Before going through the content of each specific Project Fiche, please read the introduction document.

Project Group EAST_01 - Poland-Slovakia interconnection

Reasons for grouping [ENTSOG]

Project groups is composed by the first interconnection between Poland and Slovakia (both sides of the investment), as well as an enhancer project in the Polish side, which contributes to the optimal utilisation of PL-SK interconnection.

Objective of the project(s) in the group [Promoter]

The objective of the project group is to implement a missing interconnection between the transmission systems of Poland and Slovakia and complete the North-South gas corridor. The group aims at increasing the security of gas supplies in Central-Eastern Europe through the diversification of supply sources and routes. The projects are aiming to support the countries in the region to replace the coal/oil/wood/waste with gas and to mitigate their impacts on the air pollution.

Projects constituting the group

TYNDP Project Code	Project Name	Promoter	Hosting Country	Project Status	4th PCI List Code	First Comm Year	Last Comm. Year	Compared to TYNP 2018
TRA-N-0245	North - South Gas Corridor in Eastern Poland	GAZ-SYSTEM	PL	Less-Advanced	6.2.2	2029	2029	-
TRA-F-0275	Poland - Slovakia Gas Interconnection (PL section)	GAZ-SYSTEM	PL	FID	6.2.1	2021	2021	-
TRA-F-0190	Poland - Slovakia interconnection	eustream, a.s.	SK	FID	6.2.1	2021	2021	Delayed

Technical Information

TYNDP Project Code	Diameter [mm]	Length [km]	Compressor Power [MW]
TRA-F-0190	1000	106	0
TRA-F-0275	1000	56	-
TRA-F-0275	1000	98	-
TRA-F-0275	1000	59	-
TRA-F-0275	1000	168	-
TRA-N-0245	1000	316	-
TRA-N-0245	1000	72	-
TRA-N-0245	-	-	30
TRA-N-0245	1000	135	-
TRA-N-0245	1000	103	-
TRA-N-0245	1000	60	-
TRA-N-0245	1000	39	-

Capacity Increment

The capacity increment values for each project are provided at all related Interconnection points (IP), both for “exit” and “entry” directions, being indicated the operator of the IP as well as the associated commissioning years of the capacity increments.

This information is presented in the table below and should be read per each line as follows: a certain project, TRA-N-123, can bring at a specific “Point Name” operated by “Operator X” an “exit” capacity increment “From System Y” “To System Z” which has associated an “Increment Commissioning Year”. Equally, for the same “Point Name” and operated by the same “Operator X”, an “entry” (reverse) capacity increment can be available to system “Y” from system “Z” which at its turn has associated an “Increment Commissioning Year”.

TYNDP Project Code	Point Name	Operator	From System	Exit Capacity [GWh/d]	Increment Comm. Year	To System	Entry Capacity [GWh/d]	Increment Comm. Year
TRA-F-190	Interconnector PL - SK	eustream, a.s.	Transmission Slovakia	174.59	2021	Transmission Poland (VTP - GAZ-SYSTEM)	143.96	2021
TRA-F-275	Interconnector PL - SK	GAZ-SYSTEM S.A.	Transmission Poland (VTP - GAZ-SYSTEM)	143.9	2021	Transmission Slovakia	174.5	2021
TRA-N-245	Aggregated Distribution (PL)	GAZ-SYSTEM S.A.	Distribution Poland (VTP - GAZ-SYSTEM)	0	-	Transmission Poland (VTP - GAZ-SYSTEM)	0	2029

B. Project Cost Information

During the TYNDP 2020 Project Data Collection, promoters were asked to indicate whether their costs were confidential or not. The following tables display the costs provided by the promoters (as of June 2019, end of TYNDP 2020 project collection). The amounts provided can differ from the figures used by the project promoters in other contexts, where costs can be updated and/or evaluated using different methodologies or assumptions. For the purposes of this project fiche, in case promoters identified their costs as confidential, alternative costs have been provided by the promoter. The alternative costs are identified with "*".

	TRA-F-190	TRA-F-275	TRA-N-245	Total Cost
CAPEX [min, EUR]	143.4*	680*	1020*	1843.4
OPEX [min, EUR/y]	0.67*	16*	22*	38.67
Range CAPEX (%)	10	40	40	-
Range OPEX (%)	10	0	0	-

Description of costs and range [Promoter]

The costs were calculated based on market prices and costs of similar investment projects. The costs are best estimate in this project phase.
The CAPEX/OPEX range for the TRA-F-190 reflects current status of the project taking into account issues encountered during its implementation and factors affecting the construction phase beyond control of the project promoters.

C. Project Benefits

C.1 Summary of project benefits

This section provides a summarised analysis by ENTSOG of the main benefits stemming from the realisation of the overall group and according to the guidelines included in the ENTSOG 2nd CBA Methodology. More details on the indicators are available in sections D and E.

