Joint-Stock Company

conexus BALTIC GRID

Natural Gas Transmission System Operator

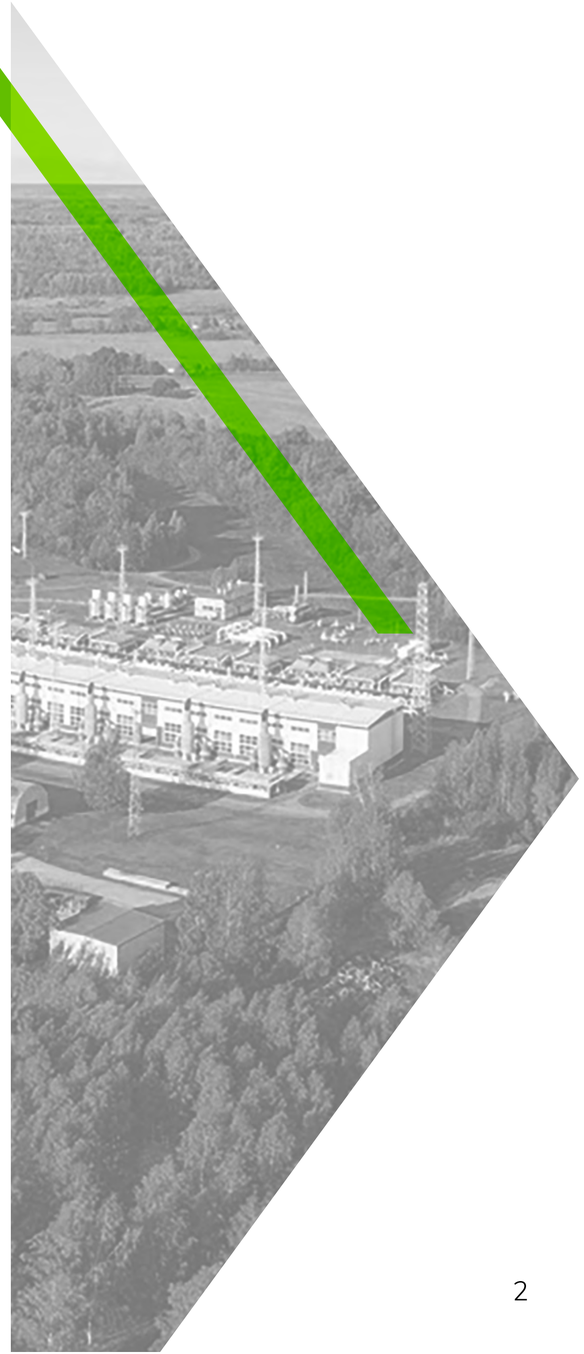
ANNUAL EVALUATION REPORT 2021

Rīga 2022

CONTENTS

ABBREVIATED TERMS

RES	Renewable energy sources
AST	Joint-Stock Company “Augstsprieguma tīkls”
CEF	Connecting Europe Facility
CINEA	European Climate, Infrastructure and Environment Executive Agency
Conexus or Company	Joint-Stock Company “Conexus Baltic Grid”
CO_2	Carbon dioxide
ENTSO-E	European Network of Transmission System Operators for Electricity
ENTSOG	European Network of Transmission System Operators for Gas
GIPL	Lithuania-Poland Interconnection
Inčukalns UGS	Inčukalns underground gas storage
PCI	Project of common Interest
NECP	National Energy and Climate Plan
NOx	Nitrogen Oxides
TSO	Transmission system operator
LNG	Liquefied Natural Gas
GHG	Greenhouse Gases
PUC	Public Utilities Commission
TYNDP	Ten-Year Network Development Plan



GENERAL INFORMATION

In accordance with Section 43.[1] Paragraph Two of the Energy Law, the natural gas transmission system operator shall, once a year, prepare a transmission system and consumption conformity and State natural gas supply security evaluation report (hereinafter referred to as – the Evaluation Report). The Evaluation Report for 2021 has been prepared in accordance with the requirements of the Regulation of the Cabinet of Ministers No. 482 "Rules on Annual Evaluation Report of Natural Gas Transmission System Operator" of 20 June 2006. In accordance with Paragraph 5 of this Regulation, the transmission system operator shall prepare and submit an Evaluation Report to the Ministry of Economics and PUC by 1 June each year.

Conexus is an independent unified natural gas transmission and storage operator in Latvia, which manages one of the most modern natural gas storage facilities in Europe – Inčukalns UGS and the main natural gas transmission system, which directly connects the Latvian natural gas market with Lithuania, Estonia, and Russia.

Conexus customers – users of natural gas transmission and storage system – represent several countries of the Baltic Sea region – Finland, Estonia, Latvia, Lithuania, and Poland; as well as other European countries – Norway, Czech Republic, and Switzerland. Users are both private local companies, and state-owned and international companies representing various business sectors – natural gas wholesale and retail trade, energy producers, heating operators, and manufacturing companies.

Conexus natural gas transmission and storage services are regulated by PUC.

Conexus takes care of sustainability and safety of infrastructure, high service quality, which enhances the market development and provides economic value for the customers and the entire society.

Conexus is a socially responsible company, which, through the creation of added economic value, provides overall sectorial development, growth of employees, and sustainable employment, at the same time taking care of minimum environmental impact of the technological processes.

Vision, Mission, and Values of Conexus

WHY DO WE EXIST?

Mission

To promote sustainable energy market in the region, offering reliable operation of natural gas transmission and storage system.

WHO DO WE WANT TO BE?

Vision

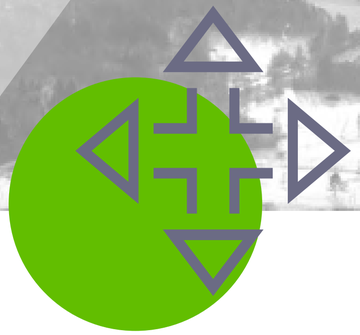
To become the most reliable energy source in the region.

WHAT IS IMPORTANT TO US?

Values

Secure operation of the system

Professional and united team



Flexibility and openness

Sustainable development

Strategic Targets

The principal medium-term targets (2019–2023) of Conexus are related to three areas: **market development, infrastructure provision,** and **development of operations.** The strategic targets are set in accordance with the values, vision, and mission of Conexus: **to promote the sustainable operation of the energy market in the region by ensuring the reliable operation of the natural gas transmission and storage system.**

1 Development of regional natural gas market to achieve sustainable operation of Inčukalns UGS in market conditions

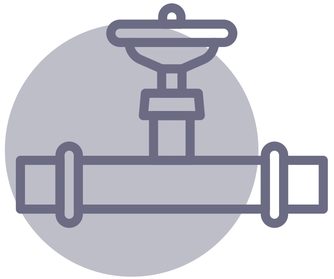
2 Provide safe, accessible and marked-based infrastructure

3 Implement sustainable management of the working capacity of internal and external resources

Along with the strategic targets, Conexus has defined three development guidelines that run through all planned medium-term activities, supplement the strategic targets set and contribute to their implementation.

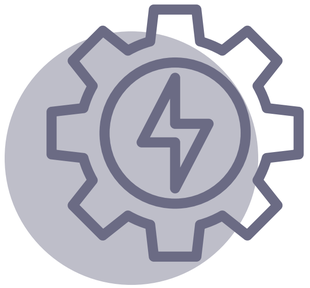
DIGLTISATION

Conexus will focus on modernisation and development of technologies as well as centralized asset, personnel and financial management and implementation of effective resource management



COOPERATION WITH OTHER REGIONAL TSOs

In the medium term, Conexus plans to facilate cooperation with other TSOs in the region by coordinating operational cooperation and introducing a periodic benchmarking system with other regional TSOs



CONEXUS – ENERGY PROVIDER

To become the most reliable energy source in the region and gradually introduce services not only for natural gas users, but also for eletricity users.

