ADJUSTED INVESTMENT REQUEST FOR ENHANCEMENT OF THE LATVIA – LITHUANIA INTERCONNECTION (ELLI)
PCI 8.2.1

conexus

Introduction

In 2018 Project promoters AB Amber Grid and JSC Conexus Baltic Grid with the support of Ernst&Young Baltics and SIA «Olimps» carried out the feasibility study «Feasibility Study and Cost Benefit Analysis for the Enhancement of Latvia-Lithuania Interconnection (ELLI) », (further - the Study). The aim of the Study was to define the optimal technical capacity and solutions of the Project and provide an overview of its financial and economic profitability, prepare cost-benefit analysis (CBA) and proposal on cross border cost allocation (CBCA) decision

Based on the market analysis and gas flows modelling the bidirectional capacity of ca. 125 GWh / d was accepted as the leading case for ELLI implementation and was subject to optimization and detailed technical capacity assessments in both directions. The target ELLI capacity was identified at 130,47 GWh/d in the LT->LV and 119,5 GWh/d in the LV -> LT direction in order to come across the needs of the market and remove most foreseen bottlenecks in both directions.

Hydraulic modelling of gas flows proved that necessary capacity could be reached by using the existing gas transportation system without construction of new gas pipelines in Latvia and with the maximum utilization of the Lithuanian compressor stations. In Latvia the pipelines Rīga-Panevežys, Rīga-Inčukalns UGS I&II Pskov-Rīga& Izborsk-Inčukalns UGS, Vireši-Tallinn will have to be enhanced with the aim to increase max operation pressure to 50 bar and a new compressor unit built on the site of Incukalns UGS, and in Lithuania GMS Kiemenai capacity will have to be increased and the piping of Panevežys CS modified. Total ELLI CAPEX was set as 25.4 MEUR (LV-20.7 MEUR, LT- 4.7 MEUR), which is significantly lower than estimated before the Study.

During the Study, ELLI viability also has been assessed from the perspective of the society and Project Promoters under two Common Baltic Market Zone (CBMZ) materialization scenarios (first - CBMZ materializes in 2020, second - there is no CBMZ). The main conclusions of the assessment are:

- ELLI Project is not financially profitable for both Project Promoters. Consequently, additional solutions need to be pursued (i.e. EU grants, tariff increase at other points) in order to increase Project viability.
- Project is desirable from an economic point of view and contributes to the goals of the EU regional policy in all significantly impacted countries.
- Economic profitability of the Project is very high under both scenarios related to the materialization of the CBMZ.
- Based on the analysis of ENTSOG indicators, LV, LT, EE and FI were identified as countries "significantly impacted" by the ELLI realization.
- In case of ELLI, all countries significantly impacted by the Project implementation reach a positive ENPV. As such, these countries have been identified as net beneficiaries of the Project under both scenarios related to the CBMZ materialization (CBMZ / no CBMZ)
- As a consequence, CBCA monetary transfer is not applicable to the ELLI Project due to the lack of net cost bearers of the Projects entitled to receive CBCA.

On December 19, 2018 project promoters AB Amber Grid and JSC Conexus Baltic Grid submitted to the Public Utilities Commission of the Republic of Latvia (further- PUC) and National Control Commission for Prices and Energy of the Republic of Lithuania, as well as to the Finland's Energy Authority and Estonian Competition Authority the investment request for the Enhancement of the Latvia-Lithuania interconnection Pursuant to the EU regulation 347/2013 Article 12(3).

JSC Conexus Baltic is a project promoter also for another PCI project 8.2.4 Enhancement of Incukalns Underground Gas Storage. After completion of the Study on ELLI project, in particular, based on the choice of technical solution where a compressor unit on the site of Incukalns UGS is required, JSC Conexus Baltic Grid specialists analyzed the possibility of using the same compressor unit for increase of the pressure in

Latvian gas transmission system and compression gas extraction from the storage. The conclusion was that it is a viable technical solution and using the same compression unit is a significant contribution towards saving of the costs in Latvian gas infrastructure. When preparing the proposal for submission to the EC under CEF 2018 2nd Call for Proposals, JSC Conexus Baltic Grid included procurement and installation of the compressor unit into the scope of the project Enhancement of Incukalns UGS and on January 23, 2019 received information from the EC that PCI 8.2.4 is selected for funding.

On January 29, 2019 during the meeting with PUC, JSC Conexus Baltic Grid representatives informed PUC regarding decision of the EC on funding of PCI 8.2.4 and suggested to update the Investment request submitted on December 19, 2018.

Adjusted Investment Request for Enhancement of Latvia-Lithuania Connection (ELLI) is elaborated pursuant to the PUC letter No.2-2.80/465 of 07.02.2019 and is addressing the following issues:

- Update of ELLI TOTEX (CAPEX and OPEX) for Latvian part
- Recalculation of the Project results
    - Financial performance indicators
    - Economic performance indicators
    - Value of ELLI related CBCA compensation between the significantly impacted countries
    - Value of the CEF grant for which the Project may be eligible
    - Tariff impact resulting from ELLI implementation in Latvia
- Updated recommendation for CBCA decision
- Technical description of the ELLI project and assessment of the risks

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Table of acronyms

No.	Abbreviation / term	Explanation
1.	ACER	Agency for the Cooperation of Energy Regulators
2.	AG	AB Amber Grid
3.	BEMIP	Baltic Energy Market Interconnection Plan initiative
4.	BY	Belarus
5.	CAPEX	Capital expenditures
6.	CBA	Cost – Benefit Analysis
7.	CBCA	Cross Border Cost Allocation
8.	CBG	JSC Conexus Baltic Grid
9.	CBMZ	Common Baltic Market Zone
10.	CEF	Connecting Europe Facility
11.	Consultant	The ELLI Feasibility Study delivery team led by EY
12.	EBCR	Economic Benefit to Cost Ratio
13.	EC	European Commission
14.	EE	Estonia
15.	ELLI	Enhancement of the Latvia – Lithuania Interconnection
16.	ENPV	Economic Net Present Value
17.	ENTSOG	European Network of Transmission System Operators for Gas
18.	ERR	Economic Rate of Return
19.	FBCR	Financial Benefit to Cost Ratio
20.	FI	Finland
21.	FID	Final Investment Decision – status of a Project
22.	FS	Feasibility Study
23.	FM	Flow modeling
24.	FNPV/C	Financial Net Present Value of the Project
25.	FNPV/K	Financial Net Present Value of National Capital

26.	FRR/C	Financial Rate of Return of the Project
27.	FRR/K	Financial Rate of Return of National Capital
28.	GIPL	Gas Interconnection Poland - Lithuania
29.	GMS	Gas metering station
30.	INEA	Innovation and Networks Executive Agency
31.	LCC	Life Cycle Cost
32.	LT	Lithuania
33.	LV	Latvia
34.	NWC	Net Working Capital
35.	NRA	National Regulatory Authority
36.	OPEX	Operating expenditures
37.	PCI	Project of Common Interest
38.	PL	Poland
39.	Project Promoters	JSC Conexus Baltic Grid and AB Amber Grid
40.	PS CBA	Project Specific Cost Benefit Analysis
41.	RU	Russia / Russian
42.	SoS	Security of Supply
43.	TA #1, #2, #3	Technical Alternative #1, #2 and #3 for the ELLI implementation
44.	TOTEX	Total Expenditure
45.	TSO	Gas Transmission System Operator
46.	TYNDP	Ten-Year Network Development Program prepared by ENTSOG
47.	UGS	Underground Gas Storage facility
48.	VTP	Virtual Trading Point
49.	WACC	Weighted Average Cost of Capital

1. Brief description of market testing, need for capacity enhancement and choice of the technical alternative revealed by the Study

Picture 1.