National Trends

Benefits explained (but Sustainability) [ENTSOG]

> Security of Supply:

In the existing infrastructure level, the project group **fully mitigates the risk of demand curtailment** in Poland in 2040 under 2-week dunkelflaute climatic stress conditions and significantly **reduces the risk of demand curtailment** under peak-day climatic stress conditions, furthermore, it **provides remaining flexibility** to the Polish gas system when facing this stress conditions from 2025.
This situation improves in the low infrastructure level, where the project group together with FID projects fully mitigates the risk of demand curtailment in Poland also in 2040 for peak-day climatic stress conditions and increases even more remaining flexibility of the Polish gas system. With the implementation of the advanced projects the project group will be able to improve remaining flexibility in Poland up to very high level of remaining flexibility reaching 100% for 2-weeks and 2-weeks dunkelflaute in 2025.

Regarding the supply import routes disruptions, in case of Ukraine and Belarus disruptions the project group reduces significantly risk of demand curtailment in Poland. More specifically:

In case of **Belarus disruption**, **project group fully mitigates the risk of demand curtailment** for all climatic stress conditions (Peak, 2-week, 2-week DF) in Poland in 2025 and 2030, and it also **reduces the risk of demand curtailment** in 2040. This situation further improves together with the implementation of FID and advanced projects, where the project group reaches lower curtailment rates in 2040 in the low infrastructure level and increases remaining flexibility levels in the advanced infrastructure level.

In case of **Ukrainian disruption**, **project group fully mitigates the risk of demand curtailment** in Poland in 2040 for 2-weeks climatic stress conditions and **reduces the risk of demand curtailment** for peak-day and 2-weeks dunkelflaute climatic stress conditions. This situation also improves in the low infrastructure level and project fully mitigates the risk of demand curtailment in Poland for 2040 2-weeks dunkelflaute and reduces curtailment rates during peak day climatic stress conditions. Whereas, in the advanced infrastructure level, the project group fully mitigates all risk of demand curtailment for Ukrainian route disruption.

For **Single Largest Infrastructure Disruption in Poland** (SLID-PL indicator), in the existing infrastructure level, the project group **fully mitigates the risk of demand curtailment** in Poland in 2025 and 2030 and it also reduces this risk in 2040. Whereas for the low infrastructure level, the project group fully mitigates the risk of demand curtailment only in 2040.

> Competition:

The project group **improves the diversification of entry capacities** (LICD indicator) in Slovakia and Poland.

> Market integration:

The group brings benefits in monetised terms as a **reduction of the cost of gas supply up to** 4 MEUR/y on average in the reference supply price configuration. Such benefits can be explained by the savings in transportation costs mainly due to rerouting of Russian supplies: reduction of Yamal flows arriving to Poland which are replaced by Ukrainian flows from Slovakia. This is confirmed by the sensitivity analysis on tariffs where benefits increase in case of even lower tariffs while decrease to zero in the reference supply price configuration in case of more expensive tariffs compared to the other possible routes.
Supply cost savings due to the project group in the low infrastructure level are similar to the savings in the existing level, whereas reduced to zero in the advanced infrastructure level mainly due to the implementation of the advanced project Baltic pipe in Poland.
Bidirectionality is improved with the creation of capacity between Slovakia and Poland.

Distributed Energy

Benefits explained (but CO2 savings) [PS-CBA Experts/ENTSOG]

> **Security of Supply:**

In the existing infrastructure level, the project group **provides some extra remaining flexibility** to the Polish gas system in 2025 when facing this stress conditions and from 2030, mainly due to the increase in Polish demand, project group **reduces the risk of demand curtailment** in Poland under all climatic stress conditions.

This situation improves in the low infrastructure level, where the project group together with FID projects fully mitigates the risk of demand curtailment from 2030 for 2-weeks and 2-weeks dunkelflaute climatic stress cases and reduces the risk of demand curtailment in 2040 for peak-day climatic stress case. With the implementation of the advanced projects the project group will be able to **improve remaining flexibility** in Poland under all climatic stress cases and assessed years.

Regarding the supply import routes disruptions, in case of Ukraine, Baltics-Finland and Belarus disruptions the project group reduces significantly risk of demand curtailment in Poland. More specifically:

In case of **Belarus disruption**, **project group fully mitigates the risk of demand curtailment** for all climatic stress conditions (Peak, 2-week, 2-week DF) in Poland in 2025 and significantly reduces these risks from 2030. This situation further improves together with FID and advanced projects, where curtailment rates are further reduced in the low infrastructure level and full mitigation of all risk of curtailment in the advanced infrastructure level.

In case of **Ukrainian disruption**, project group **reduces the risk of demand curtailment** from 2030 under all climatic stress conditions. As per Belarus disruption, situation also improves in the low and advanced infrastructure levels, however in the low infrastructure level, Poland will still face risk of demand curtailment.
In case of **Baltic-Finland disruption**, in the low infrastructure level and thanks to the new interconnection between Poland and Lithuania, project group will fully mitigate the risk of demand curtailment in Lithuania and Latvia in 2030 for 2-weeks and 2-weeks dunkelflaute climatic stress cases and also will **reduce the risk of demand curtailment** in these countries under peak-day climatic stress case.