1. MAIN INDICATORS IN 2021

2. NATURAL GAS DEMAND IN LATVIA IN 2021

Latvia has a balanced energy resource structure, where natural gas playing an important role. Most of the demand comes from the natural gas users, which use natural gas for electricity or heat production, thus the natural gas consumption is closely related to outside temperature fluctuations, natural gas market prices, as well as depends on the competitiveness of electricity produced from natural gas in the Baltic and Nordic electricity markets.

Figure 2.1. **Consumption of primary energy resources in Latvia[1] (%), 2009–2019**

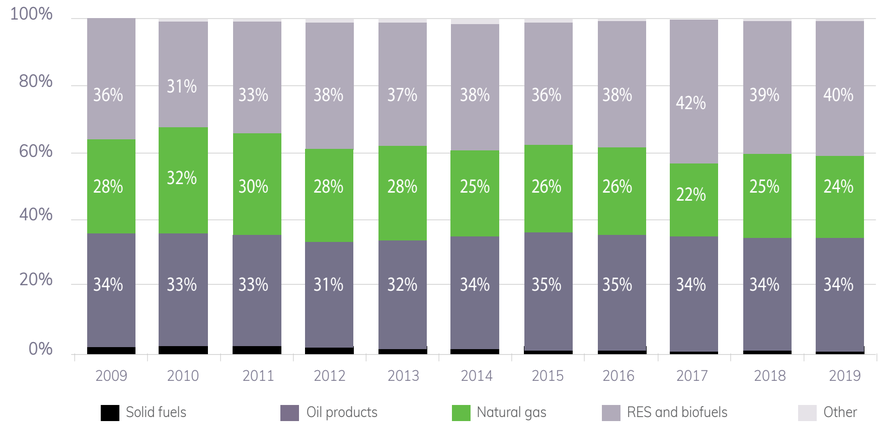
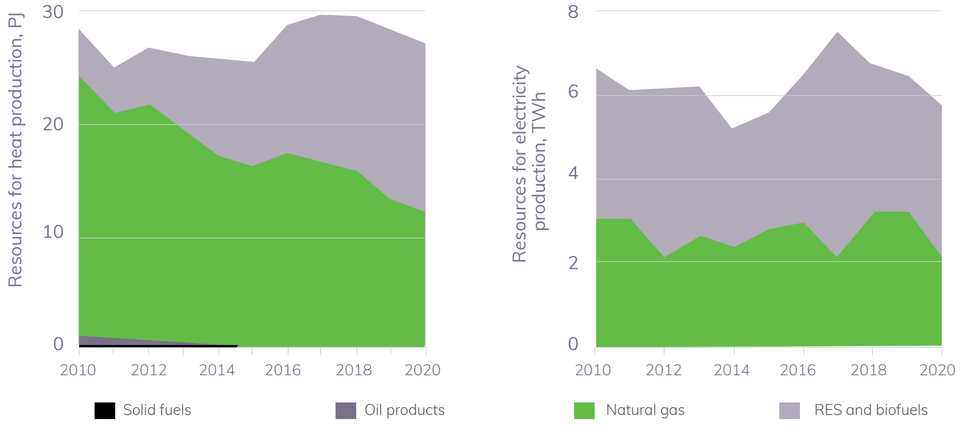


Figure 2.2. **Energy resources for heat (PJ) and electricity (TWh) production in Latvia[2]**



[1]European Commission's statistics. Available at: https://ec.europa.eu/energy/data-analysis/energy-statistical-pocketbook_en
[2]European Commission's statistics. Available at: https://ec.europa.eu/eurostat/web/energy/overview

In 2021, the volume of gas transmitted for the needs of Latvian users was 12.5 TWh, which represents 8% over the indicator of 2020. Increase in consumption was influenced by climatic conditions in winter, as the average air temperatures dropped to -2.8°C, which is 0.4°C below the seasonal norm, furthermore, January and February saw the harshest frost in the recent years[3]. At the same time, the cold climatic conditions raised natural gas consumption for electricity production – the year of 2021 shows higher volume of electricity produced by thermal power stations.[4]

Figure 2.3. **Amount of natural gas supplied to the natural gas distribution system operator in Latvia by months (TWh)**

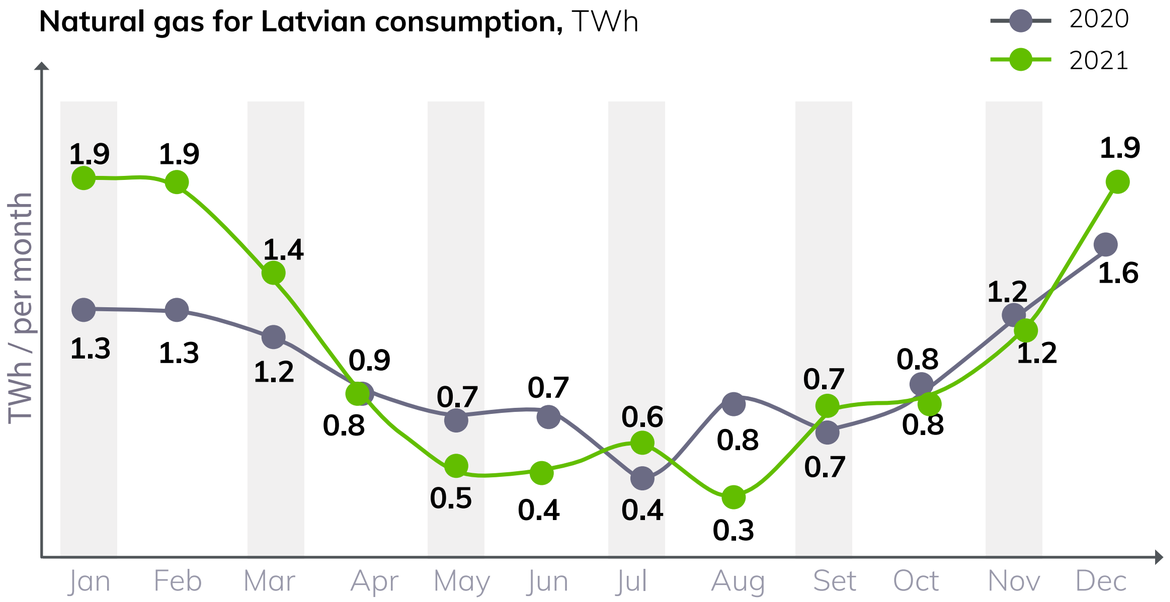
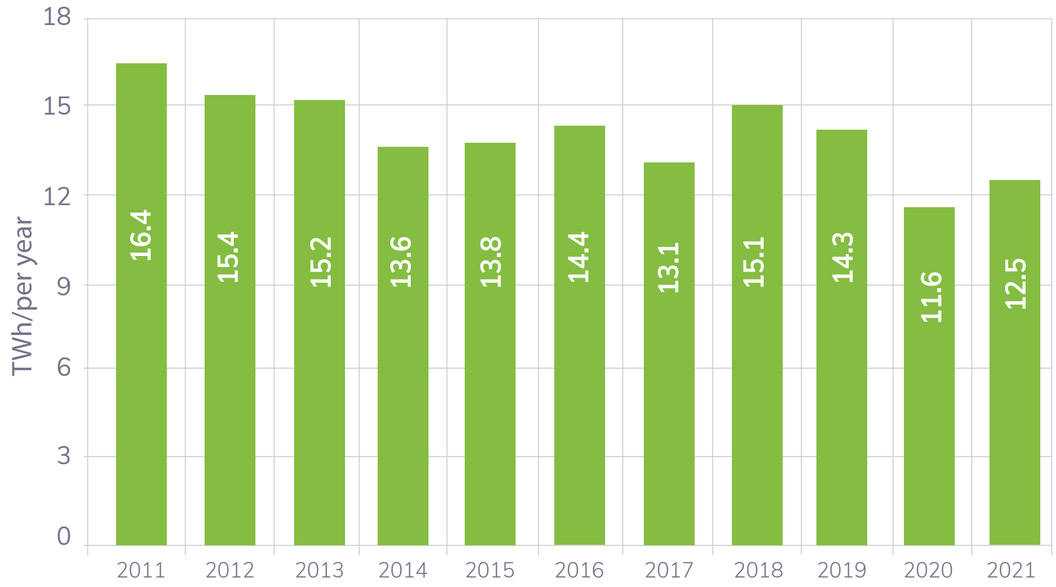


