market as well as the development of new regional infrastructure.

The aim of this report is to assess progress and existing challenges for the creation of gas market among the Baltic States and Finland. We will start by providing a short historical overview of assessing the EU strategic and legal incentives for the creation of common market in gas sector. Next, we will assess progress for the development of current and new infrastructure projects as a key precondition for the internal gas market in the region. Then, we will analyse remaining challenges and uncertainties with respect to creation of gas market in the region. Finally, we will draw main conclusions.

¹ In 2018, Eleven Member States (Bulgaria, Czech Republic, Estonia, Latvia, Hungary, Austria, Poland, Romania, Slovenia, Slovakia and Finland) imported more than 75 % of total national imports of natural gas from Russia. <https://ec.europa.eu/eurostat/statistics-explained/pdfscache/46126.pdf>

2. Unified Market: from idea to the practical implementation

2.1. Liberalisation and diversification of energy markets

The EU Energy Union declared the core framework for energy policy objectives that seek to bring about a more diversified, better connected and more sustainable energy sector. In 2015, European Commission (EC) adopted Energy Union strategy setting out five key targets which incorporate market objectives as well as put in place the guidelines of the common EU energy policy (EC, 2015). The Energy security strategy addresses measures both for short-term security, mainly focusing on resilience to energy supply disruptions, and for long-term security – diversification of energy supply and finally reduction of energy dependency on external energy supplies. The aims of common energy policy include ensuring the functioning energy market and security of energy supply by diversification of energy sources and promoting interconnection of all Member States' energy networks (Hermanson, 2018:305).

Even before the Energy Union Strategy, the EU energy market liberalisation packages, adopted in 1998, 2003 and 2009, have been at the core of the common gas market creation in the EU. All of them were agreed with the intention to increase short-term transactions and gas-to-gas or electricity-to-electricity competition. With the adoption of relevant directives and regulations the EC set a goal to finalise (with few exceptions) the internal energy market by 2014, notably, by enforcing the unbundling of networks away from the competitive parts of the electricity and gas business. The EU Third Energy Package mandates the EU member States to unbundle natural gas and electricity distribution networks: transmission should be separated from supply and distribution. This would reduce the monopoly power of energy suppliers.

Unbundling requirements envisaged that the independent transmission system operator (TSO) should not be associated with the gas supply business and instead should ensure the best use of the infrastructure it operates (Molis, 2016). Earning from selling the capacity of pipelines and related services (but not the gas), the TSO would be interested in attracting new suppliers, this way diversifying gas supply, investing into new grids, expanding trading hubs and integrating gas storage facilities into liquid trading systems based on trading hubs. To achieve these goals, the EU Third Energy Package provided 3 models for unbundling: "Ownership unbundling, establishment of the Independent System Operator or creation of the Independent Transmission System Operator. Lithuania was among the first countries implementing the Third Energy Package and adopting the strictest option – ownership unbundling" (Molis, 2016:99). Following Lithuania's decision, Estonia implemented its unbundling legislation. Latvia, on the other hand, postponed the implementation until April 2017 (EC, 2017a). In addition, fully state-owned the Finnish TSO Gasum Oy remains vertically integrated company and the major market player in the Finnish gas industry (Energy Authority, 2019). The company currently performs various market roles at the same time. It is the only market participant importing natural gas to Finland, acts as TSO, whilst also operating in the segments of natural gas transport and trade, complemented by its subsidiary Kaasupörssi Oy (Energy Authority, 2019).

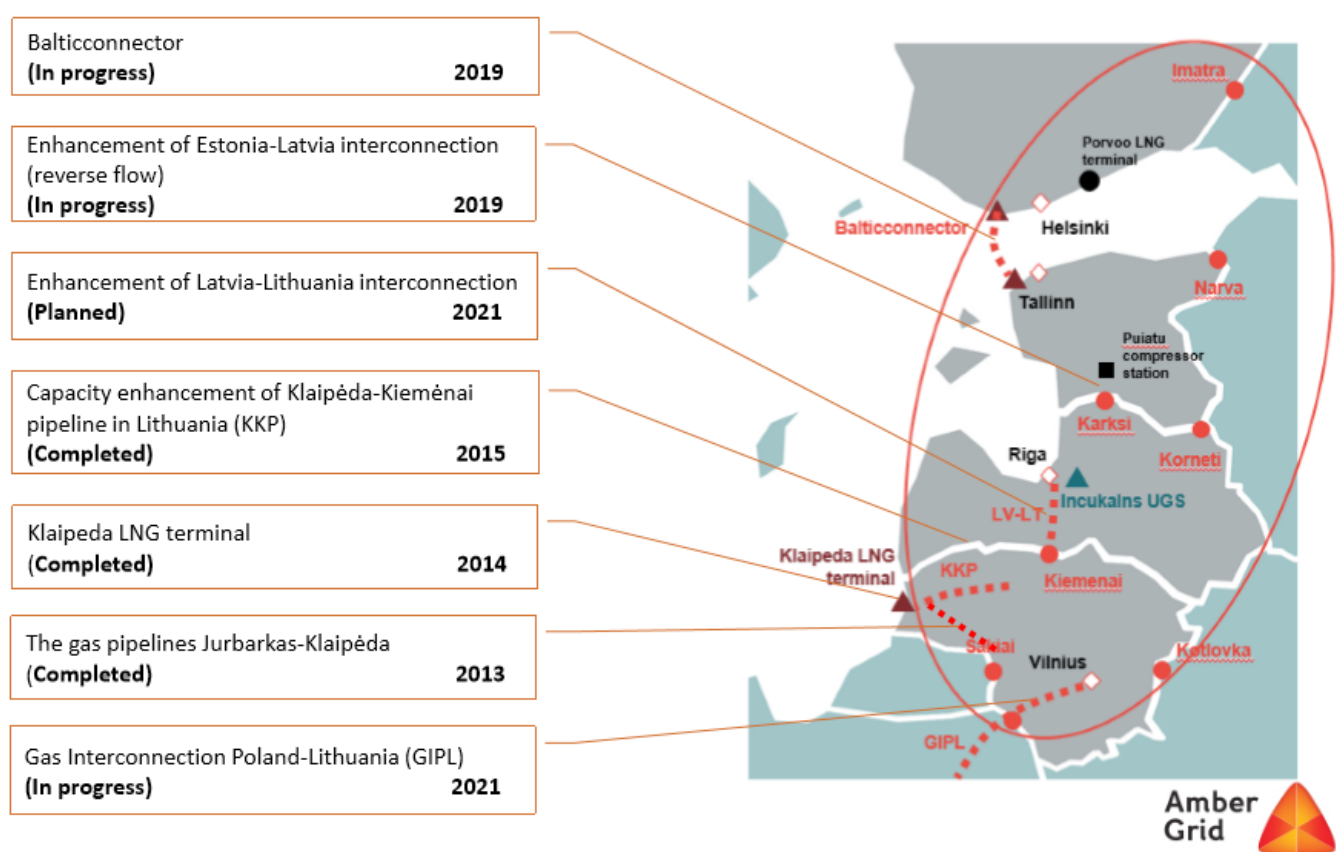
The work and achievements of regional cooperation in the energy sector in the Baltic Sea region has been conducted within the framework of the Baltic Energy Market Interconnection Plan initiative (BEMIP) which was launched by the EU in 2009. The main objective of the BEMIP is to create an open and integrated regional electricity and gas markets between EU countries in the Baltic Sea region, ending energy isolation of the Baltic States and Finland (European Commission, 2018). The BEMIP initiative was further reinforced through reforms launched by the European Commission at the BEMIP High Level Group (HLG) meeting on 31 October 2014; and the Declaration on Energy Security of Supply signed on 14 January 2015 by the Energy Ministers of the Baltic States (BEMIP Action Plan, 2015). As it is stated in the action plan: "*Efforts should be continued to implement the most economically viable solution to connect Finland and the three Baltic States to the continental European gas network and to new gas supply sources, and to accelerate market opening in the Member States applying derogations from the Union's third energy legislative package*" (BEMIP Action Plan, 2015:7). The BEMIP has been successful, since Estonia, Latvia, and Lithuania have developed electricity interconnections both between themselves and to other parts of the EU (Hermanson, 2018:306). Another part of the BEMIP concerns the plans to build pipelines between Poland and Lithuania and Finland and Estonia to connect gas systems of these countries together with the EU. If successfully implemented, these projects would contribute to region's security of supply.