For **Single Largest Infrastructure Disruption in Poland** (SLID-PL indicator), in the existing infrastructure level, the project group **fully mitigates the risk of demand curtailment** in Poland in 2025 and it also reduces this risk in 2030 and 2040. This situation improves with the implementation of Fid and advanced projects, which allows the project group to lower curtailment rates in the low infrastructure level and full mitigation of the risk of disruption in the advanced infrastructure level.

> **Competition:**

The project group **improves the diversification of entry capacities** (LICD indicator) in Slovakia and Poland.
In the Existing and Low Infrastructure Levels, the **project group has a positive impact reducing the dependence to Russia and LNG supplies** in Poland in 2040. With the creation of an interconnection between Poland and Slovakia, Poland is more integrated with the rest of Europe and can share, and consequently reduce, its supply dependence.
In Low Infrastructure Level, Czech Republic and Slovakia will increase their access to **LNG,** however this increase is not captured by CSA indicator as LNG was already available in these countries.

> **Market integration:**

The group brings benefits in monetised terms as a reduction of the cost of gas supply of 16.4 MEUR/y (on average) under reference supply price configuration in the existing infrastructure level. Such benefits can be explained by the savings in transportation costs mainly due to rerouting of Russian supplies: reduction of Yamal flows arriving to Poland which are replaced by Ukrainian flows from Slovakia. This is confirmed by sensitivity analysis on tariffs where benefits increase in case of even lower tariffs while sharply decrease in case of more expensive tariffs compared to the other possible routes. Slightly higher benefits are found under Russian expensive supply price configuration, also these benefits are linked to tariffs savings.
Additionally, supply cost savings in the Distributed Energy (DE) demand scenario are higher than National Trends as higher gas demand in Poland and lower gas demand in Slovakia for DE scenario increases the use of the new interconnection.
Supply cost savings in the low infrastructure level are similar to the existing level, whereas reduced to zero in the advanced infrastructure level due to the implementation of the advanced project Baltic pipe in Poland.
Bidirectionality is improved with the creation of capacity between Slovakia and Poland.

Global Ambition

Benefits explained (but CO2 savings) [PS-CBA Experts/ENTSOG]

> **Security of Supply:**

In the existing infrastructure level, the project group **provides some extra remaining flexibility** to the Polish gas system in 2025 when facing all climatic stress conditions and from 2030, mainly due to the increase in Polish demand, project group **fully mitigates the risk of demand curtailment** in Poland in 2030 under 2-week and 2-week dunkelflaute climatic stress conditions and **reduces the risk of demand curtailment** in Poland in 2030 under peak and in 2040 under all climatic stress conditions.

This situation improves with the implementation of FID projects, reducing curtailment rates and increasing remaining flexibility values in the low infrastructure level. However, with the implementation of the advanced projects the project group will be able to fully mitigate the risk of curtailment and **improve remaining flexibility** in Poland under all climatic stress cases and assessed years.

Regarding the supply import routes disruptions, in case of Ukraine and Belarus disruptions the project group reduces significantly risk of demand curtailment in Poland. More specifically:

In case of **Belarus disruption**, **project group fully mitigates the risk of demand curtailment** for all climatic stress conditions (Peak, 2-week, 2-week DF) in Poland in 2025 and significantly reduces these risks from 2030. This situation further improves together with FiD and advanced projects, where curtailment rates are further reduced in the low infrastructure level and nearly full mitigation of all risk of curtailment in the advanced infrastructure level (except for peak case in 2040).

In case of **Ukrainian disruption**, project group **reduces the risk of demand curtailment** in Poland from 2030 under all climatic stress conditions. This situation also improves in the low infrastructure level, with implementation of FID projects, the project group fully mitigates the risk of demand curtailment in 2030 for 2-weeks and 2-weeks dunkelflaute climatic stress cases and further reduces curtailment rates in 2040 and 2030 peak case. Additionally, as per Ukrainian disruption, in the advanced infrastructure level, thanks to the implementation of advanced projects, the project group fully mitigates all risk of disruption except for 2040 peak case.

For **Single Largest Infrastructure Disruption in Poland** (SLID-PL indicator), in the existing infrastructure level, the project group **fully mitigates the risk of demand curtailment** in Poland in 2025 and it also reduces this risk in 2030 and 2040. This situation improves with the implementation of Fid and advanced projects, which allows the project group to lower curtailment rates in the low infrastructure level and full mitigation of the risk of disruption in the advanced infrastructure level (except for 2040 where some risk of disruption still remains).

> **Competition:**

By further reducing the LICD indicator value, the project group **contributes to the diversification of entry points** in Poland and Slovakia.

In the low Infrastructure Level, with the FiD project of interconnection between Lithuania and Poland, Estonia, Finland, Latvia, and Lithuania will also increase the number of sources they have access to in 2030, and thanks to the interconnection with Slovakia **those countries can benefit from more Norwegian gas**.