Figure 2.4. **Amount of natural gas supplied to the natural gas distribution system operator in Latvia (TWh)**



[3]Latvian Environment, Geology and Meteorology Centre data. Available at: https://klimats.meteo.lv/laika_apstaklu_raksturojums/2021/gads/
[4]AST's data. Available at: https://www.ast.lv/lv/electricity-market-review?year=2021&month=13

Figure 2.5. **Amount of natural gas supplied to the natural gas distribution system in Latvia per 24 h (GWh) and daily average air temperature in Riga (°C)[5], 2021**

According to the 2016 research "Joint Risk Assessment of the gas system of Estonia, Finland, Latvia and Lithuania" conducted by the European Commission's Joint Research Centre, natural gas consumption in Latvia on a winter day may reach 136 GWh/day. In the winter of 2021, the maximum daily natural gas consumption in Latvia was 92.08 GWh/day; compared to 2020, it increased by 23.61 GWh/day, or 34%, which can be explained by the low air temperature during the period concerned. The lowest daily average air temperature in Riga was registered on 17 January, when it fell below -15oC. Repeated peak indicators of daily natural gas consumption were reached also in February and December. Minimum daily natural gas consumption was on 11 July 2021 – 5.90 GWh/day, which was slightly lower than in the previous years.

Maximum and minimum daily natural gas consumption in Latvia in 2021[5]

DATE	Consumption (GWh)	Air temperature (°C)
16 January	**92.08**	**-12.9**
17 January	90.71	-15.1
11 July	**5.90**	**+23.2**
20 June	5.96	+26.6

[5]Latvian Environment, Geology and Meteorology Centre data.
Available at: https://www.meteo.lv/meteorologija-datu-meklesana/?nid=461

3. 10-YEAR FORECAST OF NATURAL GAS CONSUMPTION IN LATVIA

In April 2022, ENTSOG and ENTSO-E published the updated joint gas and electricity scenario report titled TYNDP 2022 Scenario Report[6] describing the possible future energy scenarios for the European Union up to 2050. All the scenarios are aimed for a climate-neutral future and are designed with the purpose to reduce GHG emissions, as well as to reflect interaction of the gas and electricity systems and ensure infrastructure evaluation from the viewpoint of integrated system.

Nacional Trends[7] are the central scenario of the Report, which reflects the National Energy and Climate Plans of the Member States of the European Union. The plans have been submitted to the European Commission in accordance with the Regulation of the European Parliament and of the Council on the Governance of the Energy Union and Climate Action. The NECP 2030 is the main document for the formulation of a long-term energy and climate policy with a vision of sustainable, competitive and secure development of a climate-neutral economy. In February 2020, Latvia's NECP 2030[8] entered into force and includes about a hundred different policy measures and envisages 12 action lines. The plan provides for an increase of at least 50% in the

share of RES, including at least 3.5% in the share of modern biofuels in the Latvian transport sector. These binding targets will affect final energy consumption and facilitate the market penetration of RES. In Latvia, biomethane has great development potential in terms of both production and consumption. According to the forecast data in Latvia's NECP 2030, the total final energy consumption in 2030 will be about 11% lower than in 2018, but the share of electricity and natural gas in the total final energy consumption will increase by more than 5% due to the replacement of oil products with gas in road transport. No significant changes in the primary energy structure are envisaged: natural gas and oil products will continue taking up the biggest share in the overall consumption structure of energy resources in Latvia.

In July 2021, the European Commission presented the energy and climate law package called "Fit for 55"[9] with the aim to ensure 55% reduction in greenhouse gas emissions by 2030 and climate neutrality by 2050. In 2021, the Ministry of Economics informed on commencement of impact assessment of the package "Fit for 55". Review of Latvia's NECP will be commenced in 2022 with the aim to submit the updated NECP to the European Commission by June 2023.

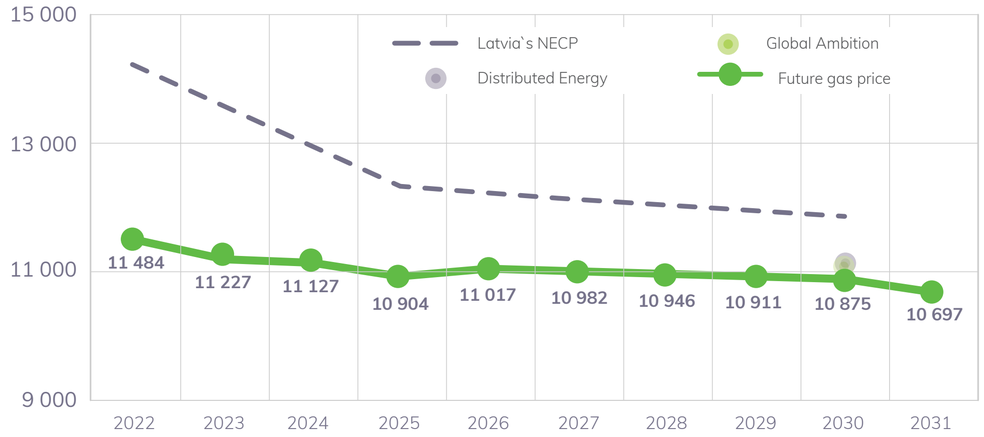
The Global Ambition[10] and *Distributed Energy*[11] scenarios were developed in compliance with the goal of the Paris Agreement to reduce the emissions of greenhouse gases, to prevent the global temperature from rising by more than 2°C compared to the average temperature of the preindustrial age, and trying to keep it at the level of 1.5°C, and with the goal defined in "Fit for 55" to ensure 55% reduction

[6] ENTSOs mājaslapa. Pieejams: https://2022.entsos-tyndp-scenarios.eu/
[7] no angļu val. - National Trends
[8] Ekonomikas Ministrijas mājaslapa. Pieejams: https://www.em.gov.lv/lv/nekp-2020gada-redakcija
[9] Eiropas Komisijas mājaslapa. Pieejams: https://ec.europa.eu/commission/presscorner/detail/en/IP_21_3541
[10] no angļu val. - Global Ambition
[11] no angļu val. - Distributed Energy

in greenhouse gas emissions by 2030 and climate neutrality by 2050. *The Global Ambition* scenario is related to the economic development of centralised energy production and use of the global energy markets as a mean for the acceleration of decarbonisation. Economies of scale lead to significant cost reductions in emerging technologies such as offshore wind, but also imports of energy from competitive sources are considered as a viable option. *Distributed Energy* scenario contains the key feature of the role of the energy consumer, who actively participates in the energy market and stimulates driving the system towards climate neutrality through investments in small-scale energy production solutions and approaches of cyclic solutions. This enhances production of renewable energy in Europe and decrease in energy imports.

Taking into account the geopolitical situation and its significant impact on the *gas prices* and the economic benefits of gas consumption, it is forecasted that, in the course of the following years, gas consumption will decrease in Latvia and will be mainly related to lower demand from gas on the part of cogeneration stations. Assessments of the information on futures in financial instrument markets available today show that gas prices in Europe could decrease and reach historical level of gas prices from 2026.

