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NATURAL GAS TRANSMISSION SYSTEM OPERATOR'S TEN-YEAR NETWORK DEVELOPMENT PLAN (2016–2025)

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INTRODUCTION

AB Amber Grid (hereinafter referred to as the 'Company') is Lithuania's Natural Gas Transmission System Operator responsible for a safe operation of the system and for its development. In order to ensure reliability of natural gas supplies of Lithuania's consumers (uninterrupted gas supplies and sufficient capacity of the System), it is important to develop the gas transmission system in an efficient manner aiming at its smooth integration into the Pan-European Natural Gas Transmission System and the creation of opportunities for the gas supply source diversification. To this end, the Parliament of the Republic of Lithuania in Lithuania's National Energy Independence Strategy provided for the priority projects required to be implemented in the gas sector in order to diversify Lithuania's gas supply sources and to interconnect Lithuania's Gas Transmission System with the Gas Transmission System of the European Union. Having taken into account the national strategic documents, the strategy and environmental protection policy of the Company, the needs Lithuania's natural gas users and with a view to securing gas supply reliability and efficient functioning of the gas transmission system, the Company has drawn up the Natural Gas Transmission System Operator's Ten Years (2016–2025) Network Development Plan (hereinafter referred to as the Plan). The Plan relies on the long-term objectives included in the National Energy Independence Strategy, and provisions of other legislation defining operation and principles governing transmission system operators and the gas sector.

Lithuania's Gas Transmission System consists of gas transmission pipelines, gas compressor stations, gas metering and regulation stations (M&R stations), gas metering stations, gas pipeline corrosion protection equipment, remote data transmission and communication systems and other facilities attributed to the Transmission System. Lithuania's Gas Transmission System is connected with the LNG Terminal infrastructure facilities and with the gas transmission systems of the Kaliningrad Region of Russian Federation as well as with the ones of Belarus and Latvia. Gas is supplied to the Lithuania's transmission system from Russia (via pipeline from Belarus via Kotlovka M&R station) and through the LNG Terminal in Klaipėda; another gas supply route is the one via the gas transmission pipeline from Latvia.

In 2015, as part of the implementation of the Project for the Capacity Enhancement of the Klaipėda-Kiemėnai Pipeline, the Klaipėda-Kuršėnai gas transmission pipeline was constructed, which has enabled making full use of the capacity of the LNG Terminal in Klaipėda and resulted in a significant increase in natural gas supply diversification level of both Lithuania and other market participants of the Baltic States.

In 2016–2025, as Lithuania continues diversifying gas supply sources, increasing reliability of gas supply, and integrating the gas transmission systems of the Baltic Region into the common gas system of the EU, the following investment projects are expected to be completed:

- to construct a gas transmission pipeline interconnection between the Lithuanian Gas Transmission System and the Polish Gas Transmission System;

- to carry out a joint project of Lithuania's and Latvia's Natural Gas Transmission System Operators aimed at an increase of the present capacity of the natural gas interconnection between the two Baltic States.

These projects will also be relevant to processes shaping regional gas market in the east Baltic Region.

In 2016, the Company plans construction a gas transmission pipeline branch to the Tauragė M&R station and building of the M&R station, allowing for connection to the gas distribution system. Once the distribution system operator builds the distribution pipeline grids from the M&R station, Tauragė district will be connected to the natural gas system.

The aim of the gas transmission pipeline section (connector pipeline), which is planned to be constructed from the Kaunas-Šakiai gas transmission pipeline to the Kaunas M&R station after 2020 is to secure safe and reliable gas supplies within the territory of Lithuania, because in case there should be gas transmission disruptions via the existing sole gas line (due to any accidents or any other causes), a considerable number of gas customers of the city of Kaunas as the ones of the Kaliningrad Region would have to suffer gas supply interruptions.

1. SOURCES OF NATURAL GAS SUPPLY AND DEMAND FOR GAS TRANSMISSION SERVICES

To-date, gas is supplied to Lithuania from two main sources, i.e. via the LNG Terminal in Klaipėda and from Russia, via Belarus, through the gas pipeline crossing Kotlovka M&R station; gas supply is also available to Lithuania from Latvia, via Kiemėnai M&R station.

Natural gas consumption forecast for Lithuania, collectively with the shaping of the common gas market in Baltic Region was one of the key factors in the planning of the Transmission System development. In order to ensure maximum accuracy of the planning process, the Company has been holding consultations with the stakeholders – both with the existing Transmission System users and with potential Transmission System users, and with the gas supply companies. Gas transportation forecasts for 2016-2025 were based on relevant information supplied by the existing Gas System users about their prospective gas demand quantities. System users were asked to supply data on their prospective demand for gas quantities and capacities for the next ten years.