The questionnaires for the market testing were sent out to 144 market participants of the Baltic States, Finland and Poland, and 89 companies replied. At the same time, based on the expectations of the gas flows of Baltic and Finnish TSOs six cases were developed for hydraulic flows modelling based on infrastructure development, gas price and daily gas demand. The results of these activities showed that expansion needs in both directions are primary driven by market demand, however, need for expansion were identified also during technical flows modeling. Based on the results of the market test and technical modelling, Project promoters agreed that moderate capacity enhancement up to **125 GWh/d** is the right solution because it fully addressed all expected market needs and removed all, but one bottleneck identified under technical flow modelling.

In order to select the best technical solution for meeting the needed capacity, four technical alternatives were identified compared along with their initial technical feasibility assessments based on the hydraulic simulations:

#	Technical solution	Technical assessment results
Technical alternative #1	Construction of a new DN 500 pipeline Rīga – Iecava - Kiemenai from the border of LT to the point of connection to existing gas pipelines Inčukals - Rīga 1 and Rīga 2 (length 94 km), increase of GMS Kiemenai capacity and readjustiment of CS Panevežys piping.Existing compressors' capacities utilized to a minimal extent.	Feasible
Technical alternative #2	Maximum utilization of existing compressors' capacities in LT and pressure increase in the LV system up to 50 bar. Reconstruction of Rīga – Panevėžio, Rīga – Inčukals UGS (I and II line), Pskov – Riga & Izborsk – Inčukals UGS and Vireši – Tallinn pipelines, increase of GMS Kiemenai capacity and readjustment of CS Panevežys piping. Installation of compression unit at Inčukalns UGS site.	Feasible
Technical alternative #3	Construction of a new DN 250 gas pipeline Palanga – Nīca – Liepāja from the gas pipeline branch directed to Palanga GRS (in Lithuania) up to the gas pipeline Iecava - Liepāja, in the area of the GRS Liepāja (length 76 km).	Feasible
Technical alternative #4	Construction of a new DN 300 gas pipeline Visaginas – Daugavpils from the gas pipeline branch directed to GRS Visaginas in Lithuania to the gas pipeline Rīga – Daugavpils in the area of the GRS Daugavpils (pipeline length 40 km).	Not feasible

Table 1.

The three technically feasible alternatives have been compared using the Life-cycle costs[1] (LCC).The following table reflect results of the analysis:

	TSO	CAPEX [EURm	OPEX [EURm/y	Country LCC [EURm]	TOTAL LCC [EURm]
TA #1 (LT->LV: 142,27 GWh/d LV->LT: 134,6 GWh/d)	**CBG**	91,7	1,0	**88,8**	**93,8**
	AG	4,7	0,1	**5,0**	
TA #2 (LT->LV: 130,47 GWh/d LV->LT: 119,53 GWh/d)	**CBG**	20,7	0,2	**19,7**	**24,8**
	AG	4,7	0,1	**5,1**	
TA #3 (LT->LV: 116,48 GWh/d LV->LT: 119,53 GWh/d)	**CBG**	54,6	0,7	**53,9**	**67,2**
	AG	11,9	0,3	**13,3**	

Table 2.

Based on the results of LCC analysis technical alternative #2 was selected as the Leading Case for ELLI implementation as the most cost efficient solution, supporting a maximum flow of 130.47 GWh/d in the LT-LV and 119.53 GWH/d in LV-LT direction.

After deleting of the compression unit from the scope of the ELLI project the technical alternative #2 has become even more attractive: LCC for Latvia is equal to 5,2 EURm and total project LCC 10.3 EURm.

	TSO	CAPEX [EURm	OPEX [EURm/y	Country LCC [EURm]	TOTAL LCC [EURm]
TA #2 (LT->LV: 130,47 GWh/d LV->LT: 119,53 GWh/d)	**CBG**	5,5	0,04	**5,2**	**10.3**
	AG	4,7	0,1	**5,1**	

Table 3.

[1] The aim of conducting the LCC (Life – cycle cost) analysis is to determine the most cost-efficient options for realization of an investment. This is done by discounting and then summing all outlays and costs (borne during the assets' lifespan) and comparing the sums among options. The alternative with the lowest LCC is most cost-effective, and based on purely financial criteria, should be selected for implementation. CAPEX and OPEX in Latvia and Lithuania were discounted at respective TSOs' rates FDR rates (4,22% and 4,15% for CBG and AG respectively)

2. Update of ELLI TOTEX (CAPEX and OPEX) for Latvian part

The Technical alternative #2 on Latvian side provides for

- construction of compression unit at Incukalns UGS site and
- enhancement of (reconstruction) of pipelines Rīga- Paņevežys, Rīga-Inčukalns UGS (I and II), Pskov-Rīga& Izborsk- Inčukalns UGS and Vireši-Tallinn.

More specific information on the technical issues of the Project is provided in the section 5. *Technical description of the Project.*
Since costs of procurement and installation of the compressor unit are included in the scope of implementation of the PCI 8.2.4, CAPEX and OPEX of compressor unit shall be excluded for ELLI project.

#	Investment	Initial CAPEX [EURm]	Updated CAPEX [EURm]
A.	**Latvia**	**20,7**	**5,5**
1.	Construction of the new compressor station in Inčukalns UGS	15,2	0
2.	Enhancement Latvian gas pipelines to increase pressure up to 50 bar	5,5	5,5
B.	**Lithuania**	**4,7**	**4.7**
1.	Increasing of GMS Kiemenai throughput capacity	4,2	4,2
2.	Readjustment of CS Panevėžio piping	0,5	0,5
	Total CAPEX	**25,4**	**10,2**

#

#	Country	Initial OPEX [EURm /y]	Updated OPEX [EURm/y]
1.	Latvia	0,44	0,04
2.	Lithuania	0,30	0,30
	Total OPEX	**0,74**	**0,34**

Table 4.