2.2. Current and new infrastructure

The national gas infrastructure in Finland and the Baltic States are inherited from the Soviet period. Gas was separately supplied to Finland and to each Baltic state during that period (Belyi, 2019). As it was designed for much larger population, the Soviet gas grid took advantage of local strengths, such as, for example, the unique geological properties of Latvia's Inčukalns area was used to meet the needs of St Petersburg (former Leningrad) heating during winter time. Today, the main gas storage facility in the Baltic region, Latvian Underground Gas Storage (UGS) in Inčukalns (see Figure 1), is connected to both the Lithuanian and Estonian gas networks and constitutes an important balancing point for south-to-north gas flows from Latvia to Estonia. Finland receives supplies from Russia via Imatra and has no connections with Estonia.

The Baltic States have already completed some important internal and regional projects to facilitate the creation of integrated regional gas market (see Figure 1). As already explained, at the end of 2014 a new LNG terminal in Lithuania (Klaipeda) was opened. The terminal for the first time ensured alternative gas supply routes and sources to the Russian gas delivered by pipelines. Moreover, the capacity enhancement of Klaipeda-Kiemėnai pipeline made physically possible to ensure considerable gas supplies to all three Baltic States (EPSO-G, 2015). Moreover, the enhancement of bi-directional Estonia-Latvia interconnection in Karksi (GMS Karksi) Estonia enables the supply diversification with the transfer of globally sourced LNG terminal to Estonia/Finland or to Latvia/Lithuania. The increase in the security of supply will enhance the regional resilience as well as decrease the costs of disruptions (EC, 2017b).

Figure 1. Main gas infrastructure projects in the region



Source: Ambergrid, 2018.

2.3. Gas Interconnection Poland – Lithuania (GIPL)

The construction of natural gas infrastructure that will connect Polish and Lithuanian as well as Baltic and Finnish natural gas transmission systems with other European systems is a key precondition for the development of gas market in the region. One of the key infrastructure projects is GIPL (see Figure 1), a natural gas pipeline interconnection between Lithuania and Poland currently on the development and expected to be finished in 2021. It is the first gas pipeline connecting Lithuania and Poland and the first gas interconnector between the Eastern Baltic Sea region and the Continental Europe. The GIPL gas pipeline will run from Jauniūnai Gas Compressor Station (GCS) in Širvintos district to the Hołowczyce GCS on the Polish side. According to preliminary estimations, the length of the GIPL would make up 534 km with the capacity allowing transporting to Baltic States up to 2.4 billion cubic meters (27TWh) of natural gas per year (EPSO G, 2019). With additional moderate investment, the capacity of interconnection could be increased up to 4.5 billion cubic meters per year (EPSO G, 2019)². The project is carried out by Lithuania's and Poland's natural gas transmission system operators Amber Grid and GAZ-SYSTEM. The European Commission has recognised and funded the GIPL project as a Project of Common Interest (PCI) contributing significantly to the EU's energy security (Amber Grid, 2019).

Since 2015 there have been two routes of natural gas supply to the Baltic States: gas transmission pipelines from Russia and through the LNG terminal in the port of Klaipėda. GIPL will create one more alternative supply route, connecting the Baltic and Central European gas systems, and potentially expanding the possibilities of using the LNG terminal. The benefit of this project for the Baltic States is substantial. This connection would diversify the gas supply sources and thus increase the security of supply, as Baltic countries will not depend so much on Russia's import anymore. Also, the opening of the Baltic States' gas market will increase competition between suppliers, so the customers will be offered a lower price and will have more options to choose from (Ministry of Energy of Lithuania, 2018).

Figure 2. Gas Interconnection Poland-Lithuania (GIPL)



Source: Ambergrid 2019.

²The total gas consumption in the Baltic States and Finland accounts around 7,1 bcm (2018). The maximum supply capacity of LNG terminal in Klaipėda and GIPL is around 6,4 bcm (with a possibility to increase to 8,5 bcm with extension of GIPL capacity). The import capacities in Baltic States and Finland may increase as Estonia and Finland considering of building new infrastructure.

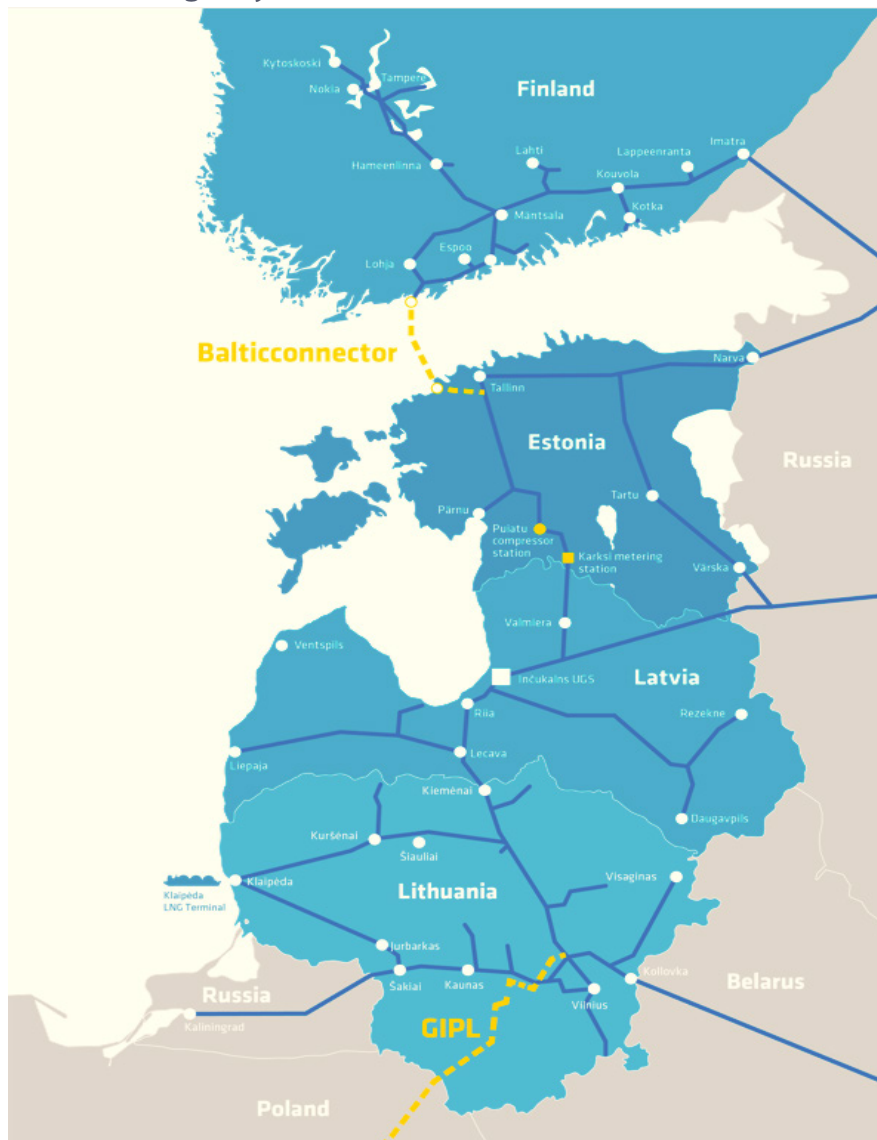
The interconnection is of strategic importance for Poland as well. For the Polish market GIPL would create and opportunity to use Latvian Inčukalns Underground Gas Storage (ENTSOG, 2012:73). According to Poland, GIPL is a backbone of a regional market development (Gaz-system, 2012). The interconnection would allow Polish gas market providers to access underdeveloped the Baltic States' gas market, thus supplying gas from projected Baltic Pipe and LNG in Świnoujście (Młynarski, 2016:313; ENTSOG, 2012:76). This would make Poland the key gas hub in the region of Central and Eastern Europe.