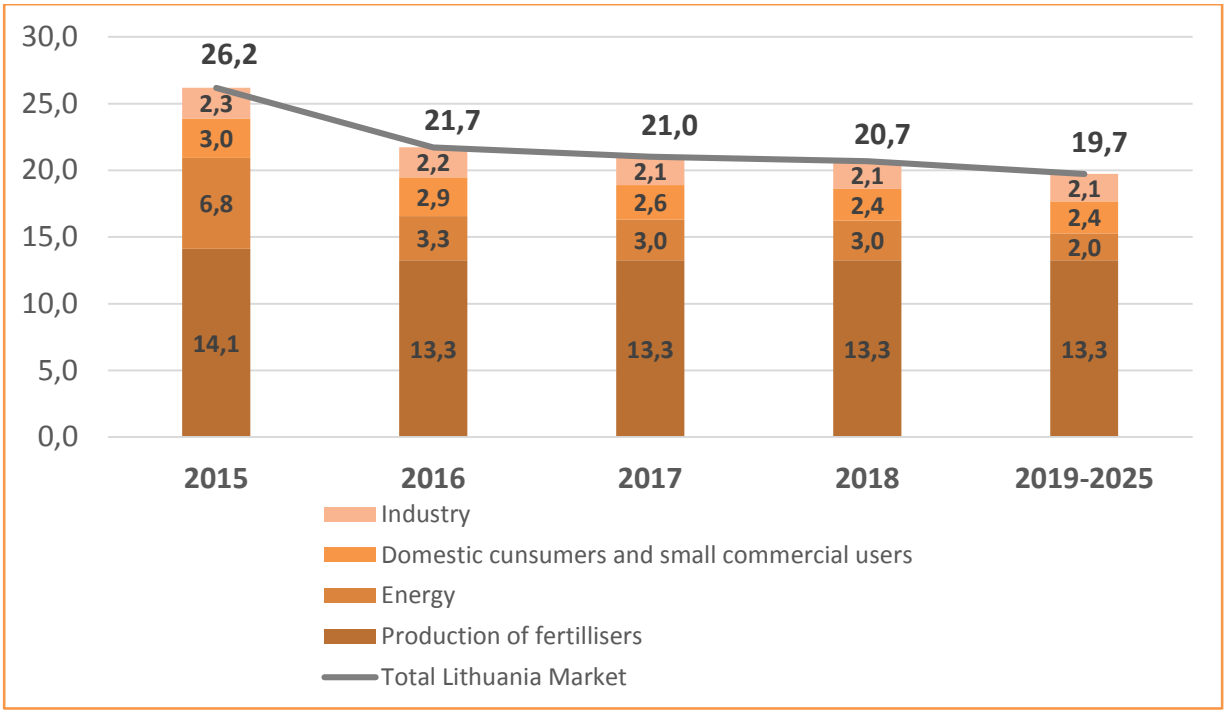
In 2016, declared / established consumer capacity of the users and consumers of the Lithuania's gas transmission system (maximum quantity of natural gas per day required to meet maximum consumer needs of natural gas) is approx. 202.6 GWh per day.

Recently, the gas quantity transmitted in order to serve the Lithuanian market using the gas transmission system of the Company has seen a sharp drop: in 2014, 26.7 TWh of gas was transmitted, in 2015, 26.2 TWh gas was transmitted; while in 2016, the Company expects to transmit 21.7 TWh natural gas to serve the needs of the Lithuanian consumers. According to the data that was submitted by the users of the Lithuanian system, gas transmission quantities for the needs of Lithuanian customers are likely to gradually decrease to 20.7 TWh in 2018; and in later years (having factored in any potential impact of the pending projects planned for implementation by the energy group "Lietuvos Energija" at the Vilnius and Kaunas district heating systems for the installation of biofuel and municipal waste cogeneration plants) would reach approximately 19.7 TWh per year.

Lithuania's energy companies are expected to show a significant decline in natural gas demand due to their thermal energy production efficiency raising and due to the conversion from gas to alternative fuels (biomass, solar, wind, geothermal energy). The use of alternative technologies (renewable energy resource-related technologies) is promoted by both the EU and the national strategic documents, which provide for a growing share of alternative energy resources within the total energy balance and a shrinking share of fossil fuels.

Accordingly, in 2016, the demand for subscribed long-term transmission system capacity by Lithuania's consumers is 94.2 GWh. The Company expects that later on, post 2018, the subscribed capacity will drop to 86.4 GWh per day.

Chart 1. Natural gas transmission quantities by business sector in Lithuania in 2015–2025, TWh per annum.



In recent years, the quantity of gas supplied to the Kaliningrad Region of the Russian Federation has remained stable: in 2014, the volume of gas transit was 21.6 TWh, in 2015, the volume was 21.8 TWh; while in subsequent years the Company expects to make use of the resources available and transmit 22-26 TWh gas per year, depending on the needs of the Kaliningrad Region (mostly for gas-based electricity generation).