> **Market integration:**

The group brings benefits in monetised terms as a reduction of the cost of gas supply of 15 MEUR/y (on average) mainly under LNG expensive or Russian gas cheap supply price configurations. Such benefits can be explained by the savings in transportation costs mainly due to rerouting of Russian supplies: reduction of Yamal flows arriving to Poland which are replaced by Ukrainian flows from Slovakia. This is confirmed by the sensitivity analysis where benefits increase in case of even lower tariffs while sharply decrease in case of more expensive tariffs compared to the other possible routes.
Supply cost saving in the low infrastructure level are lower to the existing level, whereas reduced to zero in the advanced infrastructure level due to the implementation of advanced projects in Poland.
Bidirectionality is improved with the creation of capacity between Slovakia and Poland.

Sustainability benefits explained [ENTSOG]

The ENTSOG analysis shows that, in the yearly assessment, the projects group realisation enhances the replacement of more polluting fuels with natural gas, which enables fuel switch savings between 1.9-20.6 MEUR/y under existing infrastructure level and between 0.1-12.5 MEUR/y under low infrastructure level. The table below shows the related reduction in terms of CO2eq/y for each scenario and infrastructure level and over the 25-years assessment period of the project group. The contribution of the project group to the CO2eq/y emissions (positive number indicate reduction in CO2eq/y emissions) is also displayed for the three simulation configurations that consider different level of tariffs for the project group.

Sustainability		EXISTING			LOW			ADVANCED		
CO2 and Other externalities (KtCO2 eq/y)	Reference	34 / 41	279 / 320	58 / 75	1 / 1	177 / 203	66 / 86	0 / 0	0 / 0	0 / 0
	Lower Tariff Sensitivity	31 / 55	284 / 341	102 / 149	33 / 52	262 / 275	146 / 177	0 / 0	0 / 102	0 / 17
	Higher Tariff Sensitivity	-1 / 0	-1 / 0	-1 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0

The minimum and the maximum values displayed in the table above refer respectively to the CO2eq/y savings in case emissions from the additional gas demand increase not replacing other more polluting fuels are counted in the overall CO2eq emissions assessment or they are considered neutral. For more information, please consult the Project Fiche introduction document and the TYNDP 2020 Annex D.

Savings have been allocated to the project group based on the flows resulting from ENSTOG simulations under the reference supply price configurations and according to the methodology described in TYNDP 2020 Annex D. Such methodology is also based on the assumption that the use of the infrastructures already included in the different infrastructure levels (versus which the project group is assessed) is always prioritised.
In fact, the highest contribution of the project is observed under the existing infrastructure level, and in Distributed Energy scenario. This scenario is the one characterised by the highest level of gas demand in 2030 and 2040 for Slovakia and Poland together.
In line with the analysis described in the “market integration” section, the sensitivity on tariffs shows that the contribution of the project to the savings varies when the project group tariffs change.
TYNDP 2020 ENTSOG and ENTSO-E scenario storylines have identified for Distributed Energy and Global Ambition scenarios the need for hydrogen imports to satisfy the hydrogen demand that cannot be covered by European production of hydrogen (e.g. through power-to-gas). In the future, hydrogen demand not satisfied by locally produced hydrogen could be covered by directly imported hydrogen through hydrogen-compatible infrastructures and/or by natural gas through natural gas pipelines or LNG terminal. In TYNDP 2020 ENTSOG has considered fuel switch benefits from hydrogen import in the form of natural gas import then converted into hydrogen in Europe. For project group EAST_01, such benefits represent, on average, 10% of the benefits from fuel switch in 2030 in Distributed Energy and Global Ambition scenarios and 80% in 2040.

Sustainability benefits explained [Promoter]

No additional benefits were provided by promoters.

C.2 Quantitative benefits [ENTSOG]

The following tables display all the benefits quantified by ENTSOG through specific indicators and stemming from the realisation of the considered project group. Some of those benefits are measured through quantitative indicators (i.e. SLID and Curtailment rate) and monetised ex-post. Their monetised value is displayed in section E. When assessing those type of benefits, it is important to avoid any double counting considering them both in quantitative and monetised terms.