2.4. Balticconnector

Further progress in ending energy isolation can be achieved through connecting Finland's gas systems with the rest of the Europe's. Despite some considerable delays, the construction of the first gas interconnector between Finland and Estonia – Balticconnector (see Figure 3) is currently under development and expected to be finished in 2020 (The Baltic Times, 2019). This is another project of the BEMIP and is recognised by the EU as Project of Common Interest (EC, 2017c). This pipeline together with GIPL should finish the integration of Baltic gas market into a common system. The project will comprise the construction of pipeline systems, stations and facilities to connect the existing gas networks in Finland and Estonia. The transmission capacity of the pipeline will be 7.2 million cubic meters (72 GWh) per day. Gas could be transported bi-directionally between Finland and Estonia according to market demand.

The aim of the gas interconnection between Finland and Estonia is the integration of the isolated gas markets by introducing the alternative gas supply route. However, as analysis of Jääskeläinen et al. show, even though Finland's only source of gas supply is from Russia, the gas accounts only a few percent of Finland's energy mix. So, in Finland the dependency on Russia's gas does not pose immediate energy security threat in terms of gas supply (Jääskeläinen et al., 2018). But as former Minister of Economic Affairs Olli Rehn pointed out *"even though the share of gas in energy mix is not large, it is still important one due to its role in heat and power generation. The target is to keep gas as part of our energy mix."* (Rehn, 2016:5). The construction of this interconnection would diversify and open Finland's gas market to the LNG in Klaipeda and Central Europe gas supply sources through GIPL. Moreover, Balticconnector has a strategic importance for Finland as it would allow to access Latvian Inčukalns Underground Gas Storage and let to fill it up off peak seasons and store it for peak demand situations (ENTSOG, 2012). Also, interconnection would facilitate liberalisation of Finland's gas market and would create 'a single entry exit' zone across Baltic States and Finland by developing a single system of entry and exit points which would lower the gas prices (Rehn 2016:5).

Figure 3. Balticconnector and gas system of the Baltic States.



Source: Balticconnector, 2019.

3. Challenges for the creation of gas market

Positive changes that have taken place in the Baltic States, especially in terms of diversification of infrastructure do not automatically guarantee the secure and sustainable development of the gas market. Moreover, the creation of gas market in the Baltics faces a number of important political, economic and technical challenges many of them equally urgent in nature. In this section, I will elaborate on some of important challenges which could hinder the creation of regional gas market.

3.1. Disagreements over market design

It is essential to set right structural framework for a functioning gas markets to emerge (Molis, 2016). Moreover, some experts have argued that a single entry exit model (in short, completely merging the Baltic and Finnish gas markets) would bring tangible security and commercial benefits (Leppiman, 2013).

Furthermore, recently signed Memorandum of Understanding between gas transmission operators in Finland, Latvia, and Estonia aims to set up a single gas transmission tariff zone for the three countries from the start of 2020 which is an important step to implement plans in time for the creation of a common market in 2022. Because of common entry-exit zone, the three States will have common entry points for pipeline access. As Belyi (2019:10) pointed out *“Gas suppliers delivering gas to these points will need to pay an entry fee calculated in inverse ratio to the length of the period for which the booking is made. In this way, the fee rate in pro rata terms will be significantly lower for a one-year booking of capacity than for an intra-day booking”*. In addition, transmission fees for natural gas delivery will be discontinued within the area

covered by the entry-exit zone. Revenue from entry points is accordingly to be coordinated between the transmission system operators of the participating States (Belyi, 2019).

Nevertheless, disagreements remain over the exact design of the future gas market in the region, especially with regards to the inter-transmission system compensation mechanism, partly concerning the sharing revenues of the Baltic TSOs (Jegelevicius & Powell, 2019). For example, Lithuania participated in a single gas transmission tariff zone negotiations until 2017. Nevertheless, at the later stage of these negotiations, Lithuania decided to discontinue its participation in the entry-exit zone. According to Lithuanian officials from the Ministry of Energy, Lithuania decided not to participate in the entry-exit zone as the current market design proposed by its neighbours do not ensure fair and balanced economic gains to all countries in the region. According to spokesman of Lithuania's Energy Ministry, "... *under the current conditions Lithuania would suffer significant financial losses*" (Jegelevicius & Powell, 2019). Moreover, Lithuania proposes to set the tariffs for the entry capacity products from Belarus at the same level as the Finland-Estonia-Latvia entry/exit zone. A discount would be applied at the entry point from the LNG terminal in Klaipeda to the Lithuanian entry/exit zone. However, Latvia disagrees, claiming a zero tariff is not in its interest (Jegelevicius & Powell, 2019). According to spokesman of Lithuania's energy ministry, "*Lithuania remains open to the idea that a separate cost-benefits analysis should be performed by an independent body such as the European Commission. Such analysis would determine, what would be the most balanced and correct inter-transmission system mechanism to expect from the perspective of all four countries*". (Jegelevicius & Powell, 2019).

The other reason for Lithuania's decision not to join a single gas transmission tariff zone proposed by Finland, Latvia, and Estonia is its willingness to keep revenues accruing within the transit line from Belarus to Kaliningrad. The country demands to keep the money it receives from gas transit to the Russian region of Kaliningrad which account in the range of €12-15 million/year (Jegelevicius & Powell, 2019)³. According to Belyi (2019:10), "*It was partly for this reason that Lithuania declined to participate in the entry-exit zone: a transit line connecting Belarus with the Russian enclave of Kaliningrad traverses Lithuania, meaning that revenues accruing within the transit would also be distributed to other participants in the zone*".

Lithuania's refusal to join entry-exit zone becomes even more complicated when virtual trading platforms are considered. In fact, since 2012 there has been a virtual trading platform – called Get Baltic – that allows traders from the three Baltic States to trade gas. As noted above, a virtual platform can be used by traders of any kind and can also be used to carry out exchanges resulting from balancing. Estonia and Latvia may use Get Baltic, among other options, as part of their balancing market or to create a new one. Since a common balancing platform is to be created between the two Baltic States and Finland, Get Baltic plans to offer services to traders from Finland by way of expanding its platform services. Lithuania's absence from the entry-exit zone creates a significant mismatch between the participants in the entry-exit system (Latvia, Estonia and Finland) and the virtual platform Get Baltic (Lithuania, Latvia, Estonia) (Jegelevicius & Powell, 2019). As a result, Estonia, Latvia and Finland may investigate alternatives to the existing structures of the Get Baltic platform.

3.2. Internal market discrepancies

The structure of domestic gas markets constitutes the main impediment to market liquidity. Although signing a Memorandum of Understanding between gas transmission operators in Finland, Latvia, and Estonia to set up a single gas transmission tariff zone is an important step towards an integrated market, the gas markets in the regional countries needs to be more fragmented. This in turn requires a larger number of suppliers to be active within it. Instead, at least in Estonia and Lithuania, the market has become less fragmented.