Since 2015, once the alternative offered by the LNG Terminal became available, gas is supplied via Lithuania to Latvia; in 2015, a total of 1 TWh gas was supplied to the Latvian gas transmission system. The Company expects to transmit approx. 0.6 TWh gas in 2016 via Kiemėnai cross-border exit point to foreign consumers / supply companies. According to the estimates, once the gas market in Latvia is opened, given favourable development of the gas market in the east Baltic Region and other infrastructure projects underway in the region, cross-border gas transmission flows served by the Lithuanian gas transmission system will increase. Notably, estimated total annual demand for gas in Latvia and Estonia is approx. 18 TWh; it can be met using alternative gas supply sources via interconnection from Lithuania and Incukalns gas storage facility. Intensity of additional gas flows in the Lithuanian gas transmission system will depend on the conditions in the natural gas market. In view of the opening opportunities in the market, as well as following completion of the Balticconnector pipeline project in 2022 (to connect Estonia and Finland), the volumes of gas transported to the Nordic countries may well increase.

Furthermore, once the gas interconnection of Poland-Lithuania is completed in 2020, gas transmission will also be available to Poland.

2. EXISTING GAS TRANSMISSION SYSTEM

2.1. Lithuania's Gas Transmission System

Lithuania's gas transmission system is connected with the transmission systems of the Kaliningrad Region of Russian Federation, Belarus and Latvia and with the LNG Terminal in Klaipėda.

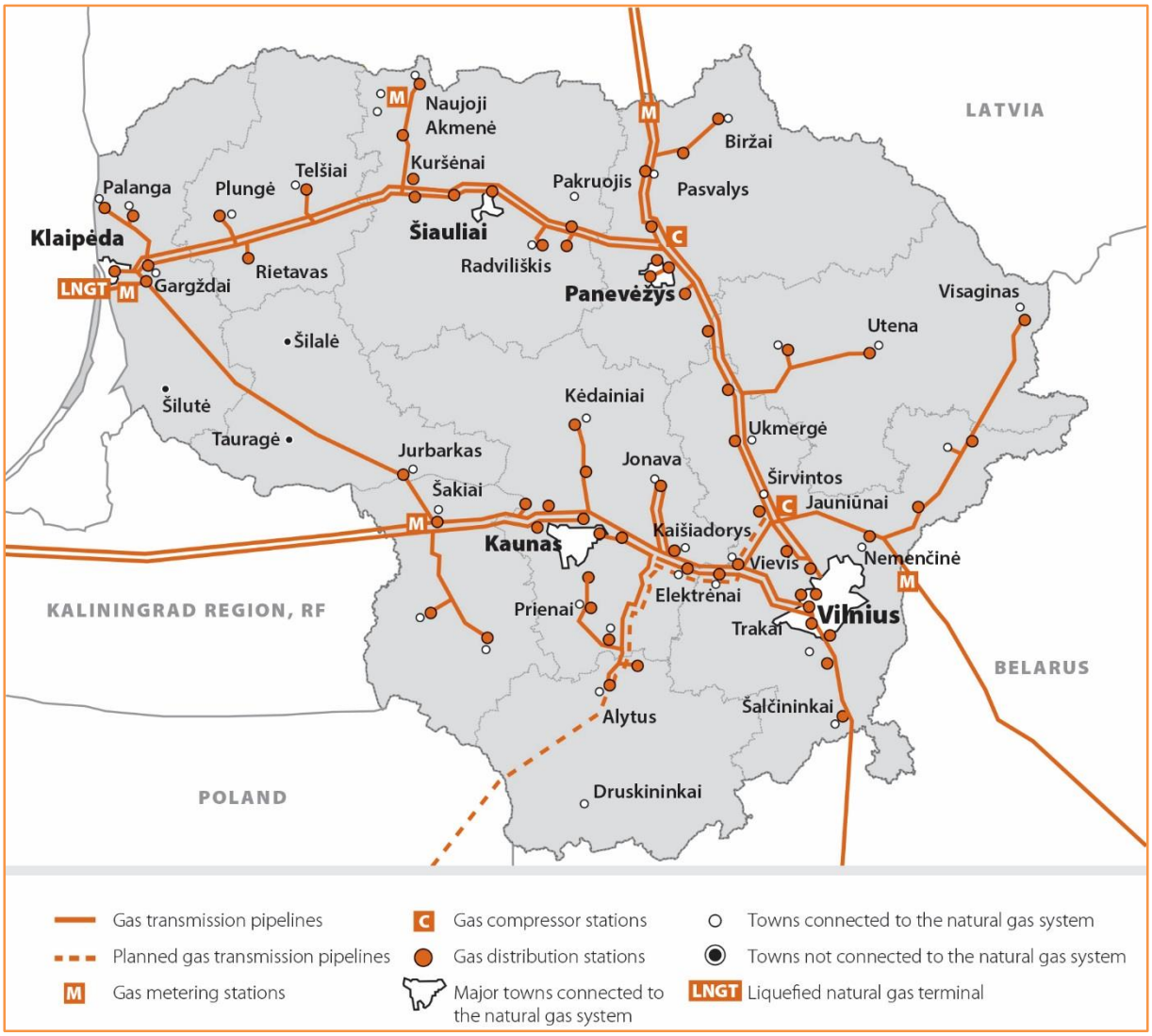
The total length of the pipelines of the Transmission System in the territory of Lithuania is over 2.1 thousand km. In addition to that, in order to secure smooth operations of the Transmission System and in order to facilitate supply of natural gas to the distribution systems, the Gas Transmission System is equipped with 66 M&R stations and one gas metering station. The interconnections of the Lithuanian transmission system operator with the Gas Transmission Systems of the neighbouring countries are equipped with two gas metering stations located in the Lithuanian territory, both of which are owned by the Company. The Company also operates Panevėžys and Jauniūnai gas compressor stations, which ensure that all the gas pressure parameters are as required.