EXISTING Infrastructure Level – National Trends

Sum of Value	Column Labels											
	2025						2030			2040		
	CBG			GBC			NT			NT		
Row Labels	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Competition												
LNG and Interconnection Capacity Diversification (LICD)												
Poland	3,996	2,868	-1,128	3,996	2,868	-1,128	3,996	2,868	-1,128	3,996	2,868	-1,128
Slovakia	3,905	2,809	-1,097	3,938	2,826	-1,111	3,898	2,805	-1,093	3,847	2,783	-1,064
Security of Supply												
Belarus Disruption Curtailment Rate 2-Week Cold Spell (%)												
Poland	-3%	0%	3%	-3%	0%	3%	-1%	0%	1%	-18%	-5%	13%
Belarus Disruption Curtailment Rate 2-Week Cold Spell (%) --- DF												
Poland	-4%	0%	4%	-4%	0%	4%	-11%	0%	11%	-26%	-14%	12%
Belarus Disruption Curtailment Rate Peak Day (%)												
Poland	-9%	0%	9%	-9%	0%	9%	-10%	0%	10%	-31%	-21%	11%
Curtailment Rate 2-Week Cold Spell (%) --- DF												
Poland										-8%	0%	8%
Curtailment Rate Peak Day (%)												
Poland										-15%	-4%	11%
Remaining Flexibility 2-Week Cold Spell (%)												
Poland	22%	39%	16%	22%	39%	16%	24%	40%	16%	2%	15%	13%
Remaining Flexibility 2-Week Cold Spell (%) --- DF												
Poland	21%	37%	16%	21%	37%	16%	11%	25%	14%	0%	4%	4%
Remaining Flexibility Peak day (%)												
Poland	14%	29%	15%	14%	29%	15%	11%	25%	14%			
Single Largest Infrastructure Disruption (SLID)-Poland												
Poland	10%	0%	-10%	10%	0%	-10%	11%	0%	-11%	32%	21%	-11%
Ukraine Disruption Curtailment Rate 2-Week Cold Spell (%)												
Poland										-8%	0%	8%
Ukraine Disruption Curtailment Rate 2-Week Cold Spell (%) --- DF												
Poland							-1%	0%	1%	-17%	-5%	12%
Ukraine Disruption Curtailment Rate Peak Day (%)												
Poland										-23%	-13%	11%
Market Integration												
Bi-directionality - Country												
PL <=> SK	0%	82%	82%	0%	82%	82%	0%	82%	82%	0%	82%	82%

LOW Infrastructure Level – National Trends

Sum of Value	Column Labels											
	2025						2030			2040		
	CBG			GBC			NT			NT		
Row Labels	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Competition												
Commercial Supply Access (CSA)												
Romania							2	3	1			
LNG and Interconnection Capacity Diversification (LICD)												
Poland	3,304	2,500	-804	3,304	2,500	-804	3,304	2,500	-804	3,304	2,500	-804
Slovakia	3,905	2,809	-1,097	3,938	2,826	-1,111	3,898	2,805	-1,093	3,847	2,783	-1,064
Security of Supply												
Belarus Disruption Curtailment Rate 2-Week Cold Spell (%)												
Poland										-7%	0%	7%
Belarus Disruption Curtailment Rate 2-Week Cold Spell (%) --- DF												
Poland										-16%	-4%	12%
Belarus Disruption Curtailment Rate Peak Day (%)												
Poland										-22%	-12%	11%
Curtailment Rate Peak Day (%)												
Poland										-6%	0%	6%
Remaining Flexibility 2-Week Cold Spell (%)												
Poland	38%	52%	14%	38%	52%	14%	38%	54%	16%	13%	26%	13%
Remaining Flexibility 2-Week Cold Spell (%) --- DF												
Poland	37%	51%	14%	37%	51%	14%	23%	37%	14%	2%	14%	12%
Remaining Flexibility Peak day (%)												
Poland	28%	41%	13%	28%	41%	13%	23%	37%	14%	0%	5%	5%
Single Largest Infrastructure Disruption (SLID)-Poland												
Poland										23%	12%	-11%
Ukraine Disruption Curtailment Rate 2-Week Cold Spell (%) --- DF												
Poland										-7%	0%	7%
Ukraine Disruption Curtailment Rate Peak Day (%)												
Poland										-14%	-4%	11%
Market Integration												
Bi-directionality - Country												
PL <=> SK	0%	82%	82%	0%	82%	82%	0%	82%	82%	0%	82%	82%

ADVANCED Infrastructure Level – National Trends

Sum of Value	Column Labels											
	2025			2030			2040					
	CBG			GBC			NT			NT		
Row Labels	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Competition												
LNG and Interconnection Capacity Diversification (LICD)												
Poland	2,129	1,781	-348	2,129	1,781	-348	2,129	1,781	-348	2,129	1,781	-348
Slovakia	3,905	2,809	-1,097	3,938	2,826	-1,111	3,898	2,805	-1,093	3,847	2,783	-1,064
Security of Supply												
Remaining Flexibility 2-Week Cold Spell (%)												
Poland	99%	100%	1%	99%	100%	1%	99%	100%	1%	64%	77%	13%
Remaining Flexibility 2-Week Cold Spell (%) --- DF												
Poland	98%	100%	2%	98%	100%	2%	79%	93%	14%	48%	60%	12%
Remaining Flexibility Peak day (%)												
Poland	84%	99%	15%	84%	99%	15%	78%	92%	14%	36%	47%	11%
Market Integration												
Bi-directionality - Country												
PL <=> SK	0%	82%	82%	0%	82%	82%	0%	82%	82%	0%	82%	82%