For example, over the past three years, in Estonia the number of non-incumbent importers have declined despite the governmental target of 32% of market share limit of the largest supplier company (Belyi, 2019). Instead, the incumbent, Eesti Gaas, has increased its market share from 77% to 88% during the period between 2015 and 2017 (see Figure 4).

³ Despite the opening of (LNG) import terminal in Kaliningrad Marshal Vasilevskiy in January 2019, most of its gas needs of Kaliningrad Oblast are still supplied via Minsk-Vilnius Kaunas-Kaliningrad pipeline. Lithuania has a long-term agreement with Gazprom on the transit of gas to the Kaliningrad Oblast. The agreement which is based on "take or pay" formula is valid until 2025, meaning that even if Gazprom halts transit via Belarus and Lithuania, the agreed minimal fee would need to be paid by Gazprom.

Eesti Gaas is a privately-owned company currently controlled by Trilini Energy, a member of the Inforfar Group. The latter is also the owner of Tallink, a large energy consuming group which is one of Estonia's major gas consumers. In 2017, the main competitors of the incumbent were state-owned companies, namely Elektrum Eesti (8% market share) and Eesti Energia (4% market share). The state-owned energy company Eesti Energia (4% import share) is a potential long-term gas consumer in the electricity sector and is, in common with Eesti Gaas, an important buyer at national level. Elektrum Eesti is a subsidiary of Latvenergo, a company owned by the Latvian State, and its large presence in the market only confirms a trend towards market dominance by the incumbent and state-owned operators. As a result, according to Belyi (2019) we may observe an inverse vertical integration, where major gas buyers acquire the largest share of the gas supply company.

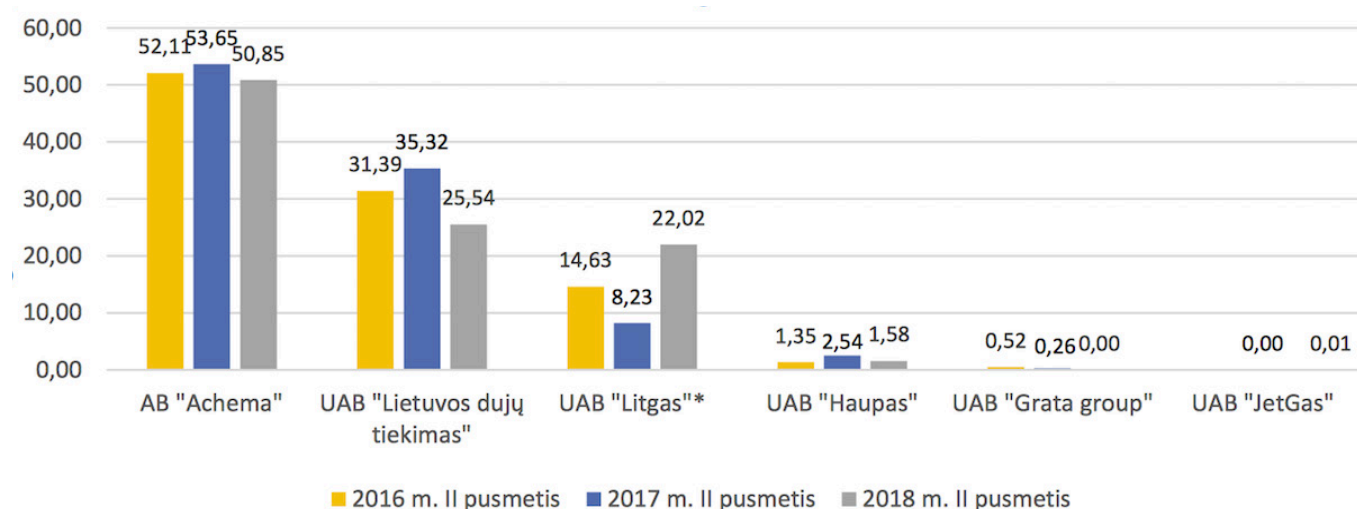
Figure 4. Gas Market in Estonia (percent share of imports)

	2015	2016	2017
Eesti Gaas	77%	92%	88%
Others	23%	8%	12%
Number of importers	5	4	3

Source: Estonian Competition Authority, 2018.

Similar situation could be seen in Lithuania where despite 23 number of registered gas suppliers with official licenses, two companies AB Achema and UAB Lietuvos energijos tiekimas constituted around 89% of total supplies in 2017 (National Energy Regulatory Council, 2018; 2019) (see Figure 5). In addition, the market became even less fragmented in 2019 when Lietuvos Energija Group announced about the integration of UAB Litgas into UAB Lietuvos duju tiekimas, substantially increasing the latter's market share (Lietuvos Energija, 2018).

Figure 5. Gas Market in Lithuania (in percentage)



II pusmetis = II half of the year

Source: Lithuania's National Energy Regulatory Council, 2019

According to Belyi (2019:11), *"This is a deep-rooted shortcoming of the Gas Market Directive in respect of the unbundling of distribution system operators. ... Since the Third Energy Package focuses on the interests of buyers, it does not envisage a situation where buyers linked to incumbents and state-owned companies favor long-term bilateral contracts, thus impeding competition"*. In this context, the market does not leave much space for competitive futures contracts. A spot market may emerge for leftover gas contracted under long-term bilateral contracts. As a result, there is a challenge regarding the Baltic entry-exit zone that a lack of market liquidity may undermine the most important advantages of a potential gas hub (Belyi, 2019).

There are other internal market impediments in Latvia and Finland which could have a negative impact on the creation of regional gas market. For example, despite adoption of full ownership unbundling legislation in Latvia in 2017, so far, the practical process in implementing the adopted legislation has not been successful. Currently, Gazprom owns 34% of shares in both Conexus, a transmission gas operator, and AS Latvijas gaze, a Latvian natural gas company which deals with the importation and sale of natural gas. In accordance with a new energy legislation, Conexus owners cannot be associated with owners of Latvijas gaze. In 2018, Latvia's Economy Minister admitted that Latvia was unable to reach an agreement with Gazprom on conditions under which it would be possible to acquire Gazprom's owned shares in Conexus (Jegelevicius, 2018b)⁴. According to some sources in the Latvian government, if unable to agree with Gazprom on the sale of its stake in Latvijas Gaze and Conexus, the government could take a tougher line, such as, for example, rejecting Conexus certification application which it submitted to Latvia's Public Utilities Commission (SPRK) (Jegelevicius, 2018b). Non-certifying Conexus could create legal problems regarding the national implementation of the EU gas directive and the following implementation of Gas regulation package (secondary EC legislation) as well as other activities, involving EU partners (Jegelevicius, 2018b).