Capacity parameters of the gas pipeline interconnections with the gas transmission systems of the neighbouring countries and the LNG Terminal:

- technical capacity at the entry point located at the Kotlovka gas metering station – 325.4 GWh per day;
- technical capacity at the entry point located at the Klaipėda gas metering station (at the point of interconnection with the system of the LNG Terminal) – 122.4 GWh per day;
- technical capacity at the entry point to Lithuania located at the Kiemėnai gas metering station – 65.1 GWh per day;
- technical capacity at the exit point from Lithuania located at the Kiemėnai gas metering station – 67.6 GWh per day;
- technical capacity at the exit point located at the Šakiai gas metering station – 109.2 GWh per day.

Existing transmission system capacity in connection points with the Lithuania's distribution systems and directly connected system users/consumers is sufficient to secure the needs of the Lithuanian consumers.

Chart 2. Existing Lithuania's Gas Transmission System



2.2. Gas Infrastructure of the East Baltic Region

In the nearest future the Company intends to focus on the liberalisation of the gas market in the East Baltic Region and shaping of the common regional gas market. This will lead to the formation of a more favourable market and diversification of gas supply sources in the region and will facilitate new gas routes and the gas flows using transmission systems of Lithuania and neighbouring countries.

To attain the above objectives, the following new projects on the enhancement of the gas transmission infrastructure are in progress. The List of Projects of Common Interest ("PCI") established by the European Commission in November 2015 and the European Network of Transmission System Operators for Gas ("ENTSOG") Ten-year Network Development Plan for 2015-2024 includes 9 projects on the development of the natural gas infrastructure, of vital importance for the Baltic Region. In the context of the development of the gas market in the east Baltic Region, the following projects are most relevant:

- construction of the gas interconnection Poland-Lithuania (GIPL),
- enhancement of the cross-border interconnection Latvia-Lithuania,
- project on enhancement and modernisation of Incukalns underground gas storage facility;
- enhancement of the cross-border interconnection Latvia-Estonia,
- construction of the gas interconnection Estonia-Finland (Balticconnector).

Chart 3. Gas infrastructure of the Baltic Region

3. TRANSMISSION SYSTEM DEVELOPMENT IN 2016–2025

Over the period of 2016-2025 there are plans to implement transmission system development investment projects aimed at the diversification of the sources of gas supplies to Lithuania and the other Baltic States and at the increase of the security and reliability of gas supply.

In this Plan, investments (investment amounts) are presented at current prices exclusive of value added tax (VAT).

3.1. Projects of Common Interest

On 18 November 2015, the European Commission announced the second European Union List of Projects of Common Interest ("PCI"), which, among other 195 key energy projects, also includes 3 gas sector projects with the involvement of the Company. These are the projects of Gas Interconnection Poland–Lithuania, Capacity Enhancement of Klaipėda–Kiemėnai Pipeline (the project was completed in late 2015) and Enhancement of Latvia–Lithuania Interconnection.

These infrastructure Projects of Common Interest are included in the European Network of Transmission System Operators for Gas ("ENTSOG") Ten-Year Network Development Plan 2015–2024, the BEMIP Region Gas Regional Investment Plan 2014–2023 and the National Key Electricity and Gas Transmission Projects Implementation Priority Plan as approved by the Resolution of the Government of the Republic of Lithuania.

3.1.1. Gas interconnection Poland-Lithuania (GIPL)

The Company implements the GIPL Project jointly with the Polish Gas Transmission System Operator, GAZ-SYSTEM S.A. This Project is aimed at the integration of the gas markets of Eastern European States and Finland (provided that the Estonia-Finland Interconnection is completed) into a single gas market of the European Union, the diversification of gas supply sources, and the enhancement of the security of gas supply.

