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NATURAL GAS TRANSMISSION SYSTEM OPERATOR'S TEN-YEAR NETWORK DEVELOPMENT PLAN (2014–2023)



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INTRODUCTION

AB Amber Grid (hereinafter also 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 effective 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 Seimas 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 needs Lithuania's natural gas users and the national strategic documents, AB Amber Grid has drawn up the Natural Gas Transmission System Operator's Ten Years (2014–2023) Network Development Plan (hereinafter referred to as "the Plan").

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. Before end 2014, Lithuania had to rely for all of its gas supplies on the single external supplier, Russia, and all the gas supplies mainly came via the pipeline from Belarus. From end 2014 on, gas supplies to Lithuania also started coming through the LNG Terminal in Klaipėda. Another gas supply route to Lithuania is the one via the gas transmission pipeline coming from the Latvian direction.

In 2014–2023, Lithuania intends to implement investment projects aimed at the diversification of its gas supplies and at ensuring gas supply reliability for consumers of Lithuania. One of the most important projects is the AB Klaipėdos Nafta's LNG Terminal Project in Klaipėda. The LNG Terminal, which was put into operation end 2014, enabled the diversification of Lithuania's gas supply sources. To achieve the integration of Baltic Region's Gas Transmission Systems into a common gas system of the EU, there are plans to construct a gas transmission pipeline interconnection between the Lithuanian Gas Transmission System and the Polish Gas Transmission System. There are also plans to carry out a joint project of Lithuania's and Latvia's Natural Gas Transmission System Operators aimed at a double increase of the present capacity of the natural gas interconnection between the two Baltic States, at achieving a higher-level of integration of the Systems of the Baltic States and at facilitating the development of the natural gas markets of the Baltic States. The implementation of both of the aforesaid Projects will increase the security of gas supplies in the event of any gas supplies' disruptions or limitations.

In order to secure Lithuania's Gas Transmission System's stable operational regimes and gas transmission reliability, to increase the transmission capacity in the western region of Lithuania and to create opportunities for the connection of new gas users in Lithuania's south-west region, in 2013, the construction of the Jurbarkas-Klaipėda Gas Transmission Pipeline was completed. The looping of the Gas Transmission Pipeline System with the existing Panevėžys-Klaipėda Gas Transmission Pipeline opened up a possibility to proceed with the reconstruction of the Gas Transmission Pipeline (in particular, through the installation of two gas pressure reduction units) and to carry out the pressure test works on a 9-km-long section from ~213 km to the Klaipėda M&R Station. As a result of this measure, Lithuania's Gas Transmission Pipeline System will be ready for the intake of gas supplies coming from the LNG Terminal in Klaipėda at a pressure of 5.4 MPa.

As part of the implementation of the Project for the Capacity Enhancement of the Klaipėda-Kiemėnai Pipeline, the Klaipėda-Kuršėnai Gas Transmission Pipeline is being constructed, which will enable making full use of the capacity of the LNG Terminal in Klaipėda and will result in a significant increase in natural gas supply diversification level of both Lithuania and other market participants of the Baltic States. Should it be decided to proceed with a construction of an Underground Natural Gas Storage Facility in Syderiai, this UGS Storage Facility would also be connected to the aforesaid pipeline.

The aim of the gas transmission pipeline (GTP) section (connector pipeline), which is planned to be constructed from the Kaunas-Šakiai GTP to the Kaunas M&R Station 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 would have to suffer gas supply interruptions.

The Plan has been developed haven taken into consideration the applicable provisions of the documents of the National Strategy, it was prepared with a view to the needs of the gas market participants, with a view to securing gas supply reliability and efficient functioning of the Gas Transmission System, the Company's environmental policy and legislative provisions. The Plan is based on the objectives for the long-term that were set out by the National Energy Independence Strategy and other legislative provisions for the activities and policies of the Transmission System Operators and of the gas sector.