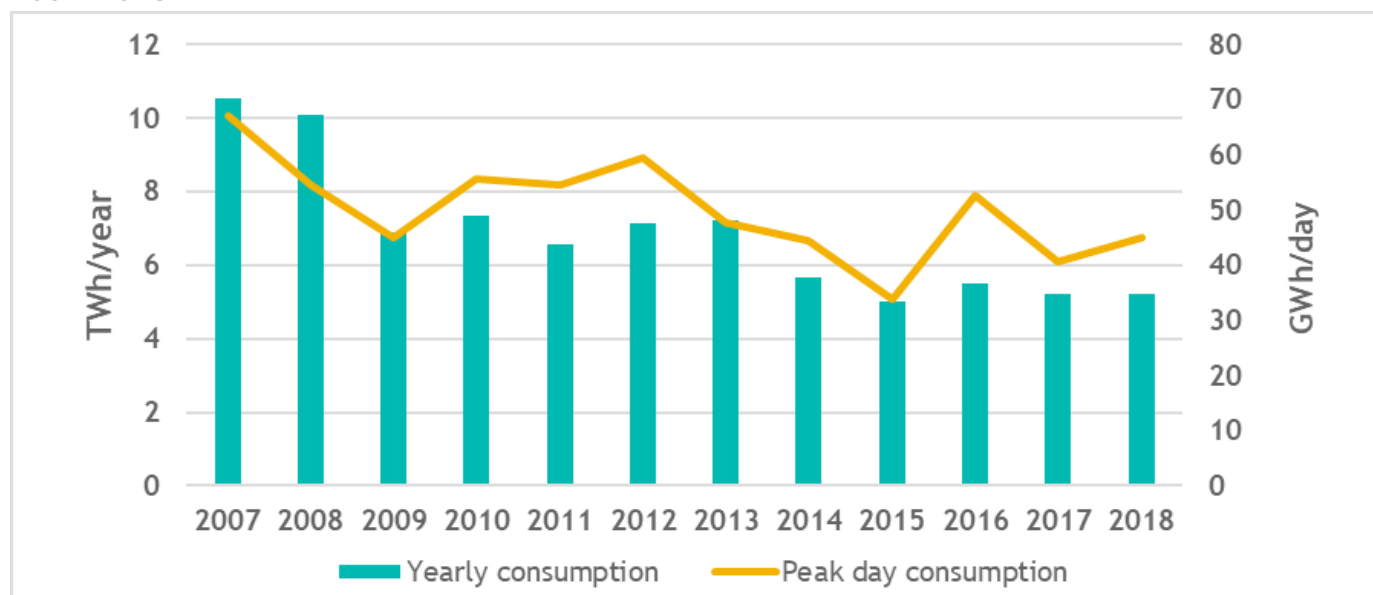
Moreover, natural gas market in Finland is dominated by Gasum, in which the state owns 26.5% of its shares (OECD, 2019). Gasum also owns the 1200-km gas-transmission network with its entire gas supply coming solely from Russia. However, it should also be noted that Finland is currently restructuring its gas market. Following the adoption of Natural Gas Market Act in 2017, Finland aims to open its gas market for competition from 1st January 2020. According to Ellias (2019), *"Starting from 1st January 2020, the Finnish gas market will be opened for competition, in regulation with the Natural Gas Market Act, to participate in the internal market of the European Union"*. This Act, that entered into force in September 2018, ensures a non-discriminatory access to the Finnish market. However, some players in the Finnish gas market are cautious regarding the prospect of market liberalisation. For instance, Jouni Haikarainen, the senior vice-president of Gasum, pointed out *"The new requirements can be complicated for local market players and consumers too, because they were used to operate under different rules until now"* (Jegelevicius, 2018a).

3.3. Uncertainty over gas demand

Another challenge for the creation of gas market is presented by the low and declining gas consumption volumes involved in regional countries. According to Belyi (2019:1), *"Competition cannot be promoted where the volumes in question are limited"*. Moreover, decline in gas demand has been evident in many European countries, especially from 2011 to 2014. The Baltic States and Finland are not an exception as, for example, in 2017, the largest falls in gas consumption among the EU member States were recorded in Latvia (-9.6 %), Finland (-6.8 %) and Estonia (-5.0 %) (Eurostat, 2018). Moreover, in the last 10 years, in Estonia gas consumption has decreased by about a half (Elering, 2018) (see Figure 6).

⁴ In 2019, public service regulator in Latvia has instructed Conexus to resolve the situation of shareholder conflict by January 1, 2020.

Figure 6. Estonian annual natural gas consumption (TWh/year) and the peak load (GWh/day), 2007–2018



Source: Elering, 2019.

Moreover, gas constitutes less than 10% of Estonia’s primary energy supply and its gas demand is the lowest of the three Baltic States. As Belyi (2019:26) pointed out “In order to achieve a competitive gas market, Estonia needs to further stimulate gas demand in the power sector and in transport”. Furthermore, the potential for increased demand exists, given the fast evolution of new technologies relating to gas usage, comprising compressed natural gas (CNG), LNG and biomethane in transport and industries. As Belyi pointed out (2019:1) “Gas-driven transport together with a potential shift to gas-fired power plants represent a significant incremental increase in demand for natural gas”. Nevertheless, despite significant potential of new technologies, the ultimate consumption of gas will depend on the actual implementation of policies, such as electrification of economic sectors including the road transport sectors.

Similar tendencies could also be seen in other Baltic States. For instance, since 2013, natural gas consumption in Lithuania has been falling rapidly (-3.9%/year), due to stronger competition from cheaper fuels (Enerdata, 2018). In addition, over the past ten years (from 2009 to 2018), the share of natural gas consumption in Latvia fell by 4.6 percentage points, constituting 24.8% in 2018 (Central Statistical Bureau, 2018).

National electricity generation is a potential sector for an increase gas demand stemming from the shift from oil shale as in the case of Estonia to natural gas in power plants. According to Belyi (2019:25), “It can easily be argued that the development of gas power plants in Estonia is a rational alternative to increasing the generation capacity deficit”. In addition, Lithuania lacks local reliable and stable electricity production to successfully prepare for synchronisation of the Baltic power systems with the European grid. For example, a study conducted by Kaunas University of Technology in 2018 confirmed that the development of reliably available and effective local capacities will be necessary in Lithuania in order to ensure reliable operation of the electric power system and security of electricity supply (Ministry of Energy, 2019). As a result, the Ministry of Energy of Lithuania, US company NET Power and energy innovation company 8 Rivers Capital have signed a Memorandum of Understanding on a feasibility study for a zero-emissions 300 MW gas power plant (Ministry of Energy, 2019).

Another potential area for increasing gas demand is the transport sector where gas could be used in the form of either CNG or LNG. The Finnish gas fueling station network is one of the fastest-growing ones in Europe as Gasum is expanding its Nordic gas filling station network by several new stations a year (Gasum, 2019). Furthermore, a growing trend in natural gas consumption is expected in the transport sector (Elering, 2018). In addition, Estonian CNG distribution companies have indicated that the Estonian CNG market is already competitive and is set to gradually increase in scale. Furthermore, Eesti Gaas recently announcement about company’s plans to expand to neighbouring countries, such as Latvia and Lithuania (PetrolPlaza, 2019).

3.4. Disagreements and uncertainties over Inčukalns UGS

The large natural gas storage facility in Inčukalns in Latvia has universally been considered as essential element in providing security of supply and liquidity to the Baltic gas market. Moreover, the main obstacle to Inčukalns eventually becoming the integrated hub of a regional Baltic gas market has in fact been political and regulatory. Despite Latvia's delayed market liberalisation, Gazprom has not sold its shares at the gas transmission and storage company, Conexus Baltic Grid, which operates the Inčukalns natural gas storage facility (Fridrihsone, 2019). This situation could create legal problems regarding the national implementation of the EU gas directive and the following implementation of Gas regulation package (secondary EC legislation) as well as other activities, including effective and transparent use of storage facility for regional purposes.