3. Recalculation of the Project results

3.1. Financial performance indicators

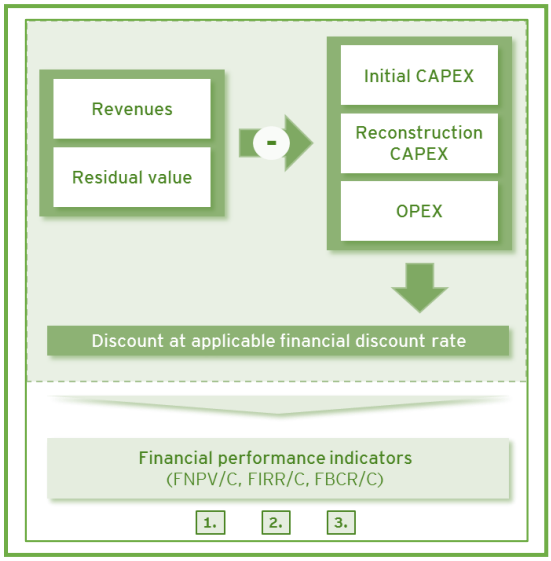
The main goal of financial analysis and calculation of the financial performance indicators is to estimate general financial performance of the project without assessment of its financial structure. Financial profitability analysis is based on the 2nd ENTSOG CBA Methodology and the EC Guide to CBA of Investment Projects 2014-2020.

The final output of the financial profitability analysis is a set of three financial performance indicators, which were computed at both the total Project-, as well as the Project Promoters level:

- Financial Net Present Value (FNPV) - this indicator represents the absolute, discounted value added produced by the Project measured in Euro (a value of above zero will suggest positive Project profitability)
- Financial Internal Rate of Return (FIRR) - this indicator represents the Project profitability measured in as a percentage rate of return (a value above the financial discount rate will suggest positive Project profitability)
- Financial Benefit-Cost Ratio (FBCR) – this indicator represents a ratio of discounted benefits to discounted costs (a value of above one will suggest positive Project profitability).

The above set of three common indicators based on ENTSOG and EC guidelines ensures the comparability between projects both at Project Promoter's and European Commission level.

Simplified approach to calculation of financial profitability indicators[2]



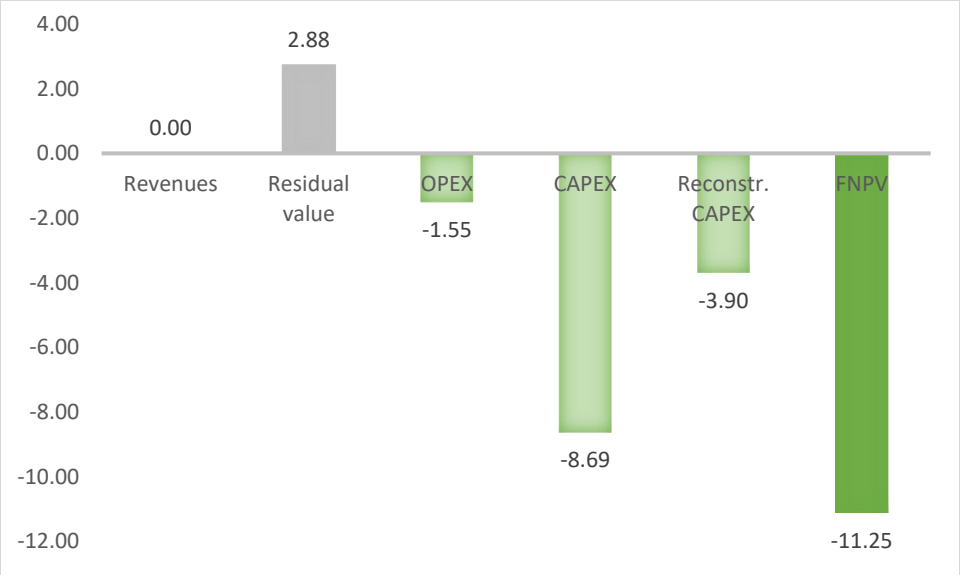
Picture 2.

[2] Reconstruction CAPEX is a cash flow position, which is charged in the financial profitability calculation. It is charged following the year in which an asset fully depreciates and the value of the reconstruction CAPEX charged is equal to the initial value of the depreciated assets. In other words – reconstruction CAPEX is the outlay needed to recreate a fully depreciated asset immediately after it depreciates to zero.

According to ENSTOG and EC methodologies, only selected groups of cash flows should be selected for financial analyses. These cash flows include:

Investment outlays (CAPEX).
Operating outlays (OPEX).
Financial / economic inflows (revenues and residual value).

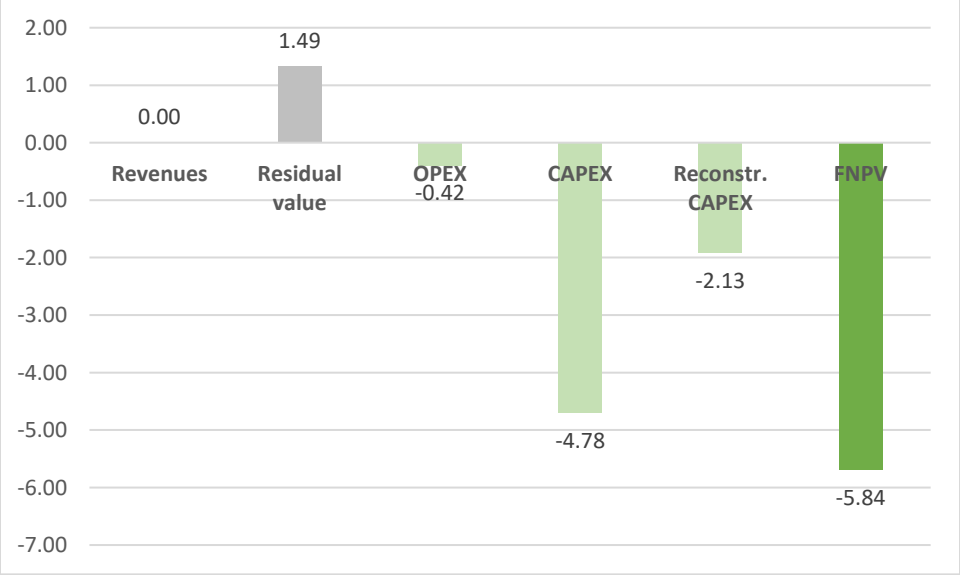
ELLI FNPV at the total Project level –FNPV -11.25EURm



FIRR	FBCR
N/A	0.20

Chart 1.