Figure 3.1. **Gas consumption forecast according to the future gas prices, Latvia's NECP[12], Global ambition and Distributed energy scenario[13](GWh)**



[12]Recalculation coefficient from ktoe to GWh is 11.63
[13]Recalculation coefficient from net to gross heat capacity is 1.11

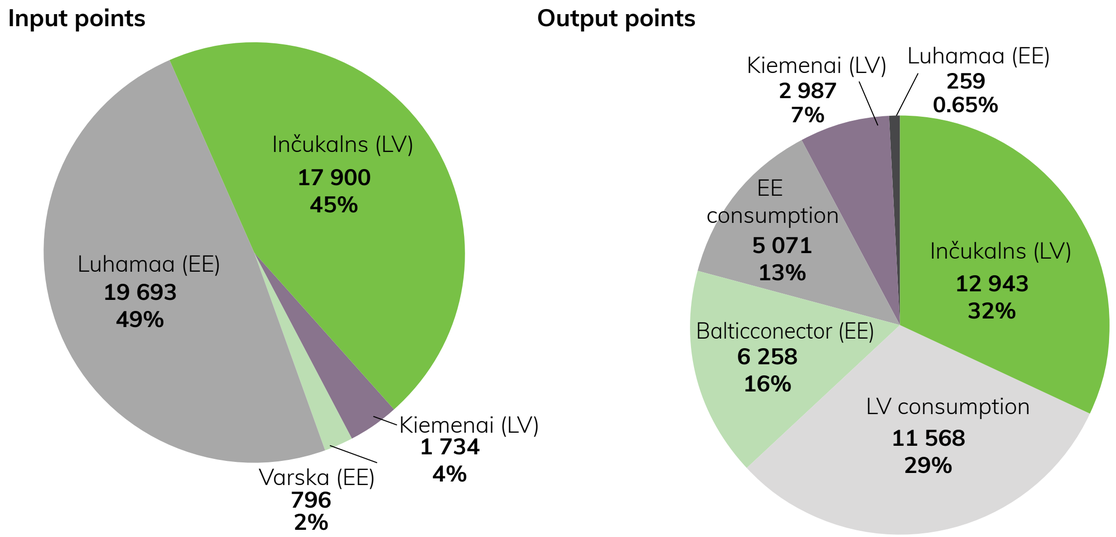
4. NATURAL GAS FLOWS IN 2021

4.1. Transmission system flow data

In 2021, the total amount of gas transmitted reached 39,3 TWh, which is an increase of 5% compared to the previous year. The Estonian and Finnish Balticconnector interconnection point opened at the beginning of 2020 has provided positive impact on the amounts of transmitted flows, enabling option if natural gas deliveries to the Finnish users, also using the services provided by the Inčukalns UGS. The amount of gas transmitted through the Balticconnector interconnection point in the direction of Finland is 6.3 TWh and amounts to approximately one third of the total Finnish natural gas consumption. However, compared to 2020, this amount has decreased, which is related to the decrease in Finland due to the high natural gas prices.

In 2021, 78% decrease in the amount of gas received from Lithuania was observed, reaching mere 1.7 TWh. Whereas, amount of the transmitted flows in the direction of Lithuania during the reporting period increased 1.8 times and reached 3 TWh. This increase in amount was observable in the first quarter of the year, when, according to the vessel delivery schedule published by Klaipeda LNG terminal, one gas delivery was cancelled at the end of January, and the required amount of gas was provided through the use natural gas stored in the Inčukalns UGS.

Figure 4.1. **Amount of natural gas received and transmitted in the Latvian–Estonian Common Balancing zone in 2021 (GWh and %)**



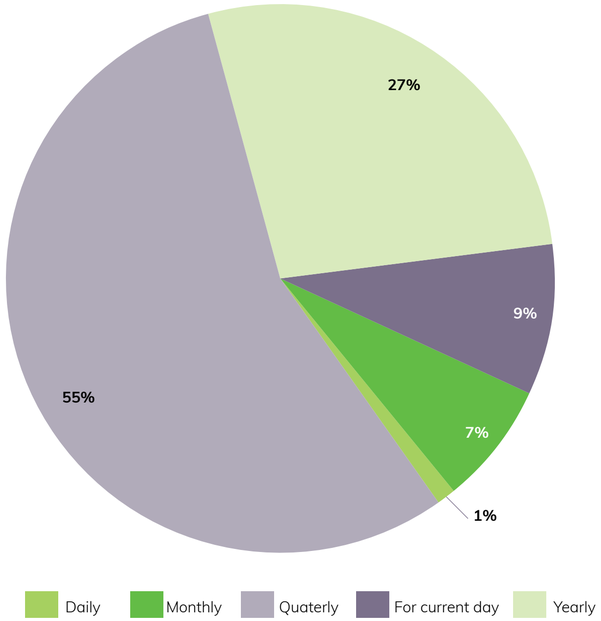
In 2021, compared to 2020, reduction in technical capacities was observed in the Inčukalns UGS and the Luhamaa interconnection points. Limits of the Luhamaa point were related to repair works in the transmission gas pipe Valday–Pskov–Riga. During the reporting period, maximum technical input capacity of the Luhamaa point was 85 GWh/day. Whereas, reduction in the Inčukalns UGS technical output capacity is based on the recommendations for safe and sustainable provision of operation of the storage facility, developed by the technological supervisor of the underground gas storage facility – company Storengy.

Compared to 2020, when larger amount of reservations concerned monthly products, in 2021, the system users more opted to reserve products with longer term transmission capacities.

Interest of the system users in reservation of capacities of a longer term – month, quarter and year – can be explained by the product multipliers introduced in tariffs providing lower transmission costs per MWh, when making reservation for products of a longer period capacity, and improving the overall system operation. In 2021, in terms of amount, more than a half of the total capacity in customer portfolios was purchased as quarterly capacity, which points at the merchants' wish to optimize costs by reducing them by reserving a longer term products as much as possible. This allows the transmission system operators to plan offer of transmission products for a longer period.

During the reporting period, participants of the natural gas market have expressed necessity to expand the current single entry tariff area for Estonia, Finland and Latvia by including also Lithuania to repeal the currently effective tariff barrier at the Lithuanian-Latvian interconnection point Kiemenai. Continuing to expand integration of the regional market commenced in 2019, operators of Latvian, Lithuanian, Estonian, and Finnish transmission systems, accordingly, Conexus, AB Amber Grid, Elering AS and Gasgrid Finland Oy, worked on a solution in 2021 to enable inclusion of Lithuania in that area without internal tariff limits, thus causing better circumstances for the market participants to operate in the entire region, at the same time providing the highest added value to the end consumer of natural gas. The offered tariff area model provides for a harmonised, uniform determination of tariffs on the external borders of the area, allowing for discounts at the entry points from alternative gas sources.

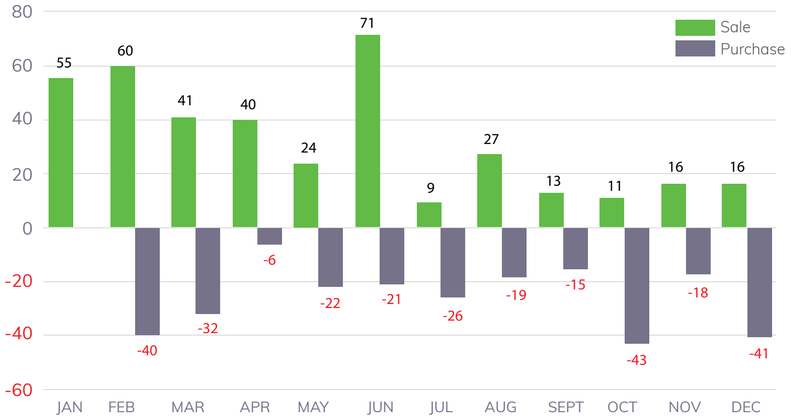
Reserved transmission capacity products 2021



4.2. Balancing operations

In 2021, Conexus, acting as the settlement and balancing coordinator of the Estonian–Latvian Common Balancing zone, performed a total of 666 balancing operations injecting the missing natural gas into the balancing zone, when the imbalance generated by the users was negative or removing the surplus natural gas from the balancing zone when the imbalance generated by the users was positive. Within the framework of the year, 383 balancing activities were performed to eliminate positive imbalances and 283 balancing activities – to eliminate negative imbalances. The total number of balancing activities performed in a year is comparable to the number of balancing activities of the previous year, however, at the same time, increase in the number of elimination of negative imbalances of the system users was observed.

Figure 4.2. **Balancing operations in the Estonian–Latvian Common Balancing Zone in 2021 (number)**



During the reporting period, 94% of all balancing transactions were performed on the trading platform, while offers submitted by transmission system balancing service providers were used in 6% of cases. Compared to the previous year, in 2021, proportion of the balancing transactions performed on the trading platform grew by six percentage points, which should be taken as a positive indicator.