EXISTING Infrastructure Level – Distributed Energy

Sum of Value	Column Labels											
	2025						2030			2040		
	CBG			GBC			DE			DE		
Row Labels	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Competition												
Commercial Supply Access (CSA)												
Czechia							2	3	1			
LNG and Interconnection Capacity Diversification (LICD)												
Poland	3,996	2,868	-1,128	3,996	2,868	-1,128	3,996	2,868	-1,128	3,996	2,868	-1,128
Slovakia	3,905	2,809	-1,097	3,938	2,826	-1,111	3,792	2,756	-1,036	3,762	2,740	-1,022
MASD-LNGall												
Poland										4%	0%	-4%
MASD-RU												
Poland										27%	24%	-4%
Security of Supply												
Belarus Disruption Curtailment Rate 2-Week Cold Spell (%)												
Poland	-3%	0%	3%	-3%	0%	3%	-29%	-18%	11%	-30%	-21%	10%
Belarus Disruption Curtailment Rate 2-Week Cold Spell (%) --- DF												
Poland	-4%	0%	4%	-4%	0%	4%	-30%	-19%	11%	-33%	-24%	10%
Belarus Disruption Curtailment Rate Peak Day (%)												
Poland	-9%	0%	9%	-9%	0%	9%	-39%	-30%	9%	-44%	-37%	8%
Curtailment Rate 2-Week Cold Spell (%)												
Poland							-12%	-1%	11%	-15%	-6%	10%
Curtailment Rate 2-Week Cold Spell (%) --- DF												
Poland							-13%	-2%	11%	-19%	-9%	10%
Curtailment Rate Peak Day (%)												
Poland							-25%	-16%	9%	-32%	-25%	8%
Remaining Flexibility 2-Week Cold Spell (%)												
Poland	22%	39%	16%	22%	39%	16%						
Remaining Flexibility 2-Week Cold Spell (%) --- DF												
Poland	21%	37%	16%	21%	37%	16%						
Remaining Flexibility Peak day (%)												
Poland	14%	29%	15%	14%	29%	15%						
Single Largest Infrastructure Disruption (SLID)-Poland												
Poland	10%	0%	-10%	10%	0%	-10%	39%	30%	-9%	45%	37%	-8%
Ukraine Disruption Curtailment Rate 2-Week Cold Spell (%)												
Poland							-21%	-10%	11%	-23%	-13%	10%
Ukraine Disruption Curtailment Rate 2-Week Cold Spell (%) --- DF												
Poland							-21%	-11%	11%	-26%	-16%	10%
Ukraine Disruption Curtailment Rate Peak Day (%)												
Poland							-32%	-23%	9%	-38%	-31%	8%
Market Integration												
Bi-directionality - Country												
PL <=> SK	0%	82%	82%	0%	82%	82%	0%	82%	82%	0%	82%	82%

LOW Infrastructure Level – Distributed Energy

Sum of Value	Column Labels											
	2025						2030			2040		
	CBG			GBC			DE			DE		
Row Labels	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Competition												
Commercial Supply Access (CSA)												
Bulgaria							3	4	1			
Estonia										3	4	1
Finland										3	4	1
Latvia										3	4	1
Lithuania										3	4	1
LNG and Interconnection Capacity Diversification (LICD)												
Poland	3,304	2,500	-804	3,304	2,500	-804	3,304	2,500	-804	3,304	2,500	-804
Slovakia	3,905	2,809	-1,097	3,938	2,826	-1,111	3,792	2,756	-1,036	3,762	2,740	-1,022
MASD-RU												
Poland										13%	7%	-6%
Security of Supply												
Baltics Finland Disruption Curtailment Rate 2-Week Cold Spell (%)												
Latvia							-2%	0%	2%			
Lithuania							-3%	0%	3%			
Poland							-4%	0%	4%	-7%	0%	7%
Baltics Finland Disruption Curtailment Rate 2-Week Cold Spell (%) --- DF												
Latvia							-4%	0%	4%			
Lithuania							-4%	0%	4%			
Poland							-5%	0%	5%	-10%	-1%	10%
Baltics Finland Disruption Curtailment Rate Peak Day (%)												
Latvia							-10%	-8%	2%			
Lithuania							-11%	-8%	3%			
Poland							-17%	-9%	9%	-26%	-18%	8%
Belarus Disruption Curtailment Rate 2-Week Cold Spell (%)												
Poland							-20%	-9%	11%	-22%	-12%	10%
Belarus Disruption Curtailment Rate 2-Week Cold Spell (%) --- DF												
Poland							-21%	-10%	11%	-25%	-16%	10%
Belarus Disruption Curtailment Rate Peak Day (%)												
Poland							-31%	-22%	9%	-38%	-30%	8%
Curtailment Rate 2-Week Cold Spell (%)												
Poland							-3%	0%	3%	-7%	0%	7%
Curtailment Rate 2-Week Cold Spell (%) --- DF												
Poland							-4%	0%	4%	-10%	-1%	10%
Curtailment Rate Peak Day (%)												
Poland							-17%	-8%	9%	-26%	-18%	8%
Remaining Flexibility 2-Week Cold Spell (%)												
Poland	38%	52%	14%	38%	52%	14%	0%	8%	8%	0%	3%	3%
Remaining Flexibility 2-Week Cold Spell (%) --- DF												
Poland	37%	51%	14%	37%	51%	14%	0%	7%	7%			
Remaining Flexibility Peak day (%)												
Poland	28%	41%	13%	28%	41%	13%						
Single Largest Infrastructure Disruption (SLID)-Poland												
Poland							32%	23%	-9%	38%	30%	-8%
Ukraine Disruption Curtailment Rate 2-Week Cold Spell (%)												
Poland							-11%	-1%	11%	-15%	-5%	10%
Ukraine Disruption Curtailment Rate 2-Week Cold Spell (%) --- DF												
Poland							-12%	-2%	11%	-18%	-8%	10%
Ukraine Disruption Curtailment Rate Peak Day (%)												
Poland							-25%	-15%	9%	-32%	-24%	8%
Market Integration												
Bi-directionality - Country												
PL <=> SK	0%	82%	82%	0%	82%	82%	0%	82%	82%	0%	82%	82%