Chart 4. Preliminary GIPL route

Preparatory works for the implementation of the GIPL Project were started back in 2009. In year 2011 the GIPL Business Environment Analysis was prepared, and the year 2013 marked the preparation of the Feasibility Study of the GIPL Project. The GIPL environmental impact assessment procedures in the Lithuanian territory were launched in the second half of 2013, and they were completed in 2015. On 5 November 2014, the Government of the Republic of Lithuania recognised the part of the GIPL Project in the territory of the Republic of Lithuania as an economic project important to the State.

As of today, the indicative pipeline route is as follows: from the Rembelszczyzna gas compressor station (Poland) to the Jauniūnai gas compressor station (Lithuania) (see Chart 4). According to the GIPL Project, the total length of the gas pipeline will be 522 km (357 km in the Polish territory and 165 km in the Lithuanian territory). In Poland, there are plans to enhance the Rembelszczyzna gas compressor station and to build a new Gustorzyn gas compressor station, and an M&R station is projected on Lithuania's side.

The preliminary technical parameters of the part of the gas interconnection in the Lithuanian territory:

- gas pipeline length: 165 km;
- gas pipeline diameter: 700 mm;

- maximum design pressure: 5.4 MPa, except for a 17 km long section from the Lithuanian-Polish border to the M&R station (in the Lithuanian territory) with maximum design pressure at 8.4 MPa.

- the estimated start of operation of the GIPL is end of 2019.

In September 2016, however, information was received from the Ministry of Energy of the Republic of Poland about technical problems that arose in the Polish territory while performing preparatory works of the Project, and about potential solutions of these problems. One of the potential new technical solutions for the implementation of the GIPL project is the changing of the gas pipeline route in the Polish territory: the route Rembelszczyzna gas compressor station - the Lithuanian-Polish border should be replaced with the route from the Holowczyce gas compressor station - the Lithuanian-Polish border. The Polish party has also informed that the new options for the project's technical solutions currently under consideration can have a positive impact on the size of the project's capacities and that changes in the technical design on the Polish side will not influence technical solutions in the territory of Lithuania; the deadline for the completion of the project, however, will be postponed until the end of 2021.

In view of the current situation, the time limits for the completion of the GIPL project in Lithuania have to be corrected as well, possibly postponing completion until 2020-2021. It is probable that the funds allocation schedule will have to be corrected as well.

The new GIPL project implementation schedule will be included in the next year's Ten-Year Network Development Plan of the Natural Gas Transmission Operator, upon the parties' agreement on the new project implementation plan.

Completion of the GIPL project would result in the development of capacities enabling the gas transportation to the Baltic States of approx. 27 TWh/year; the reverse flow to Poland could be up to 19 TWh/year if the existing infrastructure is used to the maximum extent.

In the future, if needed, the transportation of gas via the GIPL to the Baltic States (and to Finland) could be increased up to 46 TWh of gas per year, with the additional construction or expansion of the gas compressor stations in Lithuania and Poland.

EU asisistance:

After the project promoters submitted a joint application for financing under the Connecting Europe Facility ("CEF"), the European Commission adopted a decision dated 21 November 2014 to allot EUR 10.6 million for the preliminary works under the GIPL project and EUR 295.4 million for the construction works.

In accordance with the agreement for financial assistance under the CEF dated 13 May 2015 by and between AB Amber Grid, GAZ-SYSTEM S.A. and the European Union (EU) Innovation & Networks Executive Agency (INEA), AB Amber Grid was granted up to EUR 2.51 million (co-financing rate at 50% of eligible costs in the Lithuanian territory) for the purposes of the preliminary works under the GIPL.

In accordance with the agreement for financial assistance under the CEF dated 15 October 2015 by and between AB Amber Grid, GAZ-SYSTEM S.A. and INEA, AB Amber Grid was granted

up to EUR 55 million (co-financing rate at 42.6% of eligible costs in the Lithuanian territory) for the purposes of the construction works under the GIPL.

In line with the decision of the European Agency for the Cooperation of Energy Regulators (ACER) dated 11 August 2014 concerning distribution of the costs of the cross-border project, once the project is completed, AB Amber Grid will be required to pay a compensation of up to EUR 54.9 million to GAZ-SYSTEM S.A., Polish gas transmission system operator. Notably, under the agreement for financial assistance under the CEF dated 15 October 2015, AB Amber Grid was granted financial assistance under CEF covering up to 50% of the compensation (up to EUR 27.5 million).

For the preparation of the GIPL business environment analysis, feasibility studies and the environmental impact assessment ("EIA") the EU's financial assistance has been received under the European Commission's Trans-European Energy Networks (TEN-E) Programme 2011–2013, covering 50% of the costs.