There are also economic disagreements among regional countries over the use of Inčukalns UGS. Latvia is facing up to the problems of a liberalised market in which traders do not put the same value on storage as the government used to (Jegelevicius, 2018c). Moreover, struggling to fill up the underground gas storage facility in Inčukalns Latvian gas transmission and storage operator Conexus Baltic Grid is nevertheless pursuing its plan to raise the tariffs. In response, several Baltic customers have warned that the considerable increase in pricing will discourage them to use the gas storage facility. For instance, CEO of UAB Lietuvos duju tiekimas, one of the major Lithuanian gas supply companies and an important client of Conexus, argued "If Conexus gets it done, it will be a game-changer. If storage fees increase as much we expect – 40-60% – then it will make no sense for Lietuvos dujų tiekimas to ship and store gas" (Jegelevicius, 2018c). In addition, CEO of UAB Lietuvos duju tiekimas also warned of the wider repercussions for regional gas market if fees are raised "With a more expensive storing in Inčukalns, the prospects of the Klaipeda liquefied natural gas terminal would suffer a dent. As well as the Baltics' striving for energy independence - with higher tariffs in place, the US and Norwegian gas would become for UAB Lietuvos duju tiekimas too expensive" (Jegelevicius, 2018c). Furthermore, similar concerns were raised by representatives of Eesti Energia who pointed out that the company would think twice before continuing to use Inčukalns if its tariffs were increased (Jegelevicius, 2018c).

4. Importance of Poland as a gas hub

Poland has ambitions to become the 'gas hub' of Central and Eastern Europe, and its interconnection plans in all directions have significantly progressed (Tuohy, 2019). Poland can (or soon will be able to) draw on storage capacities in Ukraine, additional import possibilities via Germany (physical and virtual alike), interconnections with the Czech Republic and Slovakia (see Figure 8).

Figure 8. Major infrastructure projects between Poland and neighbouring countries

BALTIC PIPE:

- ▶ **Capacity:** 10 bcm/y towards PL, 3 bcm/y towards DK
- ▶ **Commissioning:** 2022
- ▶ **Status:** FID taken, ongoing engineering works

POLAND – CZECH REPUBLIC INTERCONNECTION:

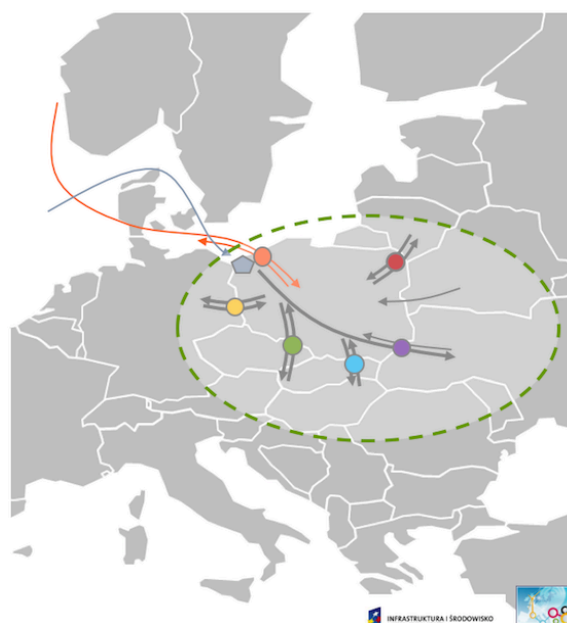
- ▶ **Capacity:** 5 bcm/y towards CZ, 6.5 bcm/y towards PL
- ▶ **Commissioning:** 2023
- ▶ **Status:** design/permitting completed, preparation of FID ongoing

POLAND – SLOVAKIA INTERCONNECTION:

- ▶ **Capacity:** 4.7 bcm/y towards SK, 5.7 bcm/y towards PL
- ▶ **Commissioning:** 2021
- ▶ **Status:** FID taken, design/permitting completed, tendering ongoing

POLAND – UKRAINE INTERCONNECTION:

- ▶ **Capacity:** 5 bcm/y both directions
- ▶ **Commissioning:** 2022
- ▶ **Status:** non-FID, permitting completed, design ongoing



Source: GAZSystem, 2018.

In addition, having signed both spot, medium-term and long-term contracts respectively with US and Qatar, Poland is also expanding its LNG infrastructure in Świnoujście to boost its regasification capacity from 5 bcm to 7.5 bcm (then possibly up to 10 bcm/year following further extension) (EC, 2017c). Moreover, Poland's Gaz-System and its Danish counterpart, Energinet, agreed to proceed with the Baltic pipe project, a long-held EU PCI funded project to link Poland with Norway's gas fields (Shotter, 2019). According to Jakubowski, CEO of Polskie LNG, "Poland is working on interconnectors with Lithuania, Ukraine, Slovakia and the Czech Republic to be able to deliver surplus volumes to neighbouring markets to create a regional gas hub. The Baltic pipe can give us very stable supplies to the Polish gas market on a long-term basis. The LNG terminal can give us flexibility and price arbitrage" (Harper, 2019). As a result, with well diversified gas infrastructure in place by 2022 Poland is expected to be able to import 52.9 bcm of gas annually, a massive change in comparison to 2009 (see Figure 9).

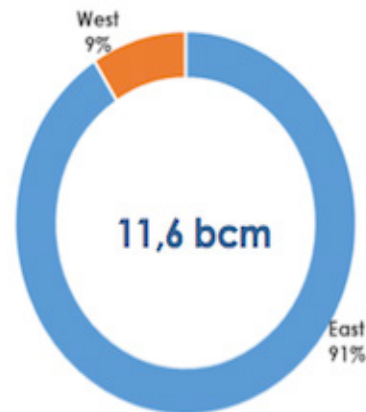
Figure 9. Comparison of Poland's technical import capacities

2009 - before the Russian-Ukrainian crisis

Transmission system



Technical import capacities

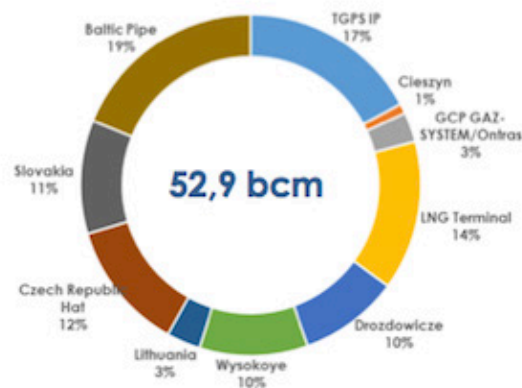


2022 – completion of the N-S corridor

Transmission system*



Technical import capacities



* - infrastructure marked in red - completed projects

Source: GAZSystem, 2018

These interconnections will not only strengthen the attractiveness of the Polish gas market but also potentially spur the growth of trading and market liquidity among the Baltic States and Finland via the forthcoming Gas Interconnector Poland-Lithuania (GIPL) pipeline. Nevertheless, the prospects of these developments will very much depend on whether all regional countries will find common ground over the regional gas market design.

5. Role of Russian gas

Import dependence on Russian gas has for many years constituted the core concern for the Baltic States' energy security. At the same time, industry stakeholders seem to prefer cheaper supply options regardless of origin. For example, despite the buildup of LNG terminal in Klaipėda, in 2017 Gazprom took 54% of Lithuania's market, a rise from 40% in 2016 (The Baltic Course, 2018). The CEO of Balticconnector Herko Plit explained: *"Gazprom cannot be expected just to go away with the opening of our gas market"* (Jegelevicius, 2018a). Moreover, the decision imposed by the European Commission on Gazprom in the context of the antitrust case in 2018 provides certain insurance for the Baltic States that Russia will no longer be able to use energy supplies as a weapon of pressure or intimidation. According Margrethe Vestager, the European Commissioner for Competition, *"Our decision provides a tailor-made rulebook for Gazprom's future conduct. It obliges Gazprom to take positive steps to further integrate gas markets in the region and to help realise a true internal market for energy in Europe. And it gives Gazprom customers in Central and Eastern Europe an effective tool to make sure the price they pay is competitive. In other words, customers can ensure that their gas price will now be driven by the competitive gas prices ..."* (EC, 2018),