Figure 4.3. **Distribution of balancing operations in 2021 (%)**

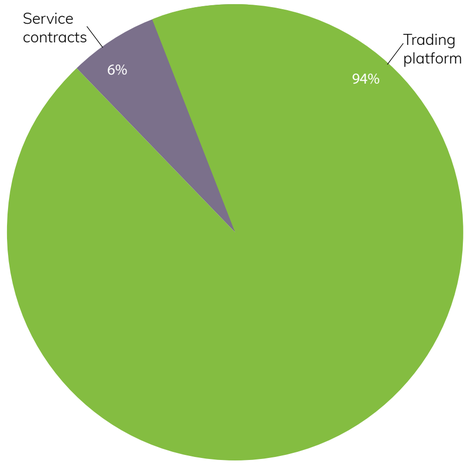
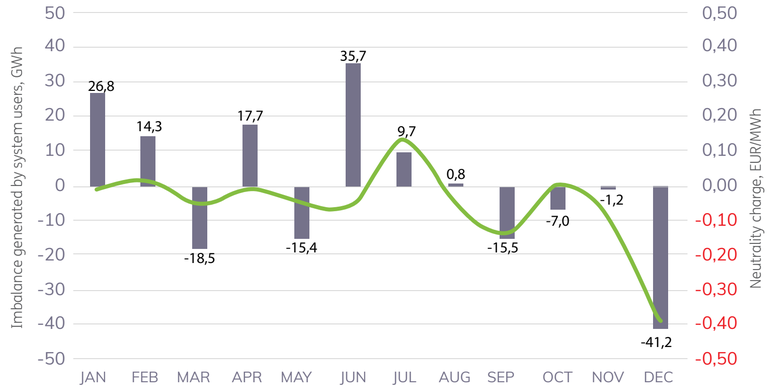


Figure 4.4. **Aggregate imbalance generated by system users (GWh) and neutrality charge (EUR/MWh) in 2021**



The total amount of the absolute imbalance generated by all system users of the Estonian–Latvian Common Balancing zone in 2021 was 467.6 GWh. Balancing operations in the amount of 248.4 GWh were performed to eliminate the positive imbalance generated by the system users, of which 215.3 GWh – on the trading platform and 33.1 GWh – within the framework of the concluded balancing service agreements. Whereas, balancing operations in the amount of 219.3 GWh were performed to eliminate the negative imbalance generated by system users, including 186.7 GWh – on the trading platform and 32.5 GWh – within the concluded balancing service agreements. Compared to the previous reporting period, proportion of the negative imbalance generated by system users has grown significantly.

The neutrality charge applied in 2021 ranged from minus EUR 0.40 /MWh (in December 2021) to EUR 0.13 /MWh (in July 2021). In settlement periods when the neutrality charge was negative, the transmission system operators paid it to the transmission system users, while in the settlement periods when the neutrality charge was positive, the transmission system operator charged it to the transmission system users. The average neutrality charge in 2021 was EUR 0.06 /MWh per month.

Neutrality charge in 2021 (EUR/MWh)

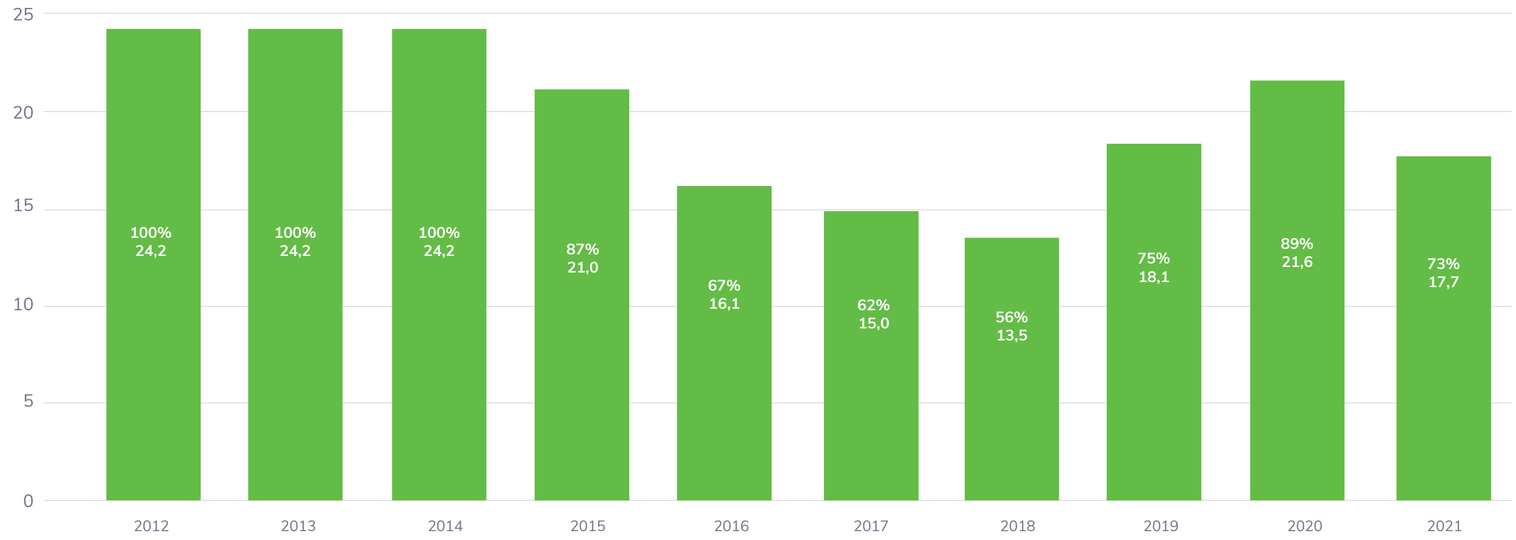
Month	Applicable neutrality charge, EUR/MWh
January	-0,01
February	0,01
March	-0,05
April	-0,01
May	-0,05
June	-0,05
July	0,13
August	-0,05
September	-0,14
October	0,00
November	-0,10
December	-0,40
Average	**€ -0,06**

In 2021, changes were made in the values of incentive factors for the applicable marginal price. By November 2021, the value of incentive factor for the sale marginal price was 0.90, and the value of incentive factor for the purchase marginal price was 1.10, but, after performance analysis of the Estonian–Latvian Common Balancing zone, it was concluded that changes in the values of incentive factors for the applicable marginal price were necessary. From 1 December 2021, the applicable value of incentive factor for the sale marginal price was set in the amount of 0.95, whereas the applicable value of incentive factor for the purchase marginal price was left unchanged.

4.3. Storage system flow data

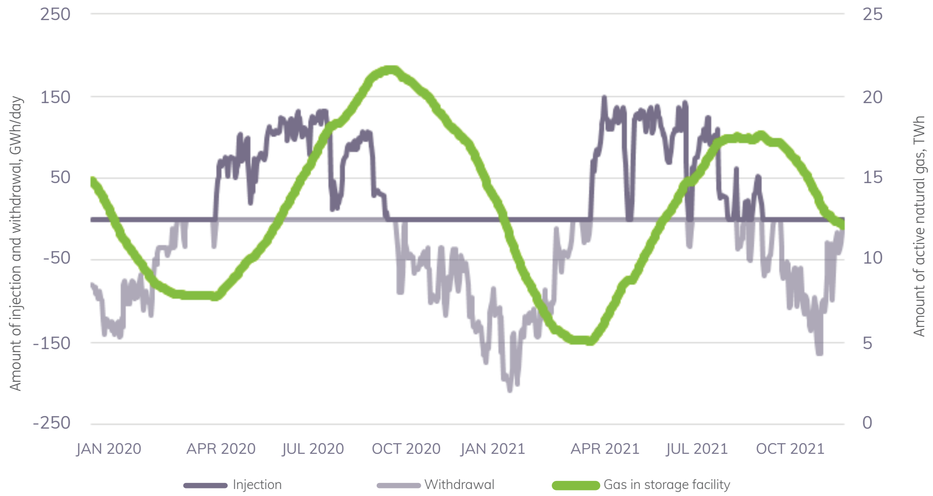
The withdrawal season of the 2020/2021 ended on 30 April 2021, and the balance of active natural gas in the Inčukalns UGS prior to the beginning of injection season in May 2021 was 5 TWh. The amount of active natural gas in the storage facility after the end of the natural gas injection season in mid-October 2021 was 17,7 TWh, which accounted for 73% of the maximum possible amount of active natural gas 24.2 TWh. During the recent three years, average consumption of natural gas in Latvia during the heating season has been 8.7 TWh, i.e., the total amount of natural gas injected into the storage facility significantly exceeds the consumption in Latvia during the heating season.