1. LITHUANIA'S NATURAL GAS MARKET

1.1. Current situation

Until end 2014, Lithuania's natural gas consumers used to be supplied from a single source, i.e. from Russia. Quantities of natural gas transmitted via the Company's Gas Transmission System for the Lithuanian market needs have been fluctuating, and over the recent years we have been witnessing a sharp downward trend. The peak of gas transmission for consumers of Lithuania was reached back in 2007, at the time of the general economic upturn.

In 2009, due to the prevailing decline in industrial production and consumption, Lithuania's natural gas consumption fell by almost 25%. After 2009, Lithuania's gas transmission quantities started increasing, but in 2013 there was a decline due to the drop in natural gas demand for fertiliser production, due to the increased use of alternative fuels, due to the lower gas quantities used for heat and electricity generation as well as due to the unfavourable natural gas prices. In 2013, the gas transmission quantities amounted to 27.7 TWh, and the gas transmission quantities for 2014 are forecast at 25.6 TWh.

Over the recent years, there was a rise in quantities of gas transmission to the Kaliningrad Region, in particular, there was a notable increase in gas transmission quantities in 2011, with the launch in Kaliningrad of a brand new combined cycle power plant. In 2013, gas transmission on transit amounted to almost 22.4 TWh.

1.2. Gas demand forecast

Natural gas consumption forecast for Lithuania was one of the key factors in the planning of the Transmission System development.

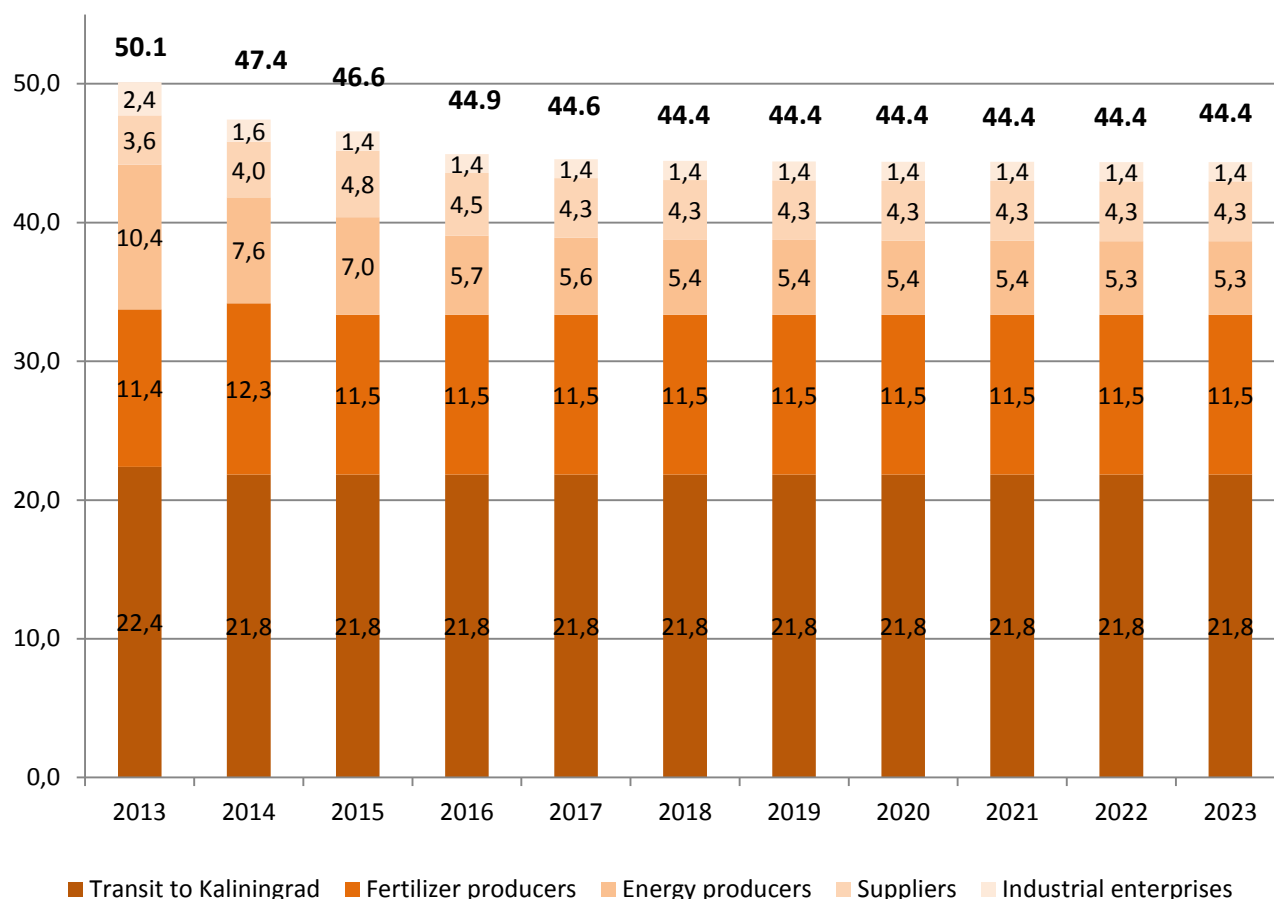
In order to ensure maximum accuracy of the planning process, the Company has been holding consultations with the stakeholders – both with the existing Transmission System users and with potential Transmission System users, and with the gas supply companies. Gas transportation forecasts for 2014-2023 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.