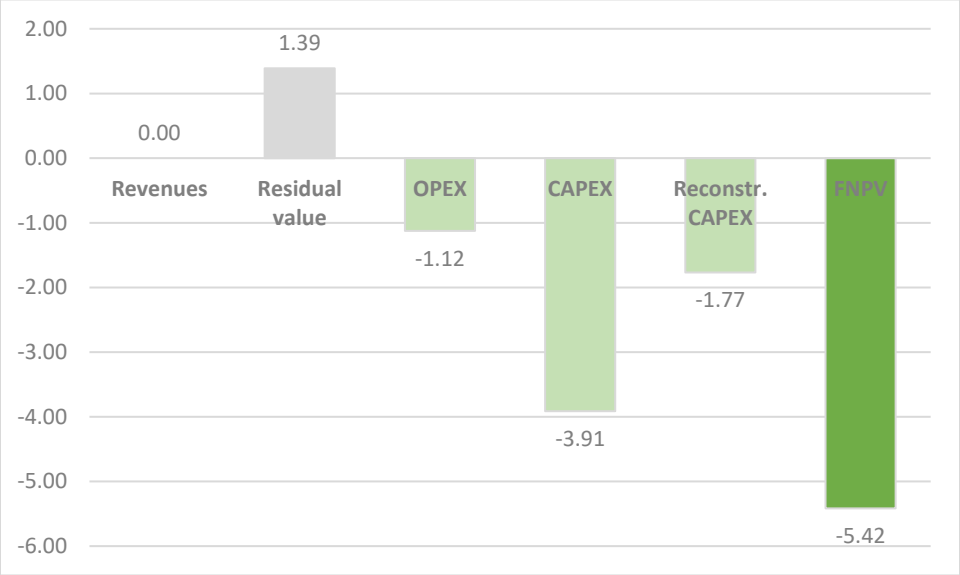
ELLI FNPV for Conexus Baltic Grid - FNPV -5.84 EURm



FIRR	FBCR
-11.9%	0.20

Chart 2.

ELLI FNPV for Amber Grid - FNPV -5.42 EURm



FIRR	FBCR
N/A	0.20

Chart 3.

Referring to the results of financial analysis it is obvious that **ELLI project is not profitable in financial terms**. It is also not profitable for Conexus Baltic Grid and Amber Grid separately. Consequently, a financial gap equal to 100% materializes for both Project promoters and financial support is required to improve financial profitability of the Project. FNPV is negative for both Project promoters and also on the Project level. FBCR is very low, and FIRR for the whole project and for Amber Grid is not possible to calculate because positive cash flow is too small, but in case of Conexus Baltic Grid it is negative.

Sensitivity analysis

The main objective of the sensitivity analysis done with regard to the financial profitability results is to determine how the Project's financial profitability changes depending on the CAPEX and OPEX and gas flows fluctuations.

This was achieved by simulating impacts, that a change in a single variable would have on the end result (FNPV). In order to limit the complexity of this analysis both in terms of number of assessments and interpretability of results, key input data was tested one-by-one, leaving everything else unchanged (a 'ceteris paribus' analysis). Changes in the input variables were tested at 10% intervals in the range from 50% to 150% of base value.

	50%	*60%*	*70%*	*80%*	*90%*	*100%*	*110%*	*120%*	*130%*	*140%*	*150%*
CAPEX	-5.6	-6.7	-7.8	-8.9	-10	-11.1	-12.2	-13.3	-14.4	-15.5	-16.6
OPEX	-10.4	-10.5	-10.7	-10.8	-11	-11.1	-11.3	-11.4	-11.6	-11.7	-11.9
Gas flows	-11.1	-11.1	-11.1	-11.1	-11.1	-11.1	-11.1	-11.1	-11.1	-11.2	-11.2

Table 5.

Sensitivity analysis shows that there is no statistical possibility of obtaing positive FNPV and CAPEX is the most critical input variable on the Project.

3.2.Economic performance indicators

Calculation of economic performance indicators is part of the economic analysis of the project. The main goal of the economic analysis is to capture a project's net impact on socioeconomic welfare. The approach to performing the economic profitability analysis is based on the 2nd ENTSOG CBA methodology from July 2017 and the EC Guide to CBA of Investment Projects 2014-2020. In the original Investment request economic analysis was done in line with the ENTSOG CBA Methodology and on the basis of ENTSOG PS-CBA prepared based on ENTSOG modeling output from June 2017 provided to the Project Promoters by ENTSOG.

The following steps had been performed for economic analysis:

- Quantitative analysis in order to establish the significantly impacted countries by ELLI:
  - Significantly impacted countries are (Latvia, Lithuania, Estonia and Finland.

- Monetization of socioeconomic externalities to identify ELLI-induced externalities in the countries significantly impacted by the ELLI implementation
  - Total value of ELLI induced externalities has been estimated at 322 EURm (sum2024-2044, undiscounted values)
  - 172 EURm of benefits (54% of the overall sum) stemming from the Project implementation is expected to materialize in Latvia (90 EURm - 28% of total benefits) and Lithuania (82 EURm - 26% of total benefits). Estonia and Finland are also benefiting from ELLI implementation. Benefits in Estonia and Finland are expected to reach 78 EURm (24%) and 72 EURm (22%) respectively.
  - On the total Project level, EU bill remains the key externality induced by ELLI implementation, accounting for 92% (297 EURm) of the overall benefits.

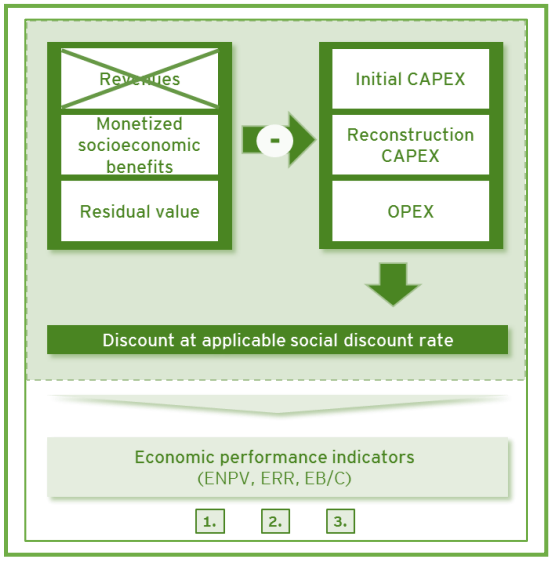
- Net Social Welfare analysis to present the sum of total undiscounted ELLI-induced net benefits which could materialize on a total Project and per country level
  - Updated Net Social Welfare of the Project is estimated at 299 EURm, with net benefits split relatively evenly between Latvia, Lithuania, Estonia and Finland (78 EURm, 71 EURm, 78 EURm and 72 EURm respectively)

		Benefits	CAPEX	Reconstr.CAPEX	OPEX	TOTAL
1.	**Latvia**	90	(6)	(6)	(1)	**78**
2.	**Lithuania**	82	(5)	(5)	(2)	**71**
3.	**Estonia**	78				**78**
4.	**Finland**	72				**72**

Table 6.

- Economic profitability analysis is to provide a comparable set of economic performance indicators for the ELLI on an aggregate Project and per country level.