Figure 4.5. **Amount of active natural gas in the Inčukalns UGS after the end of the natural gas injection season (% and TWh of maximum possible amount)**



In 2021, the amount of gas withdrawn from the Inčukalns UGS reached 17.9 TWh and represented 55% over the indicator of the previous year. Significant increase in the withdrawn amount is mainly related to the low air temperature during the heating season at the beginning of the year.

Figure 4.6. **Amount of injection and withdrawal (GWh/day) and amount of active natural gas (TWh) in the Inčukalns UGS in 2020 and 2021[14]**



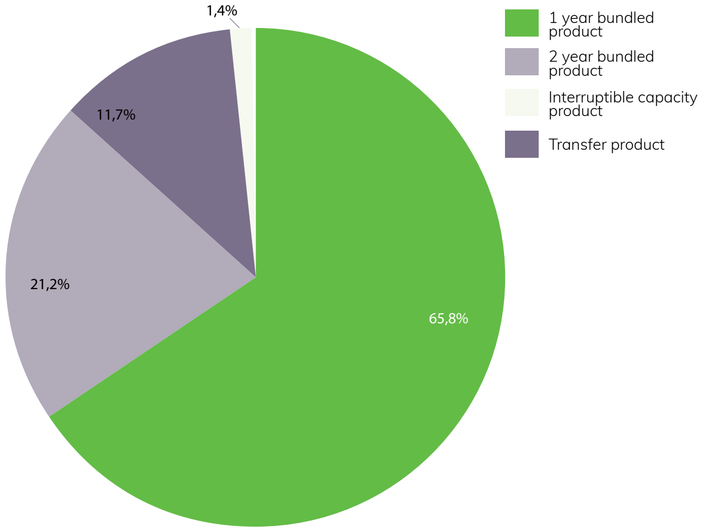
During the storage facility cycle 2021/2022, the initially available storage capacity was in the amount of 23.2 TWh, but, since part of the market participants, due to the unfavourable gas prices postponed injection, Conexus reduced technical capacities of the storage facility to 21.8 TWh to be able to provide injection of natural gas in the amount of all the reserved capacity in case of full reservation.

[14]GIE data. Available at: https://agsi.gie.eu/#/

During the storage facility cycle 2021/2022, 87% or 18.9 TWh were reserved of 21.8 TWh. Capacity of the storage facility was reserved by users from the Baltic States, Finland and Norway. During the injection season, several market participants transferred their reserved capacity of the storage facility to other market participants, since high natural gas prices made purchase and full-scale use of the reserved storage facility difficult.

Technical capacity of the storage facility cycle 2022/2023 published in April 2022 was set in the amount of 24.074 TWh. With natural gas price in the global markets remaining high, as well as small difference between the winter / summer prices, interest of users in the storage facility services may be lower than in the previous years. Whereas, commencement of operation of the Lithuania-Poland Interconnection GIPL in 2022 may potentially attract new storage users from the European countries.

Reserved capacity products for 2021/2022 storage cycle of Inčukalns UGS



5. SUPPLY AND CONSUMPTION CONFORMITY ASSESSMENT

Conformity assessment has been developed based on the assumptions concerning the upcoming summer-winter season and according to the current conditions laid out in detail in the characterisation of scenarios, however, it must be taken into account that this assessment is not a forecast of the expected situation concerning gas supply and consumption. Actual use of gas infrastructure, including the amount of active natural has in the Inčukalns UGS, will be determined by decisions of market participants, which will be affected by external factors, for example, difference between winter / summer prices, pace of introduction of new infrastructure projects, as well as political decisions.

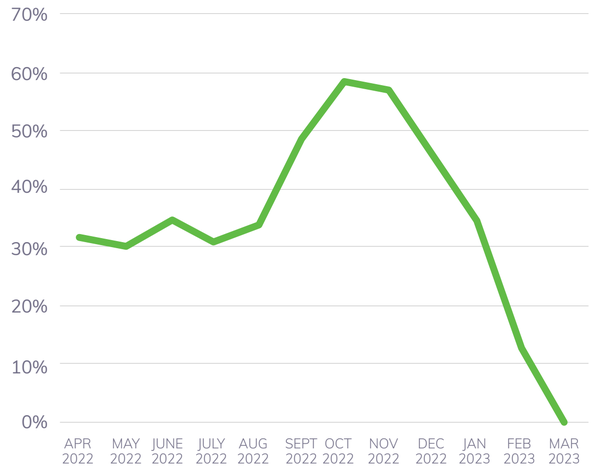
Characterisation of 2022/2023 scenario in the Baltic-Finnish region: it is assumed that, from January 2023, gas supplies in all the countries of Baltic-Finnish region from third countries do not take place at all, and the following conditions apply:

- gas price is high;
- users in the Baltic–Finland region with easily available alternative energy resources massively refuse from gas;
- GIPL is available from 1 May 2022;
- In April and June 2022, input flows in the Luhamaa point in the direction of the Estonian-Latvian Common Balancing zone are not expected;
- Hamina LNG terminal is available from 1 October 2022;
- Calculations exclude the Paldiski LNG terminal project.

[15]Amount of reserves in the Inčukalns UGS as at 1 April 2022

Figure 5.1. **Scenario of 2022/2023 in the Baltic-Finnish region and filling rate of the Inčukalns UGS, %**

Demand	**TWh/ year**
Consumption in the Baltic-Finnish region	52.35
including Latvia	11.34
Output point GIPL (LT->PL)	12.09
Supply	**TWh/ year**
Hamina LNG	1.46
Klaipeda LNG	33.29
Input points from third countries	16.98
Input point GIPL (PL->LT)	0.00
Reserves from previous period	**TWh**
Inčukalns UGS[15]	7.64
Balance	**- 5.07**



Conclusions: According to the calculations, the forecasted filling rate of the Inčukalns UGS could reach 59%, and the reserves could be fully exhausted in March 2023, including the strategic reserves of various states. During the heating period, gas deficit is expected in the Baltic-Finnish region, and, for the purposes of satisfaction of the forecasted demand, another additional LNG terminal would be necessary in Latvia, Estonia or Finland.

Characterisation of medium-term scenario in the Baltic-Finnish region: calculation is based on the maximum technical capacities of interconnection points and the LNG terminals. It is assumed within the scenario that gas supplies in the Baltic-Finnish region from third countries do not take place at all, and the following conditions apply:

- gas price is high;
- users in the Baltic–Finland region with easily accessible alternative energy resources massively refuses from gas;
- Capacity load of the GIPL interconnection, Hamina and Klaipeda LNG terminal is 80% of the maximum technical capacity due to scheduled or non-scheduled repair works;
- Reserves of the Inčukalns UGS are depleted during the previous storage withdrawal season;
- Calculations exclude the Paldiski LNG terminal project.

Figure 5.2. **Medium-term scenario in the Baltic-Finnish region**

Demand	**TWh/year**
Consumption in the Baltic-Finnish region	52.35
including Latvia	11.34
Output point GIPL (LT->PL)[16]	16.80
Supply	**TWh/year**
Hamina LNG[16]	2.80
Klaipeda LNG[16]	35.62
Input points from third countries	0.00
Input point GIPL (PL->LT)	0.00
Reserves from previous period	**TWh**
Inčukalns UGS	0.00
Balance	**- 30.72**

[16]80% load of the maximum technical capacity
[17]European Commission website. Available at: https://ec.europa.eu/commission/presscorner/detail/en/ip_22_1936

Conclusions: According to the calculations, the gas reserves of the Inčukalns UGS necessary for the next winter cannot be accumulated during the injection season. Initial calculations show that annual gas deficit in the Baltic-Finnish region could exceed 30 TWh, and satisfaction of the forecasted demand would require even higher additional supply capacity, like in 2022/2023 scenario. Ensuring the delivery and supply would require another LNG terminal in Latvia, Estonia or Finland.