According to the data that was submitted, gas transmission quantities for the needs of Lithuanian customers are likely to decrease from 25.6 TWh in 2014 to 24.7 TWh in 2015. Gas transmission quantities in subsequent years are forecast to average at 22.5 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.

Planned gas transmission to the Kaliningrad Region is forecasted at 21.8 TWh per annum.

Chart No. 1. Natural gas transmission quantities by business sector in Lithuania and transit to the Kaliningrad Region ¹ in 2013–2023, TWh per annum.



It is forecasted that the demand for long-term gas transmission system capacities for Lithuania's consumers in the period 2014–2023 will slightly decrease and will fluctuate from 130.6 GWh in 2014 to 115.4 GWh per day during the period beyond 2020.

1.3. Gas Infrastructure of the Baltic Region

The Baltic Region's natural gas market is traditionally characterised by an overwhelming dependence on the dominant (or sole) supplier of natural gas.

¹ It is forecasted that gas transmission on transit in 2015 and in subsequent years could reach 26 TWh per year, but the most likely quantity is 21.8 TWh.

Nevertheless, in the near future the situation is bound to change. The List of EU Projects of Common Interest (PCI) drawn up on October of 2013 includes 12 natural gas infrastructure development projects of major importance for the Baltic Region. As indicated in the Gas Regional Investment Plan (GRIP) for 2014–2023 prepared by the Transmission System Operators of the Region covered by the Baltic Energy Market Interconnection Plan (BEMIP), the gas infrastructure projects that are currently under implementation (such as the LNG terminals in Klaipėda and Świnoujście in Poland, reconstruction the Yamal Transit Pipeline so that it would operate in the reverse mode in the Polish territory) as soon as in 2014-2015 will allow reduce dependence on the Russian gas suppliers.

The Plan also includes other projects (projects for the installation of the LNG Terminals in Latvia, Estonia and Finland, for the construction of new gas pipelines and for the expansion of the existing gas systems, for the construction of inter-regional links between individual countries in the Region) that are expected to be launched in the near future.

The aforesaid natural gas infrastructure projects are also included in the European Network of Transmission System Operators for Gas (ENTSOG) Ten-Year Development Plan for 2013-2022. Lithuania's and the other Baltic gas transmission system operators' participation in the ENTSOG activities opens up opportunities to contribute to the development of Pan-European network codes, to participate in the creation of a single energy market of the EU – which is especially important for the gas transmission companies that due to their specific circumstances happen to operate in isolated markets.