Furthermore, the availability of Russian LNG has become a reality in the Baltic countries. For instance, Lithuania's state-owned natural gas supplier UAB Lietuvos Energijos Tiekimas (LET) has sparked a controversy over the purchase of LNG from a plant owned and operated by the Russian gas company Novatek. Some politicians in Lithuania's expressed public outcry over the purchase of gas from the company which belongs to people from President Putin's inner circle urging legal and national security investigations (Jokubaitis, 2019). Despite that, some energy experts in Lithuania claimed that the reaction was highly exaggerated and underlined the economic logic of LNG purchase from Russia. A former head of Lithuania's energy pricing commission Vidmantas Jankauskas argued *"I don't see a big difference if the gas comes from Gazprom or Novatek. It would be very foolish to prevent national gas traders from buying Novatek gas. As it is cheaper ... any ban would affect them adversely. Furthermore, they could lose competitiveness in spot gas markets"* (Jegelevicius, 2019). This position was supported by the director of international expansion of Lietuvos Energija who pointed out *"clear rules need to be set both for state and private energy companies' gas purchases, in a very competitive environment. Any (gas) acquisition, regardless of its origin, means more competition for Gazprom and lower prices. Even if Lietuvos Energija does not do so, other companies will continue buying gas including from Novatek, and selling it directly to consumers on the gas exchanges, meaning Lietuvos Energija would lose out"* (Jegelevicius, 2019). Moreover, limited Russian LNG volumes are supplied to Estonia across Lake Peipsi. Therefore, the availability of a competitive supply of small-scale LNG from Russia has become a reality and may certainly contribute to the development of the regional gas market (Belyi, 2019).

6. Conclusions

The Baltic States together with Finland have often been considered being one the most exposed areas to energy supply problems in the EU. Most of the dangers resulted from their strong dependency on gas delivered from one supplier – Russia. Despite that, in the past 10 years, countries in the region have made an important progress towards diversifying their energy supplies, especially of natural gas. This progress was brought about as a result of remarkable political will as well as improved regional cooperation has resulted in considerable economic benefit while decreasing the three countries' vulnerability to outside pressure. The important stimulus for the cooperation has been clear EU policies and legislation concerning the creation of internal gas market. Moreover, the Baltic States have already completed or are in the process of implementing some important national and regional projects which serves as a precondition for the creation of regional gas market. For example, once completed, the Balticconnector and the GIPL will allow Finland and the Baltic States to diversify their gas sources and routes as well as to integrate the entire region into the EU's internal energy market ending the physical isolation of the Baltic States and Finland from the European gas network.

Despite positive changes with respect to diversification of infrastructure, the creation of regional gas market could be hindered by certain political, economic and technical challenges. First, disagreements among Lithuania and other regional countries remain over the exact design of the future gas market in the region, especially with regards to the inter-transmission system compensation mechanism, partly concerning the sharing revenues of the Baltic transmission system operators. Secondly, there are internal market impediments in Latvia and Finland which could have a negative impact on the creation of regional

gas market. In addition, lack of market liquidity and fragmentation in Estonia and other countries in the region may hinder the construction of regional gas market. The construction of regional gas market could also be affected by the low and declining gas consumption volumes involved. Moreover, there are economic disagreement among Baltic countries over the tariffs of Inčukalns gas storage in Latvia.

Poland plays an important role in the development of an effective and efficient gas market in the region. In addition, Poland ambitions to become the 'gas hub' of Central and Eastern Europe by building interconnections with neighbouring countries could also potentially spur market liquidity among the Baltic States and Finland via the forthcoming Gas Interconnector Poland-Lithuania (GIPL) pipeline. Furthermore, despite initial predictions, Russian gas still plays a considerable role in in the development of the regional gas market.

The Baltic States and Finland should be more proactive in addressing the challenges of regional gas market development. First, the three Baltic states (as well as Finland) need to be firm in their support for market principles for gas trading. In addition, there is a need to find a common agreement with Lithuania on current market design to increase liquidity of the market by allowing to gas supplies from Klaipeda LNG terminal and GIPL. Secondly, governments in the Baltic States should continue progress towards opening and diversifying their internal gas markets. Thirdly, Baltic States and Finland should find a commercial agreement for Inčukalns, agreeing not only on tariffs but also putting forward clear security of supply provisions in case of major interruptions of supplies. Fourthly, countries in the region should evaluate the role gas in the region in the long-term transition towards carbon free economy. Lastly, Baltic States should further develop energy cooperation with Poland in order to use its potential of becoming regional gas hub.

References

Amber Grid (2019) *Gas Interconnection Poland–Lithuania (GIPL)* [online] <<https://www.ambergrid.lt/en/projects/gas-interconnection-poland-lithuania-gipl>>

Balticconnector Oy (2017) *The gas pipeline to Estonia will open the Finnish gas market as from 2020*, Press Release <<http://balticconnector.fi/wp-content/uploads/2017/04/Gas-pipeline-to-Estonia-will-open-the-Finnish-gas-market-as-from-2020-24-April-2017.pdf>>

Belyi, A. (2019) *Stepping on the Gas: Future-Proofing Estonia's Energy Market and Security*, ICDS Report [online], pp. 1-44 <https://icds.ee/wp-content/uploads/2019/05/ICDS_Report_Stepping_on_the_Gas_Belyi_May_2019.pdf>

BEMIP (2015) PA Energy – BEMIP Action Plan (for competitive, secure and sustainable energy) [online], pp. 1-10 <https://ec.europa.eu/energy/sites/ener/files/documents/BEMIP_Action_Plan_2015.pdf>

Central Statistical Bureau (2018) Last year, amount of electricity produced in hydro and wind power plants up by 70.5 %, Press Release [online] <<https://www.csb.gov.lv/en/statistics/statistics-by-theme/environment-energy/energy/search-in-theme/2404-energy-consumption-2017>>

Directorate-General for Energy (2018) *EU energy in Figures*, European Commission <<https://publications.europa.eu/en/publication-detail/-/publication/99fc30eb-c06d-11e8-9893-01aa75ed71a1/language-en>>

Elering (2018) *Estonian Gas Transmission Network Development Plan 2018—2027*, Elering.ee [online] <https://elering.ee/sites/default/files/attachments/Estonian_gas_transmission_network_development_plan_2018_2027.pdf>

Elias, T. (2019) *The Finnish Gas Market will be Opened to Competition at the Start of 2020*, EGSSIS [online], 20 May. <<https://www.egssis.com/the-finnish-gas-market-will-be-opened-up-to-competition-at-the-start-of-2020/>>

Enerdata (2018) 2017 Lithuania key figures, Energy Research estore [online] <<https://estore.enerdata.net/lithuania-energy.html>>

Energy Authority (2019) *National Report 2018 to the Agency for the Cooperation of Energy Regulators and to the European Commission*, Ref: 2177/480/2019 [online] < <https://energiavirasto.fi/documents/11120570/13026619/Raportti-National-report-2019-Finland/5f0408b2-5903-11cf-29a3-3a6d0ed0d2a5/Raportti-National-report-2019-Finland.pdf>>

ENTSOG (2012) *BEMIP: Gas Regional Investment Plan 2012 – 2021*

EPSO-G (2015) *The increase of the capacity of the Klaipėda – Kiemėnai gas pipeline. Projects* [online] < <https://www.epsog.lt/en/projects/the-increase-of-the-capacity-of-the-klaipeda-kiemenai-gas-pipeline>>

EPSO-G (2019) *GIPL: gas interconnection between Poland and Lithuania, Projects* [online] <<https://www.epsog.lt/en/projects/gipl-gas-interconnection-between-poland-and-lithuania>>

European Commission (2015) *A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy*, Energy Union Package, COM(2015). <https://setis.ec.europa.eu/system/files/Communication_Energy_Union_en.pdf>