The project has been included in the:

- List of the EU Projects of Common Interest, as published on 18 November 2015;
- ENTSOG's Ten-year Network Development Plan for 2015-2024;
- BEMIP Regional Transmission System Operators' Gas Regional Investment Plan for 2014-2023;
- National Electricity and Gas Transmission Infrastructure Projects Priority Plan approved by Resolution No 746 of the Government of the Republic of Lithuania dated 22 July 2014.

In 2015, the EIA procedures of the GIPL project were completed in the Lithuanian territory, and drafting of the territorial planning documents and the special plan along with technical project was underway (to be completed in 2016). The Company will continue to conclude servitude with land owners, and expects to obtain a permit for construction works in September 2016. Furthermore, the Company will conduct procurement procedures and acquire the pipes required for the project, secure the required delivery of these pipes, and start construction of the gas pipeline.

Table 1. The GIPL Project deadlines and the projected funds requirement in the territory of Lithuania (EUR million):

Year	before 2016	2016	2017	2018	2019	Total
Investment	0.94	14.49	59.21	42.12	19.24	136.0

3.1.2. Enhancement of the Latvian-Lithuanian Interconnection

The Project aims to ensure operational security and reliability of the natural gas interconnection between Latvia and Lithuania, a more efficient use of the infrastructure, and to create preconditions for a closer integration of the gas market of the Baltic States. This Project

would also improve conditions to use the Incukalns Underground Gas Storage Facility (Latvia) for the gas market participants of Lithuania, and in the longer term, also for the gas market participants of Poland. Upon the integration of gas markets of the Baltic States in the common Pan-European gas market, this gas interconnection will become an important part of the route linking the markets of Europe and East Baltic Region.

The final decision on the Project scope and the deadlines is expected to be adopted in light of the possible development of the regional gas market and taking into account specific investment projects aimed at gas supply diversification to be actually implemented in the region.

The implementation of this Project would result in the creation of gas transmission infrastructure in the Republic of Lithuania and in the Republic of Latvia. As a result of the implementation of the project, in the Lithuanian territory, the capacity of Kiemėnai GMS would be enhanced. In the Latvian territory, investments would be also required for the expansion of the gas transmission system. The bidirectional capacity of the Gas interconnection between Lithuania and Latvia would be increased from current 65.1-67.6 to 125 GWh/day. The promoters of this Project are AS Latvijas Gaze (company in charge of gas transmission system operator in the Republic of Latvia) and the Company.

Chart 5. The route of the Project for the Enhancement of Gas Interconnection Latvia-Lithuania

Investment amount required for the project implementation in the Lithuanian territory: EUR 2.9 million.

Launch into operation of the project is scheduled for 2020.

The project has been included in:

- List of the EU Projects of Common Interest, as published on 18 November 2015;
- ENTSOG's Ten-year Network Development Plan for 2015-2024;
- BEMIP Regional Transmission System Operators' Gas Regional Investment Plan for 2014-2023;
- the National Electricity and Gas Transmission Infrastructure Projects Priority Plan, as approved by the Resolution No 746 of the Government of the Republic of Lithuania dated 22 July 2014.

Table 2. The project Enhancement of Latvia-Lithuania Interconnection deadlines and projected need for funding in the territory of Lithuania (EUR million):

Year	2016	2017	2018	2019	2020	Viso
Investment			0.2	1.4	1.3	2.9

3.2. Other Projects Aimed at the Development of the Gas Transmission System

In addition to the projects of common interest, there are plans to implement a number of other projects that are necessary to ensure a smooth functioning of the Gas Transmission System and connection to the other gas transmission systems.

3.2.1. Construction of a Gas Transmission Pipeline Branch to Tauragė M&R Station and construction of the M&R Station

In order to connect the town of Tauragė to the natural gas system, the Company is now engaged in construction of a gas transmission pipeline branch and M&R station; once this is completed, the operator of the gas distribution system will be able to connect its expanded system. The aim of the project is to connect Tauragė district municipality to the natural gas system. Once completed, the investment project will allow for gas supply to new domestic consumers and industrial users, provide more opportunities to develop business in Tauragė region, and raise additional investment. Connection of the town to the natural gas system (including construction of the gas distribution grid and connection of consumers) is carried out by AB Energijos skirstymo operatorius, while the works conducted by AB Amber Grid form part of the project.

The Company seeks to enhance the gas transmission system and therefore expects to build a gas transmission pipeline (150 mm diameter, approx. 1.57 km long) and install a M&R station (with capacity of 32.2 MW). The investment value in the gas transmission system is EUR 1.3 million, to be covered by the connection charge payable by AB Energijos skirstymo operatorius.

Construction of the gas transmission pipeline branch and the M&R station is scheduled for completion in 2016.