Chart No. 2. Gas Infrastructure of the Baltic Region



2. EXISTING 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. Until lately, gas supplies used to come from a single external supplier, Russia, via the gas pipeline coming to Lithuania from Belarus. At the state border, the accounting of gas import quantities is made at the Kotlovka Gas Metering Station.

From end 2014 on, gas supplies to Lithuania also started coming through the new LNG Terminal, Klaipėda. The launch of the LNG Terminal enabled the delivery of gas supplies to Lithuania after the acquisition of any such supplies on the global LNG market.

There is also a possibility of supplying gas to Lithuania's Gas Transmission System from the Latvian side. In this case, the accounting of gas supplies is made at the Kiemėnai Gas Metering Station.

The total length of the pipelines of the Transmission System in the territory of Lithuania is over 2.0 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 TSO 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 the Panevėžys and Jauniūnai Gas Compressor Stations, which ensure that all the gas pressure parameters are as required.

The year 2013 marked the completion of the construction of the Jurbarkas-Klaipėda Gas Transmission Pipeline, which enabled completion of the looping of Lithuania's gas pipelines and enabled maintaining a stable operating mode, reliable transmission of gas supplies to the most remote points of Lithuania, enabled transportation of gas supplies from the Liquefied Natural Gas Terminal in Klaipėda, added to the simplification of the execution of any necessary works for the reconstruction and repairs of the Transmission System.

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

- technical capacity Q_{\max} at the Entry Point located at the Kotlovka Gas Metering Station – 324.5 GWh per day;
- technical capacity Q_{\max} at the Entry Points located at the Klaipėda Gas Metering Station (at the point of interconnection with the system of the LNG Terminal) – 47 GWh per day;
- technical capacity Q_{\max} at the Entry Point located at the Kiemėnai Gas Metering Station – 64.9 GWh per day;
- technical capacity Q_{\max} at the Exit Point located at the Kiemėnai Gas Metering Station – 67.4 GWh per day;
- technical capacity Q_{\max} at the Exit Point located at the Šakiai Gas Metering Station – 109.2 GWh per day.

Chart No. 3. Existing Lithuania's Gas Transmission System



3. TRANSMISSION SYSTEM DEVELOPMENT IN 2014–2023

Over the period of 2014-2023 there are plans to implement transmission system development investment projects, mainly 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 supplies.

In the present Plan, investments (investment amounts) are presented at current prices exclusive of the Value Added Tax (VAT).

3.1. Projects of Common Interest

On 14 October 2013, the European Commission announced the first European Union List of Projects of Common Interest, which, among other 248 energy projects, also includes 3 gas sector projects with the involvement of AB Amber Grid. These are the projects of Gas Interconnection Poland–Lithuania, Capacity Enhancement of Klaipėda–Kiemėnai Pipeline 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 (TYNDP) 2013–2022, 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, together with the Polish Gas Transmission System Operator, GAZ-SYSTEM S.A., implements the GIPL Project, which is part of Lithuania's National Energy Independence Strategy. This Project aims at the integration of the gas markets of the Baltic States into a single gas market of the European Union, at the diversification of gas supply sources and at the enhancement of the security of gas supplies.

Chart No. 4. The planned 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 are scheduled for completion 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 about 534 km (357 km in the Polish territory and 177 km in the Lithuanian territory).

Preliminary technical parameters of the part of the gas interconnection in the Lithuanian territory:

- gas pipeline length: 177 km;
- gas pipeline diameter: 700 mm;
- max. design pressure: 5.4 MPa.

Planned start of operation of the GIPL: 2019. The implementation of the GIPL project will result in building gas transmission capacities enabling transportation to the Baltic States of about 27 TWh of gas per year, and the reversal flow to Poland, should the existing infrastructure facilities be used to their maximum capacity, could reach up to 22.5 TWh per year.

In the future, if needed, there is an option of the expansion of the possibilities of transportation of gas supplies via the GIPL to the Baltic States (and to Finland) up to 46 TWh of gas per year, through an additional construction or expansion of the capacities the Gas Compressor Stations in Lithuania and Poland.