European Commission (2017b) *Enhancement of Estonia-Latvia interconnection (PCI project 8.2.2)*, Investment Project EIPP-20160038 [online] <<https://ec.europa.eu/eipp/desktop/en/projects/project-24.html>>

European Commission (2017a) *Latvia's gas market now liberalized*. News [online] < <https://ec.europa.eu/energy/en/news/latvias-gas-market-now-liberalised>>

European Commission (2017c) *Preparation of the third Union list of PCIs*, BEMIP Gas Regional Group meeting [online] < <https://circabc.europa.eu/webdav/CircaBC/Energy/13%20Regional%20Meetings/Library/2017%2004%2025-27%20Gas%20RG%20meetings/Slides%20for%20BEMIP%20Gas.pdf>>

European Commission (2018) *Antitrust: Commission imposes binding obligations on Gazprom to enable free flow of gas at competitive prices in Central and Eastern European gas markets*, Press release [online], 24 May < https://europa.eu/rapid/press-release_IP-18-3921_en.htm>

European Commission, *Baltic Energy Market Interconnection Plan (BEMIP)* <https://ec.europa.eu/energy/en/topics/infrastructure/high-level-groups/baltic-energy-market-interconnection-plan>

Eurostat (2019) *EU imports of energy products - recent developments*, Statistics Explained [online] < <https://ec.europa.eu/eurostat/statistics-explained/pdfscache/46126.pdf>

Eurostat (2018) *Natural gas supply statistics*, Statistics Explained [online] <<https://ec.europa.eu/eurostat/statistics-explained/pdfscache/10590.pdf>>

Fridrihson, M. (2019) *Gazprom still hasn't sold off shares at gas storage utility*. News [online], 2 January < <https://eng.lsm.lv/article/economy/economy/gazprom-still-hasnt-sold-off-shares-at-gas-storage-utility.a262857/>>

Gasum (2019) *The Nordic gas filling station network is expanding – a new station opens in Norrköping, Sweden*. News [online], 18 June < <https://www.gasum.com/en/About-gasum/for-the-media/News/2019/the-nordic-gas-filling-station-network-is-expanding--a-new-station-opens-in-norrkoping-sweden/>>

Harper, J. (2019) *Polish Gas Terminal Speaks Volumes*, Forbes [online], 31 March < <https://www.forbes.com/sites/joharper/2019/03/31/polish-gas-terminal-speaks-volumes/#3da3cd156e1f>>

Hermanson, A. S. (2018) *Energy security in a multi-level governance perspective*, Marine Policy, 98, pp. 301-308.

Jääskeläinen, J.J., Höysniemi, S., Syri, S., Tynkkynen, V.-P. (2018) *Finland's Dependence on Russian Energy—Mutually Beneficial Trade Relations or an Energy Security Threat?*, *Sustainability*, 10, 3445, pp.1-25.

Jegelevicius, L. (2018a) *Damb Squib for Finish Gas*, *Natural Gas World*, 3(19), 3-45.

- Jegelevicius, L. (2018b) Latvia Puts Pressure on Gazprom, *Natural Gas World* [online], 7 September <<https://www.naturalgasworld.com/ngw-magazine-latvia-puts-pressure-on-gazprom-64151>>
- Jegelevicius, L. (2018c) Latvia's Storage Dilemma, *Natural Gas World* [online], 1 March <<https://www.naturalgasworld.com/ngw-magazine-vol-3/4-latvias-storage-dilemma-58760>>
- Jegelevicius, L. (2019a) Lithuania's Russian LNG Cargo Sparks Row, *Natural Gas World* [online], 29 April <<https://www.naturalgasworld.com/novateks-lng-sparks-baltic-discord-69647>>
- Jegelevicius, L., Powell, W. (2019b) Finding Common Ground in The Baltics, *Natural Gas World* [online], 25 June <<https://www.naturalgasworld.com/finding-common-ground-in-the-baltics-ngw-magazine-70847>>
- Jokubatis, M. (2019) *Kuo rizikuoja Lietuva, pirkdama dujas iš sankcijų sąrašė esančio rusų oligarcho?* 15min.lt [online], 18 April <<https://www.15min.lt/verslas/naujiena/energetika/kuo-rizikuoja-lietuva-pirkdama-dujas-is-sankciju-sarase-esancio-oligarcho-664-1132874>>
- Leppiman A., et al, (2013) Future Outlook and Current Situation for Security of Gas Supply in Eastern Baltic Region, *International Journal of Energy and Power Engineering*, 7:11, pp. 2968-2974.
- Lietuvos Energija (2018) *Lietuvos Energija initiated a reorganisation of Lietuvos Dujų Tiekimas and LITGAS*, News [online] <<https://www.globenewswire.com/news-release/2018/08/17/1553500/0/en/Lietuvos-Energija-initiated-a-reorganisation-of-Lietuvos-Dujų-Tiekimas-and-LITGAS.html>>
- Ministry of Energy of Lithuania (2018) *Green light is on for a strategic gas pipeline between Lithuania and Poland*, News [online], 25 May <<https://enmin.lrv.lt/en/news/green-light-is-on-for-a-strategic-gas-pipeline-between-lithuania-and-poland>>
- Ministry of Energy of Lithuania (2019) *Agreement signed on a Feasibility study for the electricity generation project*. News [online], 15 March <<https://enmin.lrv.lt/en/news/agreement-signed-on-a-feasibility-study-for-the-electricity-generation-project>>
- Młynarski, T. (2016) *The Role of Polish Gas Investments in enhancing Central and Eastern Europe Energy Security*, Managing global changes: proceedings of the Joint International Conference, pp. 307-317.
- Molis, A. (2016) Towards a Regional Gas Market in The Baltic States: Political, Economic and Legal Aspects, *Humanities And Social Sciences Latvia* [online], 24(1), pp. 91-126
- National Energy Regulatory Council (2018) *Gamtinių dujų rinkos stebėsenos ataskaita už 2017 m. I pusmetį*, Report [online] <https://www.regula.lt/SiteAssets/naujienu-medziaga/2018/2018-vasaris/GD_ataskaita_2017_II_pusm.pdf>
- National Energy Regulatory Council (2019) *Gamtinių Dujų Tiekimo Licencijas / Leidimus Turinčios Įmonės*, Regula.lt [online] <<https://www.regula.lt/dujos/Puslapiai/sarasai/gamtiniu-duju-tiekimo-licencijas-turincios-imonės.aspx>>
- OECD (2019) *Finland: Fossil Fuels Support Country Note*, April.
- PetrolPlaza (2019) *Eesti Gaas: "We want to expand our CNG operations to neighbouring countries"*, News [online], 1 March <<https://www.petrolplaza.com/news/20423>>
- Rehn, Olli. (2016) *The energy security of the supply to Finland and the Balticconnector project*, Baltic Rim Economies review, 2, pp. 5
- Shotter, J. (2019) *Poland aims to break dependence on Russian gas*, Financial Times [online], 27 January <<https://www.ft.com/content/d1b9d764-febd-11e8-aebf-99e208d3e521>>
- The Baltic Course (2018) *Gazprom took 54% of Lithuania's market, a rise from 40% in 2016*, News article [online], 24 January <<http://www.baltic-course.com/eng/energy/?doc=137070>>

Tuohy, E. (2019) *Going Past Monopoly: Developing a Balanced Baltic Sea Regional Gas Market*, ICDS Policy Paper [online], pp. 1-15 < https://icds.ee/wp-content/uploads/2019/03/ICDS_Policy_Paper_Going_Past_Monopoly_Emmet_Tuohy_March_2019.pdf>

Weiner, C. (2016) *Central and East European Diversification under New Gas Market Conditions*, Centre for Economic and Regional Studies HAS Institute of World Economics, Working Paper, 221, pp. 1–79.

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