3.2.2. Connection by Second Line of the Vilnius–Kaunas Gas Transmission Pipeline and the Kaunas–Šakiai Gas Transmission Pipeline

The gas transmission pipeline which transmits gas supplies to customers of the south-western Lithuania (Marijampolė, Vilkaviškis, Kazlų Rūda, Šakiai, Jurbarkas, and Kėdainiai Districts) and the Kaliningrad Region of the Russian Federation, and, in case of a certain gas traffic scenario, gas can be supplied by the LNG Terminal for the Vilnius and Kaunas Regions, in the stretches from the city of Vilnius to the Kaunas M&R station 1 and further on from the Kaunas M&R station 2 to the Kaliningrad Region of the Russian Federation, has two lines. However, in the section located in the vicinity of the city of Kaunas (i.e. in the section from the Kaunas M&R station 1 to Kaunas M&R station 2) the aforesaid gas transmission pipeline has only one line. In the event of an accident on the single line of the Gas Transmission Pipeline located in the vicinity of the City of Kaunas, or should it become impossible to supply gas via this sole line for any other reasons, a vast number of Lithuania's gas consumers as well as the Kaliningrad Region would have to suffer gas supply interruptions.

The fundamental aim of this project is to ensure a reliable and efficient gas transmission in the Lithuanian territory. Gas supply would be ensured in both the possible directions:

- from the west (when the LNG Terminal in Klaipėda is in operation) – for gas consumers of eastern Lithuania;
- to the western direction (if necessary) – the transportation of gas supplies from Russia via the Kotlovka gas metering station and supplying gas to Lithuanian consumers located in the southwest and west of the country and ensuring that Kaliningrad Region's (Russian Federation) transit needs are met.

When the projected pipeline is constructed, all of the gas transmission pipeline in south-western Lithuania would have two parallel lines in place.

Parameters of the prospective gas transmission pipeline: length 14 km; diameter 500 mm. Completion of the project, depending on the needs of the system users and their ability to contribute to the project funding, is scheduled after 2020. Estimated investment value of the project is EUR 6.7 million.

The Project has been included in the National Electricity and Gas Transmission Infrastructure Projects Priority Plan

3.3. Reconstruction and Modernisation of the Gas Transmission System

In order to ensure reliability and security of its gas transmission pipelines, the Company has developed and is implementing its Gas Transmission Pipeline Security Strategy (hereinafter referred to as the 'Strategy'), which provides for a number of measures (both continued and new ones) for the reconstruction and modernisation of the linear part of the Company's gas transmission pipelines, M&R stations and gas compressor stations. In implementation of the provisions for physical and information security requirements applicable to companies of

strategic importance and/or the ones important to national security, the Company has been introducing measures to enhance the corporate IT security.

It is possible that part of the transmission system's reconstruction projects will be co-financed from the EU funds.

In implementation of the National Energy Independence Strategy and the National Progress Programme, on 22 July 2014 the Government of the Republic of Lithuania approved the National Electricity and Gas Transmission Infrastructure Projects Implementation Plan, which *inter alia* provides for the implementation of a number of projects for the modernisation of the existing infrastructure of the Gas Transmission System. The information on investments planned over the next 5 years is provided below.

Table 3. Funding requirement for the reconstruction and modernisation of the gas transmission system (EUR million):

No.		before 2016	2016	2017	2018	2019	2020	Total
1	Reconstruction of the linear part of the gas transmission pipelines	1.0	2.9	10.7	11.9	7.8	4.0	38.3
2	Reconstruction of M&R stations		0.2	2.0	2.2	0.2		4.6
3	Modernisation of gas compressor stations	0.1	1.9	1.4	2.8	1.2	0.3	7.7
4	Other commodity and equipment of Transmission system (corrosion protection system, measuring devices, telemetry)	0.1	1.6	1.6	1.2	0.8	1.0	6.3
	Total investment	**1.2**	**6.6**	**15.7**	**18.1**	**10.0**	**5.3**	**56.9**

The amounts of investment by the year 2016 as presented in Table 4 are an inseparable part of the continuous investment plans.

3.3.1. Reconstruction of the Linear Part of the Gas Transmission Pipelines

One of the key measures provided by the Strategy is the gas pipelines internal diagnostics by special control devices (i.e. intelligent pigging), in order to establish the actual condition of the gas transmission pipelines. To this end, the gas pipelines are planned to be equipped with

intelligent pig launchers and receivers; there are also plans to replace the line block valves, piping elbows/bends, and the old nodes of the branches of the piping.

In 2015, the implementation of the project for the enhancement of capacity of the Klaipėda-Kiemėnai gas pipeline resulted in the construction of the Klaipėda-Kuršėnai gas transmission pipeline. The pipeline was designed and constructed in such a way as to be suitable for the performance of internal diagnostics procedures, so its length, respectively, helped increase both the length of the overall gas transmission pipeline network and the length of gas pipelines that are adapted for internal diagnostics procedures.