In August of 2014, the project promoters, GAZ-SYSTEM S.A. and the Company, filed joint applications to the Innovation Network Executive Agency (INEA) for the co-financing of the GIPL Project under the Connecting Europe Facility (CEF). The right to submit applications for the funding under the CEF was granted by the decision of the Agency for the Cooperation of Energy Regulators (hereinafter referred to as the "ACER") on the cross-border cost allocation of the GIPL, which indicated the specific shares by which the Baltic States (Lithuania, Latvia, and Estonia) and Poland shall finance the GIPL Project. Based on the ACER's decision, the Baltic States shall compensate to Poland a total amount of LTL 296.3 million (EUR 85.8 million): Lithuania LTL 189.6 million (EUR 54.9 million); Latvia LTL 101.5 million (EUR 29.4 million); and Estonia LTL 5.2 million (EUR 1.5 million).

On 29 October 2014, the CEF Energy Coordinating Committee endorsed the European Commission's List of applications selected for granting financial assistance of the EU. The aforesaid List provides for the granting to the GIPL's spatial planning and engineering design works in the Lithuanian and Polish territories a total financial assistance in amount of LTL 36.6 million (EUR 10.6 million), and to the construction works in the territories of Lithuania and Poland a total amount of LTL 1,020 million (EUR 295.4 million). The specific amount of the financial assistance to be granted to the project promoters is due to be determined by individual CEF financial assistance award decisions.

Tentative Total Value of the GIPL Project: LTL 1,926 million (EUR 558 million). In the territory of Poland - LTL 1,457 million (EUR 422 million), in the territory of Lithuania - LTL 469.6 million (EUR 136 million).

According to the data of the application submitted to the INEA for the CEF's co-funding, the funding sources and the structure of the Lithuanian share of the Project are expected to be as follows:

- 41 % (~ LTL 192.5 million / EUR 55.8 million) – the TSO's own and borrowed funds;
- 59 % (~ LTL 277.1 million / EUR 80.2 million) – EU grant.

EU grant:

For the preparation of the GIPL business environment analysis, feasibility studies and EIA works the EU's financial support has been received under the European Commission's Trans-European Energy Networks (TEN-E) Programme.

The EU financial contribution covers 50% of the expenses of the preparation of the business environment analysis, feasibility study and EIA works. The remaining part is financed in equal shares with the funds of the Company and GAZSYSTEM S.A.

The Project has been included in:

- ENTSOG's Ten-year Network Development Plan for 2013–2022;
- BEMIP Regional Transmission System Operators' Gas Regional Investment Plan for 2014-2023;
- The National Electricity and Gas Transmission Infrastructure Projects Priority Plan.

Table 1: The GIPL Project deadlines and projected need for funds:

Year		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
Investments	LTL million	1.52	8.84	12.81	174.37	227.40	44.64					469.6
	EUR million	0.44	2.56	3.71	50.50	65.86	12.93					136.0

3.1.2. Capacity Enhancement of Klaipėda–Kiemėnai Pipeline (Construction of Klaipėda–Kuršėnai Pipeline) (KKP)

The KKP Project was initiated with a view to putting in place in the north western part of Lithuania a sufficient capacity to transport gas from the Liquefied Natural Gas (LNG) Terminal in Klaipėda both for Lithuania's customers and for the ones located in other Baltic States, thus creating opportunities for the Baltic States market participants to diversify their gas supply sources, to ensure safety of gas supplies, to increase the reliability of the Transmission System as well as market competitiveness.

At present, in the northern part of Lithuania, gas supplies in the east - west direction are supplied via the Šiauliai-Klaipėda Gas Pipeline which was constructed as many as 45 years ago, and which in the stretch from Klaipėda to Kuršėnai has a diameter of only 300 mm and in which, due to the age and the technical condition of the gas piping, the maximum pressure is limited to 4.7 MPa (standard pressure in the system: 5.4 MPa). Expected output of the implementation of the KKP Project is the enhancement of the reliability of the Gas Transmission System for gas supplies in the east - west direction.