Chart of calculation of economic performance indicators

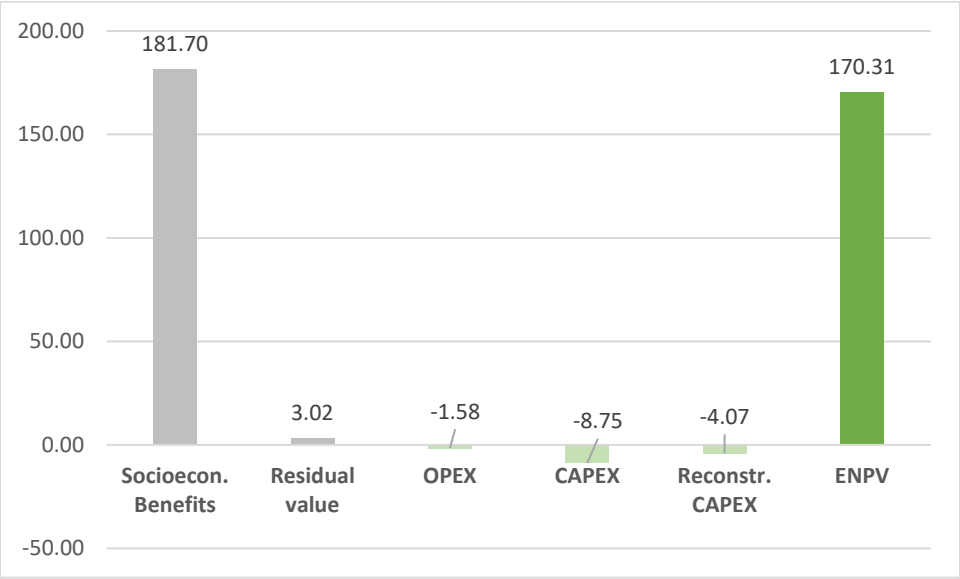


Picture 3.

The final output of the economic profitability analysis is a set of economic performance indicators, which are computed at both the total Project-, as well as the significantly impacted country level:

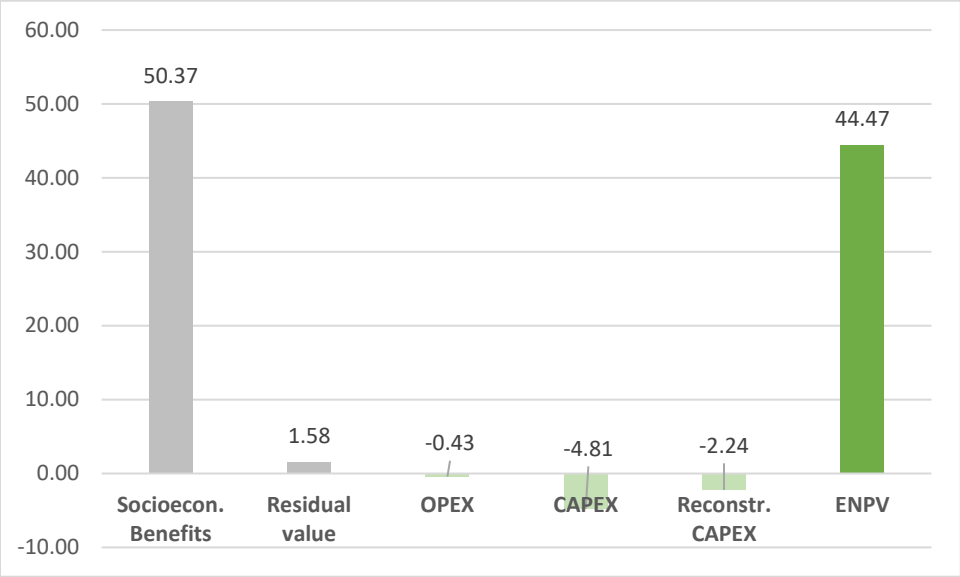
- Economic Net Present Value (ENPV) – this indicator represents the absolute, discounted economic cash-flow of the project measured in Euro (a value of above zero will suggest positive economic profitability).
- Economic Internal Rate of Return (ERR) – this indicator represents the Project economic profitability measured as a percentual rate of return (a value above the social discount rate will suggest positive economic profitability of the Project).
- Economic Benefit-Cost Ratio (EB/C) – this indicator represents a ratio of discounted benefits to discounted costs (a value of above one will suggest positive Project economic profitability).

ELLI ENPV for the total Project (SDR 4.0%) 170.31 EURm



EIRR	EB/C
78.5%	12.83

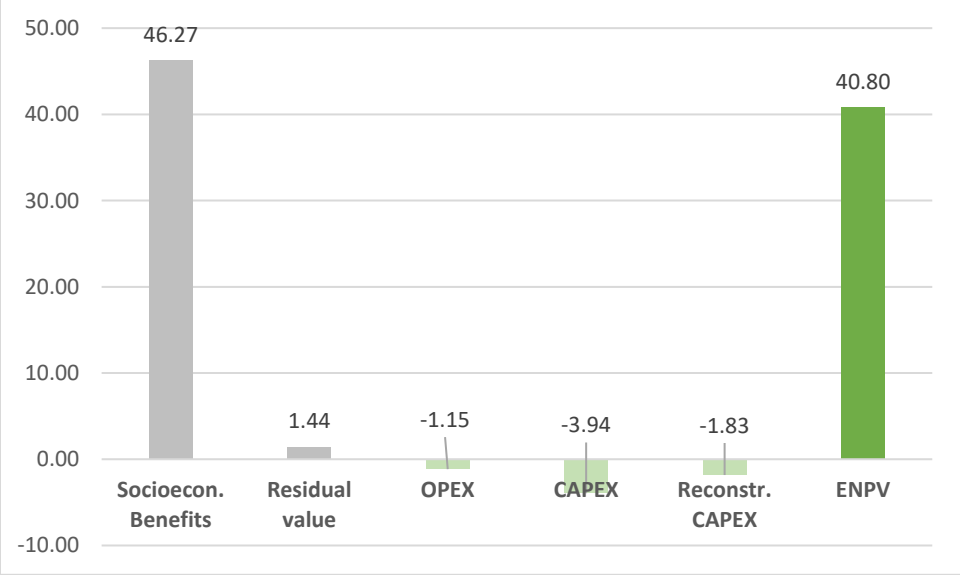
ELLI ENPV for Latvia 44.47 EURm



EIRR	EB/C
45.5%	6.94

Chart 5.

ELLI ENPV for Lithuania 40.80 EURm



EIRR	EB/C
67.0%	6.90

Chart 6.

ENPV for Estonia is 44.3 EURm and for Finland 40.8 EURm.

Referring to the results of the economic analysis we can conclude that **ELLI project is highly profitable on socioeconomic terms** and offers positive value added to societies in all significantly impacted countries, which is proved by positive ENPV values for the project and each countries separately, as well as EIRR and EB/c indices. Moreover, **no country hosting the project is deemed to have net negative impact** in at least one of the scenarios deemed plausible.