Out of the total 2,113 km of the existing pipelines, a total of 1,505 km are suitable to be adapted for the intelligent pigging procedures:

- 667 km of the gas pipelines have already been adapted and subjected to the intelligent pigging procedures;
- 539 km of the gas pipelines have already been adapted (equipped with intelligent pig launchers and receivers) and will be subjected to the intelligent pigging;
- 299 km of gas pipelines are still planned to be adapted for intelligent pigging procedures in the future.

The objective is that by 2025 all the suitable pipelines shall be adapted for the intelligent pigging procedures.

In 2016-2018, the Company plans to install intelligent pig launchers and receivers on the gas pipeline branch leading to the Jonava M&R station, Girininkai M&R station, Palanga M&R station, Naujoji Akmenė M&R station and Panevėžys – Šiauliai gas transmission pipeline (D1000), and to replace the old line block valves with brand new ones.

The Company also plans to continue with the process for the connection of the line block valves to the remote control system. It is planned that in 2019 the remote control will be installed at about 40% of the main line block valves, which will ensure a desirable level of speed of the execution of technological operations.

Renovation of individual sections of Riga-Panevėžys-Vilnius gas pipeline will be among key projects aimed at reconstruction of the linear part of the gas transmission pipelines and enhancement of security of supply. Completion of the second internal diagnostics of the gas pipelines is scheduled by October 2016. Comparison of the outcomes of the previous and the second diagnostics will provide complete information on the state of the gas pipeline, which in turn will reveal sections of Riga-Panevėžys-Vilnius gas transmission pipeline in need of investment.

Upon the assessment of the actual technical condition of the gas pipelines in question, before making a decision on proceeding with the renovation of the linear part of the gas pipeline, the project is subjected to a cost and benefit analysis as well as an analysis of renovation alternatives and the selection of the economically optimum solutions.

3.3.2. Reconstruction of Metering & Regulation Stations (M&R)

The Company operates 66 M&R stations and 3 gas metering stations.

In 2016-2018, the Company intends to reconstruct the Jonava M&R station and Alytus M&R station.

In the process of planning the renovation of the GDS, both current and prospective gas flows are taken into account in order to maximize the effect of the use of the funds allocated to the renovation, which results in the selection of equipment with optimum capacity. Given the current trends in the use of gas and the prospects in the towns of Jonava and Alytus, the total capacity of the pressure reduction lines of Jonava GDS will be about 14 percent lower and the total capacity of the pressure reduction lines of Alytus GDS will be 75 percent lower than the present levels.

These solutions ensure a rational development of the existing infrastructure and a significant decrease in subsequent infrastructure maintenance cost.

3.3.3. Modernisation of Gas Compressor Stations

The Jauniūnai gas compressor station (launched back in 2010) is equipped with 3 compressor units with a total capacity of 34.5 MW.

Before the launch into operation, the Gas Compressor Station was subjected to comprehensive assessment of its initial state, including comprehensive precise measurement and evaluation of its altitudes and dimensions, the main operating parameters, etc. In 2015, the Company plans to conduct the first diagnostic testing of the state of the Gas Compressor Station, by repeating all the original measurement procedures.

The Panevėžys gas compressor station since 1974 has 7 reciprocating gas compressor units with a total capacity of 7.7 MW. The technological equipment of the gas compressor station is being gradually modernised.

By 2018, there are plans to proceed with the Panevėžys gas compressor station automated control modernisation, filter replacement, installation of additional combustion chambers and air supply systems modernisation of the remaining three compressors.

The implementation of these measures will ensure a safer operation of the Panevėžys Gas Compressor Station and will reduce by 8-10% the consumption of gas used as engine fuel and the emissions of pollutants.

ANNEX 1

Investments under the Plan

No		before 2016*	2016	2017	2018	2019	2020	2021-2025	Total	Total, except part of investment before 2016
	Projects of common interest:									
1	Gas interconnection Poland-Lithuania	0.94	14.49	59.21	42.12	19.24			**136.00**	**135.00**
2	Enhancement of Latvia-Lithuania gas interconnection				0.2	1.4	1.3		**2.90**	**2.90**
	Other projects on the development of the gas transmission system:									
3	Gas transmission pipeline branch leading to the Tauragė M&R station and construction of the M&R station		1.30						**1.30**	**1.30**
4	Connection by second line of the Vilnius–Kaunas gas transmission pipeline and the Kaunas–Šakiai gas transmission pipeline	0.54						data to be reported in subsequent years	**0.54**	**0.00**
5	Reconstruction and modernisation of the gas transmission system	1.2	6.6	15.7	18.1	10.0	5.3	data to be reported in subsequent years	**56.90**	**55.70**
	Total investment:	**2.7**	**22.4**	**74.9**	**60.4**	**30.6**	**6.6**		**197.6**	**194.9**

* The amounts of investments by the year 2016 form an integral part of the continuous investment plans.

ANNEX 2

Lithuania's Gas Transmission System Including Gas Transmission System Development Projects Planned for Implementation by 2025