Due to the limited capacity of the Transmission System, the current Transmission System infrastructure is only capable of the gas intake into the System from the LNG Terminal of approx. 47 GWh/day, while the maximum capacity of the LNG Terminal's regasification system is as high as 122 GWh/day. The existing situation limits the opportunities of Lithuanian gas market participants and prevents other Baltic States' market participants from the diversification of their gas supply sources.

After the construction of the Klaipėda-Kuršėnai Gas Pipeline, the maximum capacity at the point of the Gas Transmission System infrastructure interconnection with the LNG Terminal

would increase from 47 GWh/day to 122 GWh/day, which would enable full use of the capacity of the LNG Terminal.

Chart No. 5. The Route of Klaipėda-Kuršėnai Gas Transmission Pipeline



The KKP Project provides for the construction of a gas pipeline from the point of interconnection with the LNG Terminal in Klaipėda to the town of Kuršėnai (Chart 5). Projected technical parameters of the pipeline:

- gas pipeline length: 110.0 km;
- gas pipeline diameter: DN 800 mm;
- max. design pressure: 5.4 MPa.

In the longer term, the pipeline could integrate into the Transmission System also the Underground Gas Storage Facility in Syderiai, whose installation feasibility is currently being explored.

In July of 2014, upon the obtainment of the Company's Board of Directors' approval, contracts were signed with contractors regarding the KKP Project construction works and the procurement of the piping materials. All the required permits for the construction works were obtained before July 2014. The KKP Project is scheduled for completion end 2015.

In April 2014, Lithuanian and Latvian regulatory authorities adopted their individual decisions regarding the cross-border allocation of the KKP Project costs. By the aforesaid decision, the National Control Commission for Energy Control and Prices approved the KKP

Project, with a provision that the Company's share of the Project investment amounts to no more than LTL 118.1 million (EUR 34.2 million) and that the remaining share of the required investments must be funded from other sources.

In April 2014, Lithuania's and Latvia's regulatory authorities signed an agreement on the cross-border allocation of the KKP Project costs, which stipulates that the share of the Gas Transmission System Operator of the Republic of Latvia, AS Latvijas Gaze, in the implementation of the KKP Project shall be approx. LTL 6.6 million (EUR 1.9 million).

In June 2014, the Company submitted to the INEA its application for the co-financing of the KKP Project from the CEF. On 29 October 2014, the CEF Energy Coordinating Committee endorsed the European Commission's list of applications selected for granting financial assistance of the EU. According to this List, it is proposed to allocate for the KKP Project construction works a total amount of LTL 95.3 million (EUR 27.6 million).

Planned investments into the KKP Project: LTL 220 million (EUR 63.7 million). Tentative financing sources and structure of the Project are as follows:

- 53.7 % (~LTL 118.1 million / EUR 34.2 million) – the Company's own and borrowed funds;
- 3 % (~LTL 6.6 million / EUR 1.9 million): funds of AS Latvijas Gaze;
- 43.3 % (~LTL 95.3 million / EUR 27.6 million): funds of the EU grant.

The Project has been included in:

- ENTSOG's Ten-year Network Development Plan for 2013-2022;
- BEMIP Regional Transmission System Operators' Gas Regional Investment Plan for 2014–2023;
- The National Electricity and Gas Transmission Infrastructure Projects Priority Plan.

Table 2: Implementation deadlines and estimated funding requirement of the Project “Construction of the Klaipėda-Kuršėnai Gas Transmission Pipeline”:

Year		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
Investments	LTL million	55.9	164.1									220.0
	EUR million	16.2	47.5									63.7

3.1.3. Enhancement of Latvia-Lithuania Interconnection

The Project aims to ensure operational security and reliability of the natural gas interconnection between Latvia and Lithuania 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 when it is decided, which specific investment projects aimed at gas supply diversification will 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 through the construction of a second line of the Riga-Iecava gas pipeline and through the enhancement of the capacity of the Kiemenai Gas Metering Station. The bidirectional capacity of the Gas interconnection between Lithuania and Latvia would be increased to 124.8 GWh / day. The promoters of this Project are AS Latvijas Gaze and the Company.