Sensitivity analysis of ENPV

	50%	*60%*	*70%*	*80%*	*90%*	*100%*	*110%*	*120%*	*130%*	*140%*	*150%*
CAPEX	176	174.8	173.7	172.6	171.4	170.3	169.2	168	166.9	165.8	164.6
OPEX	171.1	170.9	170.8	170.6	170.5	170.3	170.2	170	169.9	169.7	169.5
Gas flows	170.3	170.3	170.3	170.3	170.3	170.3	170.3	170.3	170.3	170.3	170.3

Table 7.

The sensitivity analysis done with regards to ELLI economic profitability results indicate that there are no critical variables and ENPV remains positive and there is no statistical probability to obtain negative result.

3.3.Value of ELLI related CBCA compensation between the significantly impacted countries.

Referring to item 2.6 of the Recommendation No.5/2015 of the Agency for the Cooperation of Energy Regulators of 18 December 2015 ON GOOD PRACTICES FOR THE TREATMENT OF THE INVESTMENT REQUESTS, INCLUDING CROSS BORDER COST ALLOCATION REQUESTS, FOR ELECTRICITY AND GAS PROJECTS OF COMMON INTEREST the Agency recommends that compensations are provided if at least one Member State hosting the project is deemed to have a net negative impact in at least one of the scenarios deemed plausible by all involved NRAs. In such cases, the aim should be, in general, to compensate the net negative impact in the relevant Member State.

In case of ELLI, all significantly impacted countries reach positive ENPV and as such, these countries have been identified as net beneficiaries. As the consequence, CBCA monetary transfer is not applicable to the ELLI project due to lack of net cost bearers of the Project entitled to receive CBCA.

	ENPV	
	**44.47**	Net beneficiary of the Project
	**40.80**	Net beneficiary of the Project
	**44.3**	Net beneficiary of the Project
	**40.8**	Net beneficiary of the Project

NO CBCA TRANSFER NEEDED

Picture 4.

3.4.Value of the CEF grant for which the Project may be eligible

In case of both Project Promoters, lack of revenues stemming from ELLI implementation leads to materialization of a funding gap equal to 100%. As a result, CBG and AG require external support in the form of EU grants from CEF in order to cover the funding gap.
Depending on the type of activity, (study or work) CEF grants typically cover 50% and up to 75% of the eligible costs. According to the Article 10 of Regulation (EU) No 1316/2013 of the European Parliament and of the Council of 11 December 2013 establishing the Connecting Europe Facility, amending Regulation (EU) No 913/2010 and repealing Regulations (EC) No 680/2007 and (EC) No 67/2010, the amount of

Union financial assistance shall not exceed 50 % of the eligible cost of studies and/or works. The funding rates may be increased to a maximum of 75 % for actions, which, provide a high degree of regional or Union-wide security of supply, strengthen the solidarity of the Union or comprise highly innovative solutions.

Since ELLI project is essential for regional security of supply and strengthens solidarity it can be entitled to funding rate for works up to 75%.

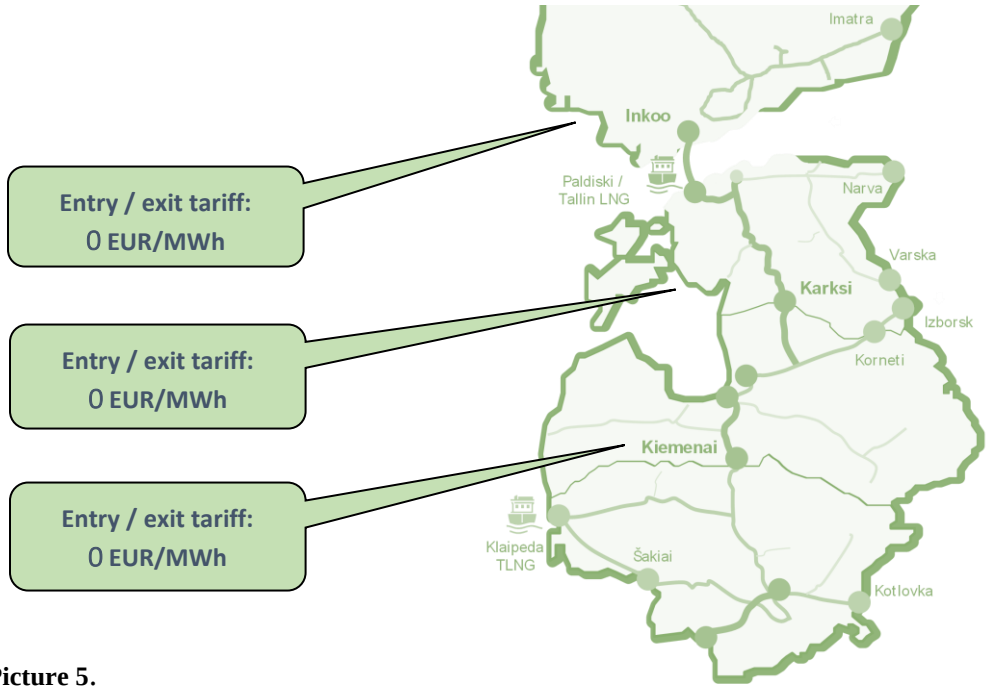
Based on the planned activities the maximum funding rate could be as follows:

	CEF EURm	% of initial investment
conexus BALTIC GRID	4.10	74%
Amber Grid	3.37	72%

Table 8.

3.5.Tariff impact resulting from ELLI implementation in Latvia

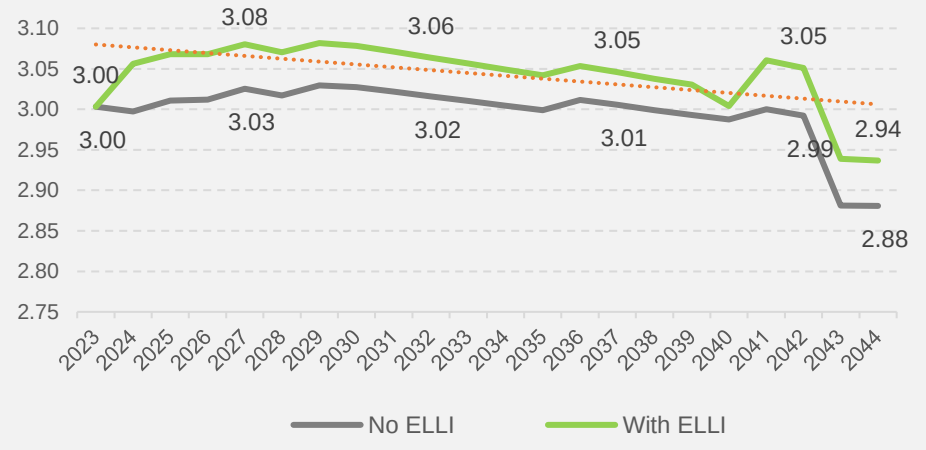
Impact of ELLI implementation on tariffs in Latvia depends on the fact whether Common Baltic Market Zone (CBMZ) will be implemented or not. In a single entry/exit zone, all interconnection points between the LT, LV, EE and FI are commercially removed and gas is freely transported within the system to any location in any country of the Baltic region. As a consequence, network users can only book capacity at entry / exit points to and from the zone, i.e. no capacity bookings will be placed at existing interconnection points between LT, LV, EE and FI gas markets, all tariff charges (entry / exit) existing at current internal interconnection points between LT, LV, EE and FI gas markets are set to zero.