ADVANCED Infrastructure Level – Distributed Energy

Sum of Value	Column Labels											
	2025						2030			2040		
	CBG			GBC			DE			DE		
Row Labels	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Competition												
LNG and Interconnection Capacity Diversification (LICD)												
Poland	2,129	1,781	-348	2,129	1,781	-348	2,129	1,781	-348	2,129	1,781	-348
Slovakia	3,905	2,809	-1,097	3,938	2,826	-1,111	3,792	2,756	-1,036	3,762	2,740	-1,022
Security of Supply												
Belarus Disruption Curtailment Rate Peak Day (%)												
Poland										-8%	0%	8%
Remaining Flexibility 2-Week Cold Spell (%)												
Poland	99%	100%	1%	99%	100%	1%	39%	50%	11%	31%	40%	10%
Remaining Flexibility 2-Week Cold Spell (%) --- DF												
Poland	98%	100%	2%	98%	100%	2%	38%	49%	11%	27%	37%	10%
Remaining Flexibility Peak day (%)												
Denmark							79%	92%	13%	87%	100%	13%
Poland										-9%	-1%	8%
Market Integration												
Bi-directionality - Country												
PL <=> SK	0%	82%	82%	0%	82%	82%	0%	82%	82%	0%	82%	82%

EXISTING Infrastructure Level – Global Ambition

Sum of Value	Column Labels											
	2025						2030			2040		
	CBG			GBC			GA			GA		
Row Labels	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Competition												
LNG and Interconnection Capacity Diversification (LICD)												
Poland	3,996	2,868	-1,128	3,996	2,868	-1,128	3,996	2,868	-1,128	3,996	2,868	-1,128
Slovakia	3,905	2,809	-1,097	3,938	2,826	-1,111	3,825	2,773	-1,052	3,806	2,763	-1,043
Security of Supply												
Belarus Disruption Curtailment Rate 2-Week Cold Spell (%)												
Poland	-3%	0%	3%	-3%	0%	3%	-27%	-16%	11%	-34%	-24%	10%
Belarus Disruption Curtailment Rate 2-Week Cold Spell (%) --- DF												
Poland	-4%	0%	4%	-4%	0%	4%	-27%	-17%	11%	-35%	-25%	10%
Belarus Disruption Curtailment Rate Peak Day (%)												
Poland	-9%	0%	9%	-9%	0%	9%	-38%	-29%	9%	-46%	-39%	8%
Curtailment Rate 2-Week Cold Spell (%)												
Poland							-9%	0%	9%	-19%	-9%	10%
Curtailment Rate 2-Week Cold Spell (%) --- DF												
Poland							-11%	0%	10%	-20%	-10%	10%
Curtailment Rate Peak Day (%)												
Poland							-24%	-14%	9%	-34%	-27%	8%
Remaining Flexibility 2-Week Cold Spell (%)												
Poland	22%	39%	16%	22%	39%	16%	0%	1%	1%			
Remaining Flexibility 2-Week Cold Spell (%) --- DF												
Poland	21%	37%	16%	21%	37%	16%	0%	1%	1%			
Remaining Flexibility Peak day (%)												
Poland	14%	29%	15%	14%	29%	15%						
Single Largest Infrastructure Disruption (SLID)-Poland												
Poland	10%	0%	-10%	10%	0%	-10%	38%	29%	-9%	47%	39%	-8%
Ukraine Disruption Curtailment Rate 2-Week Cold Spell (%)												
Poland							-18%	-7%	11%	-26%	-17%	10%
Ukraine Disruption Curtailment Rate 2-Week Cold Spell (%) --- DF												
Poland							-19%	-8%	11%	-27%	-18%	10%
Ukraine Disruption Curtailment Rate Peak Day (%)												
Poland							-31%	-22%	9%	-40%	-33%	8%
Market Integration												
Bi-directionality - Country												
PL <=> SK	0%	82%	82%	0%	82%	82%	0%	82%	82%	0%	82%	82%