On 23 March 2022, the European Commission submitted a proposal for the Regulation of the European Parliament and of the Council amending the Regulation of the European Parliament and of the Council (EU) 2017/1938 concerning measures to safeguard the security of gas supply and the Regulation of the European Parliament and of the Council (EU) No. 715/2009 on conditions for access to the natural gas transmission networks. Purpose of this proposal is to prevent the key risks related to security of natural gas supplies and the Union's economy caused by the radical changes in the geopolitical situation. Purpose of the proposal is, particularly, to ensure that there is no spare storage capacity in the Union, which is crucial to guarantee security of supplies, thus ensuring the possibility of joint use of the storage objects in the entire Union in a spirit of solidarity.

Based on the analysis of the European Commission concerning appropriate measures for ensuring gas supplies, including analysis concerning enhanced readiness for risk in the entire European Union, which the European Commission and the Gas Coordination Group conducted in February 2022, it is useful for the Member States to be obliged to ensure in principle that, by 1 November, filling rate of the storage infrastructure facilities located in their territories is at least 90% of their capacity at the Member State level with each Member State setting interim target indicators to be achieved in May, July, September and February of the following year. That is necessary to ensure that the European consumers are appropriately protected against insufficient supplies. As to 2022, lower filling rate measuring indicator will apply, namely, 80%, and smaller amount of interim measuring indicators (August, September and October), taking into account the fact that application of the Regulation would be commenced only after the beginning of the injection season of gas storage facilities and that the Member States have a limited period of time for the implementation of this Regulation.

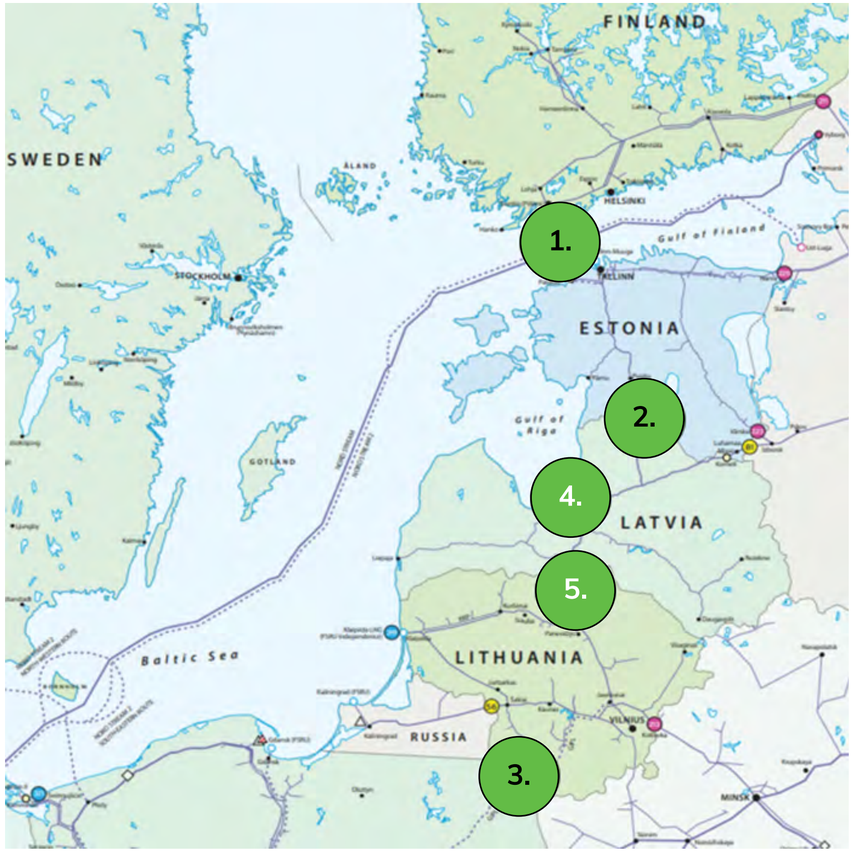
6. TRANSMISSION SYSTEM DEVELOPMENT

6.1. Interconnection system development

Pursuant to Regulation (EU) No 347/2013 of the European Parliament and of the Council of 17 April 2013 on guidelines for trans-European energy infrastructure and repealing Decision No 1364/2006/EC and amending Regulations (EC) No 713/2009, (EC) No 714/2009 and (EC) No 715/2009, the Eastern Baltic region has been identified as one of the European Union's Priority Corridors to connect the Eastern Baltic region gas supply system with the common natural gas transmission network of the European Union. In accordance with the above-mentioned Regulation, European PCIs have been established, for the implementation of which simplified procedures are available and which are also eligible for funding from the CEF Fund.

[18]ENTSOG website. Available at: https://www.entsog.eu/maps

Figure 6.1. **Natural gas infrastructure projects in the Baltics[18]**



The List of PCIs is reviewed every two years to exclude the implemented PCIs. The implemented natural gas infrastructure projects in the Baltics:

1. Estonia–Finland interconnection (Balticconnector). On 11 December 2019, the interconnection Balticconnector was officially opened: a two-way gas pipeline connecting the natural gas infrastructures of Estonia and Finland. Balticconnector, which began operating on 1 January 2020, connects the natural gas networks of the Baltic States and Finland, playing an important role in the single natural gas market.

2. Enhancement of Estonia–Latvia interconnection allows increasing the volume of natural gas flows, as well as organizing natural gas supplies from Estonia to Latvia, which will be important to ensure natural gas flows in the Single Baltic Natural Gas Market and allow Estonian and Finnish market participants to store natural gas in the Inčukalns UGS. The planned technical input and output capacity of the interconnection – 105 GWh/day – will be significantly affected by the implementation of the project for the Enhancement of Latvia–Lithuania interconnection, which is planned to be completed at the end of 2023. The interconnection enhancement works on the Estonian side are planned have been completed in 2021, while on the Latvian side, taking into account the deadline of the project for the Enhancement of Latvia–Lithuania interconnection – completion is scheduled for 2024.

3. Gas interconnection Poland–Lithuania (GIPL). Construction of GIPL gas pipe was completed at the end of 2021, and the Poland–Lithuania Interconnected started operating on 1 May 2022. GIPL connects the Lithuanian and Polish natural gas transmission systems, thus ensuring connection of the Eastern Baltic natural gas transmission systems with the Central European natural gas transmission network. GIPL functions as an alternative natural gas supply source for the Eastern Baltic region, thus increasing security of natural gas supplies in the region and allowing to integrate the region into the natural gas transmission network of the European Union. Transfer of full volume of the infrastructure constructed within the framework of the project into service is scheduled for October 2022. Planned capacity in the direction towards Lithuania – 74 GWh /day, whereas, in the direction towards Poland – 58 GWh /day.

On 19 November 2021, the European Commission published the Fifth List of PCIs[19] including two Conexus projects:

4. Enhancement of the Inčukalns Underground Gas Storage[20]. The Inčukalns UGS is the only underground natural gas storage facility in the Baltic region that provides the region with stable natural gas supplies during winter. On 15 May 2019, the CINEA signed an agreement with Conexus on the PCIs. The project envisages the implementation of three main operations: improvement of overground equipment, restoration of gas wells and enhancement of the operation of gas pumping units. The project will significantly reduce the dependence between the capacity available for withdrawal and the natural gas reserves in the storage facility, which will significantly improve the security of natural gas supplies as well as the efficiency of the storage facility, which is especially important to ensure optimal and most efficient operation of the Baltic-Finnish Single Natural Gas Market. In addition to the above, the project will implement additional environmental protection measures, reducing CO_2, NO_x and other emissions. The project deadline is December 2025.