Chart No. 6. The route of the Project for the Enhancement of Gas Interconnection Latvia-Lithuania



Investment amount required for the Project implementation in the Lithuanian territory: LTL 10.0 million (EUR 2.9 million).

Launch into operation of the Project is scheduled for 2020.

The Project has been included in:

- ENTSOG's Ten-year Network Development Plan for 2013–2022;
- The BEMIP Region's Transmission System Operators' Gas Regional Investment Plan for 2014-2023;
- The National Electricity and Gas Transmission Infrastructure Projects Priority Plan.

Table 3: The Project Enhancement of Latvia-Lithuania Interconnection deadlines and projected need for funding:

Year		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
Investments	LTL million				0.3	0.4	4.8	4.5				10.0
	EUR million				0.1	0.1	1.4	1.3				2.9

3.2. Other projects aimed at the development of the Gas Transmission System

In addition to the projects provided by the National Energy Independence Strategy, there are plans to implement a number of other projects that are necessary to ensure a smooth functioning of the Gas Transmission System.

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

The Gas Transmission Pipeline which now 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 which after the launch into operation of the LNG Terminal in Klaipėda will also serve for the transmission of gas supplies for the Vilnius and Kaunas Regions, in the stretches from the city of Vilnius to the Kaunas M&R Station No. 1 and further on from the Kaunas M&R Station No. 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 No. 1 to Kaunas M&R Station No. 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 ones of 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.

It is planned that the pipeline construction will be financed with the Transmission System Operator's own and borrowed funds; the Project's tentative investment value: LTL 23 million (EUR 6.66 million).

The Project has been included in:

- The National Electricity and Gas Transmission Infrastructure Projects Priority Plan.

Table 4: Implementation deadlines and estimated funding requirement of the Project "Connection by Second Line of the Vilnius–Kaunas Gas Transmission Pipeline and Kaunas–Šakiai Gas Transmission Pipeline":

Year		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
Investments	LTL million	0.1	1.9	10.0	11.0							23.0
	EUR million	0.03	0.55	2.90	3.19							6.66

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 on an ongoing basis implements AB Amber Grid's Gas Transmission Pipeline Security Strategy (hereinafter referred to as the "Strategy"), which provides for a number of measures (both continued and brand 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 of the applicable procedures as approved by the Minister of Energy, the Company duly implements the conversion of the accounting of its gas and gas transportation services from the old system of accounting of gas in gas volume units to the new system of gas accounting in units of energy; to this end, the Company is reforming its gas accounting systems. 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 enabling the blocking of any unauthorised access to the Company's infrastructure facilities, to its data centres and their information systems.

There is a possibility that part of the Transmission System reconstruction projects will be in part co-financed with the EU funds.

In implementation of the National Energy Independence Strategy and the National Programme for the Advancement, 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.

Table 5: Funding requirement for the reconstruction and modernisation of the Transmission System:

No.	Title		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
1	Renovation (reconstruction) of the Linear Part of the Gas Transmission Pipelines	LTL million	19.7	13.8	10.5	10.5	13.1						67.6
		EUR million	5.7	4.0	3.0	3.0	3.8						19.6
2	Reconstruction of M&R Stations	LTL million	4.1	4.7	9.4	11.5	7.0						36.7
		EUR million	1.2	1.4	2.7	3.3	2.0						10.6
3	Modernisation of Gas Compressor Stations	LTL million	0.7	0.5	5.7	10.0	5.8						22.7
		EUR million	0.2	0.1	1.7	2.9	1.7						6.6
4	Other commodity and equipment of Transmission system (corrosion protection system, measuring devices, telemetry)	LTL million	6.3	4.5	4.3	2.9	2.9						20.9
		EUR million	1.8	1.3	1.2	0.8	0.8						6.1
	Investments total:	LTL million	30.8	23.5	29.9	34.9	28.8						147.9
		EUR million	8.9	6.8	8.7	10.1	8.3						42.8

3.3.1. Renovation (Reconstruction) of the Linear Part of the Gas Transmission Pipelines (GTP)

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.