Picture 5.

For purpose of tariffs calculation for CBMZ capacity charge of entry/ exit split is assumed 50%, and, in general, tariffs increase in case of CBMZ (specially in case FI is included) are lower due to increase of gas flows. The following charts reflect tariff calculation results for Latvia with and without ELLI project, a well as whether CBMZ is implemented or not.

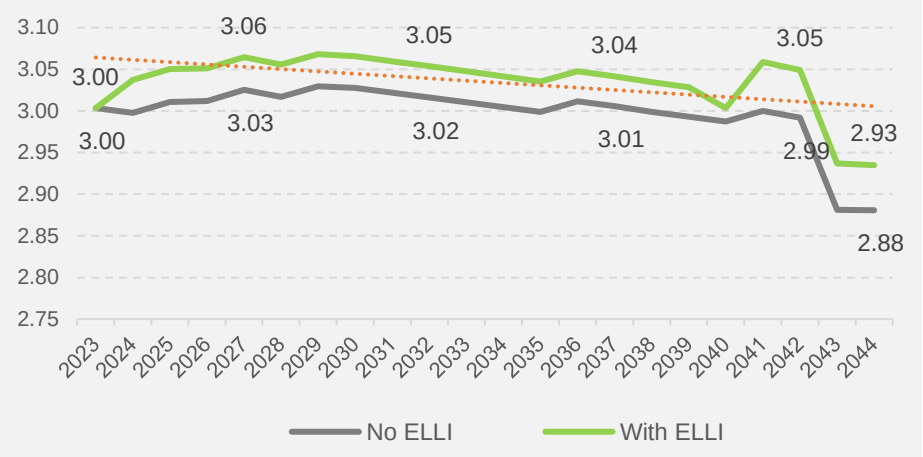
Conexus Baltic Grid average 2024-2044 tariff without CBMZ without CEF grant



Without ELLI	EUR / MWh	3.00
With ELLI	EUR / MWh	3.04
Difference	EUR / MWh	0.05
% difference	%	**1.6%**

Chart 7.

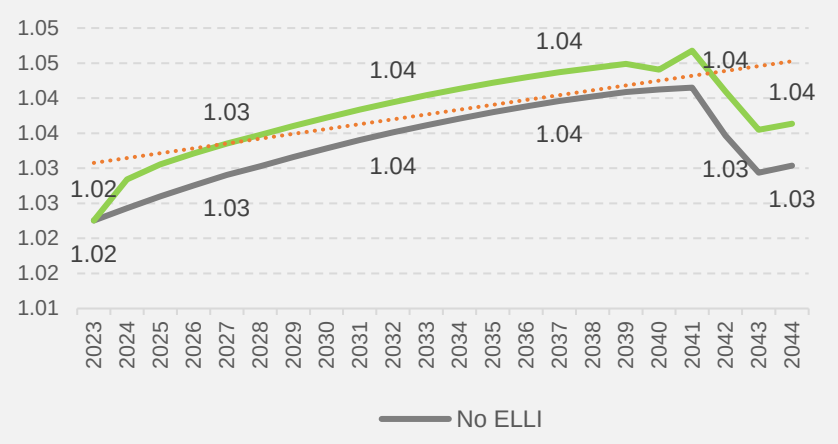
Conexus Baltic Grid average 2024-2044 tariff without CBMZ with CEF grant



Without ELLI	EUR / MWh	3.00
With ELLI	EUR / MWh	3.04
Difference	EUR / MWh	0.04
% difference	%	**1.3%**

Chart 8.

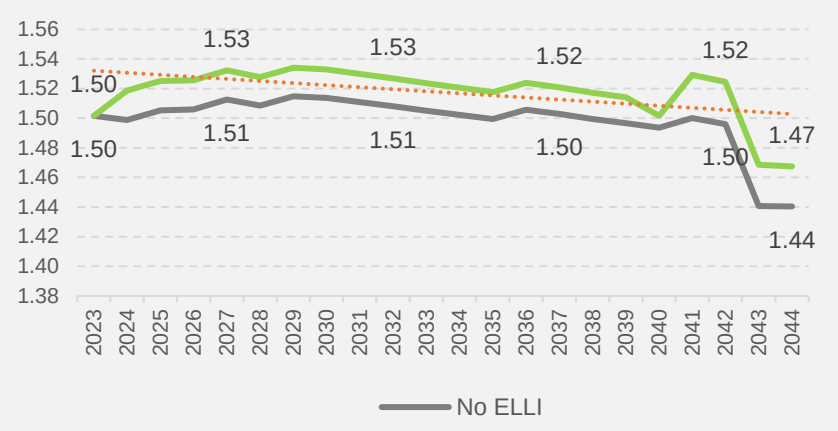
Conexus Baltic Grid average 2024-2044 entry charge with CBMZ and with CEF grant



Without ELLI	EUR / MWh	1.03
With ELLI	EUR / MWh	1.04
Difference	EUR / MWh	0.01
% difference	%	**0.40%**

Chart 9.

Conexus Baltic Grid average 2024-2044 exit charge with CBMZ with CEF grant



Without ELLI	EUR / MWh	1.50
With ELLI	EUR / MWh	1.52
Difference	EUR / MWh	0.02
% difference	%	**1.3%**

Chart 10.

Comparison of Conexus Baltic Grid total charge (Average 2024-2044) with CBMZ

Without CEF grant		
Without ELLI	EUR / MWh	2.532
With ELLI	EUR / MWh	2.562
Difference	EUR / MWh	0.030
% difference	%	**1.2%**

With CEF grant		
Without ELLI	EUR / MWh	2.532
With ELLI	EUR / MWh	2.557
Difference	EUR / MWh	0.025
% difference	%	**1.0%**

Table 9.

4. Updated recommendation for CBCA decision

Based on the results of updated economic analysis the ELLI project has significant net positive impact on Latvia, Lithuania, Estonia and Finland and all significantly impacted countries reach positive ENPV, and as such these countries have been identified as the net beneficiaries. As the consequence, CBCA monetary transfer is not applicable to the ELLI project due to lack of net cost bearers of the Project entitled to receive CBCA. Consequently, **the Project promoters propose that the CBCA decision to be issued will not contain any transfers between the significantly impacted countries.**

5. Technical description of the ELLI project and assessment of the risks

The aim of the ELLI project is to enhance transmission capacity between Latvia and Lithuania and to eliminate bottlenecks of the transmission system in Latvia, thus to enable free gas flows in the Baltic countries and Finland. ELLI Study proved that it is possible to achieve without construction of new gas pipelines, but increase of the pressure in the transmission system in Latvia.
In order to ensure safe operation of the transmission system set of activities shall be carried out and basic principles observed:

1. Gas transmission pipelines and branch lines shall be tested by method of in-line diagnostics;
2. Positive conclusion on permissible operation pressure P≤ 50 bar issued by the institution accredited by the Cabinet of Ministers shall be received;
3. Newly constructed or reconstructed valves and sets of valves shall comply with European Norms (further-EN);
4. Sections of gas pipelines where in-line diagnostics is not possible shall be tested hydraulically and shall be reconstructed according to EN;
5. Branch lines where in-line diagnostics is not possible shall be reconstructed according to EN.