5. Enhancement of Latvia–Lithuania interconnection[21]. On 19 December 2019, INEA signed an agreement with Conexus and the Lithuanian transmission system operator Amber Grid on the financing of construction works within the framework of the project for the increase in the capacity of Latvia–Lithuania interconnection – enhancement of Latvia–Lithuania interconnection. Increasing the intercon-

[19]European List of Projects of Common Interest V. Available at: : https://ec.europa.eu/energy/sites/default/files/fifth_pci_list_19_november_2021_annex.pdf

[20]Project of Common Interest No. 8.2.4. Improvement of the Inčukalns underground gas storage facility

[21]Project of Common Interest No. 8.2.1. Improvement of the Latvia-Lithuania interconnection

nection capacity will not only ensure greater volumes of natural gas exchange between Latvia and Lithuania but will also ensure sufficient capacity in the Latvian transmission system for natural gas flows with the establishment of a regional natural gas market. The aim of the project is to carry out reconstruction works, diagnostics and repair works of individual gas transmission facilities in order to prepare the system for increase in the pressure, which at the same time will increase the interconnection capacity for flows in the direction from Latvia to Lithuania to 119.5 GWh per day and from Lithuania to Latvia – to 130.47 GWh per day. The project deadline is December 2023.

The Fifth List of PCIs is the last list of PCIs to be established under the existing Regulation (EU) No 347/2013 of the European Parliament and of the Council of 17 April 2013 on guidelines for trans-European energy infrastructure and repealing Decision No 1364/2006/EC and amending Regulations (EC) No 713/2009, (EC) No 714/2009 and (EC) No 715/2009. In view of the EU's commitment to decarbonisation, the European Commission has launched a public consultation on the recast of Regulation, which is expected not to include natural gas projects.

Desynchronization of the Baltic electricity network from the BRELL[22] circle and synchronization with Continental Europe will have a significant impact on the natural gas market. After joining the new synchronization zone, Latvian electricity producers will have to provide their own generating capacities and natural gas will largely play the role of a guarantor of a stable electricity supply. The Baltic power interconnections NordBalt (Sweden–Lithuania), Estlink (Estonia–Finland) and LitPol (Lithuania–Poland), which had the status of PCIs, have significantly changed the power generation market in the Baltic States, as well as increased the demand for natural gas and its storage facilities.

Electricity interconnections with the Scandinavian region have increased competition in the power generation market, which requires more flexibility from electricity producers than can be offered by gas-fired thermal power plants. The Scandinavian electricity market will indirectly but significantly affect the natural gas market in the Baltics, as a result of which the demand for natural gas flexibility and storage facilities will increase. Gas-fired thermal power plants must be able to ensure the production of the required amount of electricity in a short time, as a result of which it will be necessary to ensure sufficient and operative withdrawal of natural gas from the Inčukalns UGS. In the next 10 years, the Inčukalns UGS will play an important role in energy supply to the Baltic Region, because after the desynchronization of the Baltic electricity network, the Inčukalns UGS will act as a guarantor of the region's electricity supply and energy security.

[22]Signed agreement among Belarus, Russia, Estonia, Latvia and Lithuania on synchronisation of mutual electricity networks of the states

6.2. National system development

Energy Transition Projects

Regulation (EC) No 715/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the natural gas transmission networks and repealing Regulation (EC) No 1775/2005 requires the ENTSOG to establish a TYNDP every two years with aim to identify and eliminate the bottlenecks in European gas infrastructure.

At the end of 2021, ENTSOG started collecting information on the projects to be included in the 2022 TYNDP. Additionally to the two natural gas infrastructure projects contained on the Fifth List of PCIs Conexus has included the following projects into the 2022 TYNDP:

- Skulte LNG terminal with the supplying pipeline, provided that the development of Skulte LNG terminal continues;
- Introduction of smart integrated solutions for injection of renewable gases into the transmission system providing for construction of biomethane injection points in the future thus ensuring possibility to the off-grid biomethane producers (producers having no connection to the gas infrastructure) to inject the produced biomethane into the transmission network without building connection pipelines from the biomethane production unit to the transmission system;
- Adaptation of cross-border gas transmission system to hydrogen transportation;
- The Inčukalns UGS as a seasonal hydrogen storage facility in the Baltic region with the capacity exceeding one TWh.

In order to prepare for the development of renewable gas market, operators of Estonian, Finnish, Latvian, and Lithuanian transmission systems, respectively – Elering AS, Gasgrid Finland Oy, Conexus, and Amber Grid AB, have signed a Memorandum of Understanding on promoting the development of green (also called renewable) gases, including establishment of regionally harmonised Guarantee of Origin system.

Since injection of hydrogen into the natural gas transmission networks may cause some technical challenges, in 2021, operators of four countries commenced a common cooperation on the development and research project about the injection of hydrogen into the Latvian, Lithuanian, Estonian and Finnish gas transmission system, which resulted in development of research plan, and it is planned to proceed with a research on possibilities to adapt the regional gas infrastructure for hydrogen transportation in 2022.

Connections to the Transmission System

In 2019, PUC approved rules in the natural gas sector that improve the process of connection to the natural gas system: “Natural gas transmission system connection rules for biomethane producers, LNG system operators and natural gas users”. The nature of the connection rules is to ensure the possibility for the natural gas users themselves to decide, plan and implement connection to the natural gas transmission system in places where it is technically possible and economically justified. At these connection points, natural gas of appropriate quality[23] can be injected into the transmission system or withdrawn from the transmission system, for example, to ensure the operation of LNG refuelling stations or industrial facilities.

Since the connection rules came into force, potential users have shown active interest in establishing a direct connection to the transmission system. Five technical regulations for establishing connections were issued, and the first direct connection to the gas transmission system, which is located in Priekuļi and from which first supplies to the customers were started, was completed in 2021. Amendment of the connection rules is underway in 2022.

The Company has created a map of possible connection points with potentially the lowest costs of connection to the gas pipeline of the natural gas transmission system with 18 potential connection points marked on the map at the moment. The map of the Latvian natural gas transmission system with connection points is available on the Conexus website[24].

[23] Regulations of the Cabinet of Ministers No. 650 of 4 October 2016 “Requirements for Injection and Transmission of Biomethane and Liquefied Natural Gas Transformed in Gaseous State in the Natural Gas Transmission and Distribution System”

[24] Conexus website. Available at: https://www.conexus.lv/interaktiva-karte

7. UNIFIED OPERATOR'S CONCLUSIONS

- Taking into account the geopolitical situation and its significant impact on gas prices and economic benefits of gas consumption, it is forecasted that, in the upcoming years, demand for gas will decrease in Latvia, but in the medium term – renew to the current amount.
- According to the calculation of the 2022/2023 scenario included in the report, the forecasted filling rate of the Inčukalns UGS is 59%.
- In absence of natural gas supplies from Russia in the Baltic-Finnish region from 2023 onwards, it is forecasted that gas reserves of the Inčukalns UGS could be exhausted in March 2023, thus, during the heating period, gas deficit is expected in the Baltic-Finnish region, and, for the purposes of satisfaction of the forecasted demand, another additional LNG terminal would be necessary in Latvia, Estonia or Finland.
- It is necessary to develop a new regional supply security risk assessment taking into account the Finnish market, the Finland-Estonia interconnection Balticconnector and the Lithuania-Poland interconnection GIPL. According to the initial calculations, in the medium term, annual gas deficit in the Baltic-Finnish region could exceed 30 TWh, unless new supply capacities are introduced.
- Renewable gas production in Latvia is a vitally important energy security aspect. It is necessary to stimulate growth of biomethane, hydrogen and other gaseous energy carrier markets and to ensure available and secure gas transmission and storage infrastructure, at the same time researching and promoting adaptation possibilities to injection of other gaseous energy carriers.
- Taking into account the experience of previous years, it is necessary to clarify criteria for the Emergency action plan of Latvia for determination of emergency situation, as well as to determine legal status of the Emergency action plan of Latvia and the Preventive action plan of Latvia.