Out of the total 2.007 km of the existing pipelines, a total of 1.127 km are suitable to be adapted for the intelligent pigging procedures:

- 458 km of the gas pipelines have already been adapted and subjected to the intelligent pigging procedures;
- 473 km of the gas pipelines have already been adapted for the intelligent pigging;
- 196 km of gas pipelines still have to be adapted for intelligent pigging procedures in the future.

The objective is that by 2017 all the suitable pipelines shall be adapted for the intelligent pigging procedures.

In 2015-2017, the Company plans to install intelligent pig launchers and receivers on the gas pipeline branch leading to the Jonava M&R Station, to install an intelligent pig receiver on the Riga-Panevėžys-Vilnius GTP (on the Latvian border), and later on there are plans to install such intelligent pig launchers/receivers on the Šiauliai-Klaipėda GTP. On the latter GTP, there are plans until end 2016 to replace four 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 2018 the remote control will be installed at about 30% of the total stock of the main line block valves, which will ensure a desirable level of speed of the execution of technological operations.

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

The Company operates 66 M&R Stations and 3 Gas Metering Stations.

In 2014, the Company intends to reconstruct the Klaipėda M&R Station No. 1, and in 2015–2018 it intends to reconstruct the Jonava M&R Station, Elektrėnai M&R Station, Alytus M&R Station and Villon M&R Station.

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.

In 2014, three gas compressors will be equipped with additional combustion chambers with electronic fuel supply control systems, which will improve the compressors' efficiency and will reduce pollutant emissions into the environment.

In 2014–2018, 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.

Having taken into account the present day realities (the connection of the LNG Terminal to the Transmission System, the construction of the Klaipėda-Kuršėnai Gas Transmission Pipeline) and upon the estimate of the demand for labour at the Panevėžys Gas Compressor Station, the Company will proceed with the preparation of a plan for its reconstruction.

ANNEX 1

**Implementation Deadlines and Cost Estimates of Investment Projects Planned for
2014–2023**

No.	Title		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
Projects of Common Interest:													
1	Gas interconnection Poland-Lithuania	LTL million	1.52	8.84	12.81	174.37	227.40	44.64					469.6
		EUR million	0.44	2.56	3.71	50.50	65.86	12.93					136.0
2	Capacity Enhancement of Klaipėda–Kiemėnai Pipeline (Construction of Klaipėda–Kuršėnai Pipeline)	LTL million	55.9	164.1									220.0
		EUR million	16.2	47.5									63.7
3	Enhancement of Latvia-Lithuania Gas Interconnection	LTL million				0.3	0.4	4.8	4.5				10.0
		EUR million				0.1	0.1	1.4	1.3				2.9
Other projects aimed at the development of the Gas Transmission System:													
4	Connection by Second Line of the Vilnius–Kaunas Gas Transmission Pipeline and the Kaunas–Šakiai Gas Transmission Pipeline	LTL million	0.1	1.9	10.0	11.0							23.0
		EUR million	0.03	0.55	2.90	3.19							6.66
5	Reconstruction and Modernisation of the Gas Transmission System	LTL million	30.8	23.5	29.9	34.9	28.8						147.9
		EUR million	8.9	6.8	8.7	10.1	8.3						42.8
	Investments total:	LTL million	88.3	198.3	52.7	220.6	256.6	49.4	4.5				870.5
		EUR million	25.6	57.4	15.3	63.9	74.3	14.3	1.3				252.1

ANNEX 2

Lithuania's Gas Transmission System Including Gas Transmission System Development Projects Planned for Implementation by 2020.