ELLI project provides for increase of operation pressure in the Latvian transmission system up to P=50 bar in the following pipelines (further-PL):

- Rīga-Paņeveža;
- Rīga-Inčukalna PGK I line;
- Rīga-Inčukalna PGK II line;
- Pleskava-Rīga;
- Izborska-Inčukalna PGK;
- Vireši-Tallina

In addition, pressure increase also shall take place in the branch lines to the gas regulation stations (GRS):

- GRS Daugmale;
- GRS Baldone
- GRS Zaķumuiža;
- GRS Vangaži;
- GRS Krimulda;
- GRS Ezerciems;
- GRS Sigulda;
- GRS Cēsis;
- GRS Palsmane;
- GRS Valmiera-1.

Activity	2019	2020	2021	2022
1.PL Rīga – Paņeveža:				
1.1. Rebuilding of PL branch line to GRS Daugmale DN150 (0,37 km) and rebuilding of connecting unit to PL			Design	Construction
1.2. Rebuilding of connecting unit to PL Rīga-Inčukalna PGK II line (without valves)		Design	Construction	
1.3 Rebuilding of PL branch line to GRS Baldone DN150 (0,08 km)			Design	Construction
2.PL Rīga – Inčukalna PGK I and II line:				
2.1. Rebuilding of two sections of PL from receiving chamber to branch line to GRS Rīga-1 (0,15 km each)		Design	Construction	
2.2. Rebuilding of PL branch line to GRS Zaķumuiža DN100 (540 m) and connecting unit to PL Rīga – Inčukalna PGK II line			Design	Construction
2.3. Rebuilding of PL branch line to GRS Vangaži and connecting unit to PL Rīga-Inčukalna PGK I line			Design	Construction
2.4.Rebuilding of PL branch line to GRS Krimulda DN150 (0,84 km)		Design	Construction	
2.5. Rebuilding of two sections of PL from launching chamber to connecting unit to IUGS		Design	Construction	
2.6.Construction of two underwater PL passes over Gauja river DN 700 mm with line valve and connecting valves' unit in the new location in parallel to Rail Baltica line	Included into Rail Baltica project			
2.7.Construction of the launching chamber unit for PL Rīga-Inčukalna PGK I line in the new location in the vicinity of IUGS	Included into Rail Baltica project			
2.8.Construction of new sections for PL Rīga-Inčukalna PGK I un II line from the new underwater passes valves till functioning PL, which are not relocated	Included into Rail Baltica project			
3.PL Pleskava-Rīga and PL Izborska-Inčukalna PGK:				
3.1. Rebuilding of PL branch line to GRS Palsmane DN150 and connecting unit to PL Pleskava-Rīga	Design	Construction		
3.2. Rebuilding of reconnecting valve Nr. 427 DN500 to PL	Design	Construction		
3.3. Rebuilding of PL branch line to GRS Ezerciems DN150 (0,22km)		Design	Construction	
4.PL Vireši – Tallina:				
4.1. Rebuilding of PL connecting units to PLPleskava-Rīga and Izborska-Inčukalna UGS (without valves)	Design	Construction		
4.2. Rebuilding of PL branch line to GRS Valmiera-1 DN200 (0,61 km) and connecting unit to the PL	Design	Construction		
4.3. Rebuilding of line valve units T5 un T6	Design	Construction		

Table 10.

The following **tests and inspections** are required for commissioning of the ELLI Latvian part:

Activity	2019	2020	2021	2022	2023
1.Preparation of testing and inspection plan					
2.In-line diagnostics of reserve PL DN500 (1,8 km) over Daugava river					
3 In-line diagnostics of PL branch line to GRS Sigulda DN150 (6,1 km)					
4. In-line diagnostics of PL branch line to GRS Cēsis DN200 (3,6 km)					
5.Hydrawlic testing of PGV to GRS Palsmane DN150 (4,8 km)					
6.In-line diagnostics of reserve PL DN700 (0,2 km) over Gauja river					
7.Hydrawlic testing and diagnostics of PL connection to IUGS (total - 2,0 km)					
8.Gas transmission system hermetic inspection by helicopter before and after increase of pressure					

Table 11.

The following table reflect **expected costs** for ELLI project Latvian part by years and activities (EURm):

Activity	2019	2020	2021	2022	2023	TOTAL
Design& studies	0.025	0.056	0.044			**0.125**
Works		1.077	1.616	1.616	1.077	**5.387**
TOTAL	**0.025**	**1.134**	**1.660**	**1.616**	**1.077**	**5.512**

Table 12.

Project **risks and their mitigation measures** are identified in the table below:

Risk type	Description	Internal/ External	Likelihood	Impact	Risk mitigation
Technical risks	Poor condition of PL and branch lines discovered by the inspection and testing	Internal	Medium	Medium	Preparation of detailed testing plan and mitigation measures
	Failures of construction/ design	Internal	Medium	Medium	Selection of construction/designing company with appropriate experience (Price cannot be the only criteria). Development of special criteria for qualification
Financial risks	Missing EU co financing	External	Medium	Medium	Reassessment of FID, project scope and timing
	Changing price for works and equipment	External	Medium	Medium	Timely procurement and pre-ordering.
Legal risks	Changes in EU legislation	External	Low	High	Monitoring of EU activities.
	Conclusions on permissible pressure	Internal	Low	High	Supervision of works and quality control
Political risks	Missing regional decision on the Rail Baltica issues	External	Medium	High	Actively participating in activities of working group, discussions with EM
Environmental risks	Ground pollution	Internal	Low	Medium	Review all decisions during the designing process. Regular meetings with designers/constructors.

Table 13.

Conclusions

1. Economic profitability of the ELLI Project is very high in all significantly impacted countries (LV, LT, EE, FI) and after decrease of CAPEX and OPEX in Latvia comparing to the initial investment request , Latvia enjoys the highest ENPV among all countries.
2. Even with the reduced CAPEX and OPEX in Latvia, the ELLI project is not profitable in financial terms neither for Conexus Baltic Grid, nor for Amber Grid, therefore it needs a financial support.
3. Implementation of ELLI project is essential for creation of the Single Baltic Gas Market and it contributes significantly towards all criteria set by Regulation (EU) No 347/2013 of the European Parliament and of the Council of 17 April 2013 on guidelines for trans-European energy infrastructure, namely, market integration, competition, security of supply and sustainability.