LOW Infrastructure Level – Global Ambition

Sum of Value	Column Labels											
	2025						2030			2040		
	CBG			GBC			GA			GA		
Row Labels	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Competition												
Commercial Supply Access (CSA)												
Estonia							2	3	1			
Finland							2	3	1			
Hungary							3	4	1			
Latvia							2	3	1			
Lithuania										3	4	1
Romania							2	3	1			
LNG and Interconnection Capacity Diversification (LICD)												
Poland	3,304	2,500	-804	3,304	2,500	-804	3,304	2,500	-804	3,304	2,500	-804
Slovakia	3,905	2,809	-1,097	3,938	2,826	-1,111	3,825	2,773	-1,052	3,806	2,763	-1,043
Security of Supply												
Baltics Finland Disruption Curtailment Rate 2-Week Cold Spell (%)												
Latvia							-2%	0%	2%			
Lithuania							-2%	0%	2%			
Poland							-2%	0%	2%	-11%	-1%	10%
Baltics Finland Disruption Curtailment Rate 2-Week Cold Spell (%) --- DF												
Latvia							-2%	0%	2%			
Lithuania							-2%	0%	2%			
Poland							-2%	0%	2%	-12%	-2%	10%
Baltics Finland Disruption Curtailment Rate Peak Day (%)												
Latvia							-7%	-6%	1%			
Lithuania							-8%	-6%	2%			
Poland							-16%	-7%	9%	-28%	-20%	8%
Belarus Disruption Curtailment Rate 2-Week Cold Spell (%)												
Poland							-17%	-6%	11%	-26%	-16%	10%
Belarus Disruption Curtailment Rate 2-Week Cold Spell (%) --- DF												
Poland							-18%	-7%	11%	-27%	-17%	10%
Belarus Disruption Curtailment Rate Peak Day (%)												
Poland							-30%	-21%	9%	-40%	-32%	8%
Curtailment Rate 2-Week Cold Spell (%)												
Poland							-1%	0%	1%	-11%	-1%	10%
Curtailment Rate 2-Week Cold Spell (%) --- DF												
Poland							-1%	0%	1%	-12%	-2%	10%
Curtailment Rate Peak Day (%)												
Poland							-16%	-7%	9%	-28%	-20%	8%
Remaining Flexibility 2-Week Cold Spell (%)												
Poland	38%	52%	14%	38%	52%	14%	0%	11%	10%			
Remaining Flexibility 2-Week Cold Spell (%) --- DF												
Poland	37%	51%	14%	37%	51%	14%	0%	10%	10%			
Remaining Flexibility Peak day (%)												
Poland	28%	41%	13%	28%	41%	13%						
Single Largest Infrastructure Disruption (SLID)-Poland												
Poland							30%	21%	-9%	40%	32%	-8%
Ukraine Disruption Curtailment Rate 2-Week Cold Spell (%)												
Poland							-9%	0%	9%	-18%	-9%	10%
Ukraine Disruption Curtailment Rate 2-Week Cold Spell (%) --- DF												
Poland							-10%	0%	10%	-19%	-10%	10%
Ukraine Disruption Curtailment Rate Peak Day (%)												
Poland							-23%	-14%	9%	-34%	-26%	8%
Market Integration												
Bi-directionality - Country												
PL <=> SK	0%	82%	82%	0%	82%	82%	0%	82%	82%	0%	82%	82%

ADVANCED Infrastructure Level – Global Ambition

Sum of Value	Column Labels											
	2025						2030			2040		
	CBG			GBC			GA			GA		
Row Labels	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Competition												
LNG and Interconnection Capacity Diversification (LICD)												
Poland	2,129	1,781	-348	2,129	1,781	-348	2,129	1,781	-348	2,129	1,781	-348
Slovakia	3,905	2,809	-1,097	3,938	2,826	-1,111	3,825	2,773	-1,052	3,806	2,763	-1,043
Security of Supply												
Belarus Disruption Curtailment Rate Peak Day (%)												
Poland										-10%	-2%	8%
Remaining Flexibility 2-Week Cold Spell (%)												
Poland	99%	100%	1%	99%	100%	1%	43%	54%	10%	27%	37%	10%
Remaining Flexibility 2-Week Cold Spell (%) --- DF												
Poland	98%	100%	2%	98%	100%	2%	41%	52%	10%	26%	35%	10%
Remaining Flexibility Peak day (%)												
Denmark							97%	100%	3%	19%	76%	57%
Poland	84%	99%	15%	84%	99%	15%	19%	28%	9%	2%	10%	8%
Single Largest Infrastructure Disruption (SLID)-Denmark												
Denmark										2%	0%	-2%
Poland										2%	0%	-2%
Sweden										4%	2%	-2%
Single Largest Infrastructure Disruption (SLID)-Poland												
Poland										12%	4%	-8%
Ukraine Disruption Curtailment Rate Peak Day (%)												
Poland										-11%	-3%	8%
Market Integration												
Bi-directionality - Country												
PL <=> SK	0%	82%	82%	0%	82%	82%	0%	82%	82%	0%	82%	82%

C.3 Monetised benefits [ENTSOG]

This section includes all benefits stemming from the realisation of a project that are quantified and monetised. Some benefits are monetised ex-post while others directly as a result of the simulations and are impacted by the modelling assumptions chosen (e.g. tariffs or supply price assumptions). Monetised benefits are showed at EU level. In order to keep the results in a manageable number, those have been aggregated per Infrastructure Level and Demand Scenarios. In line with the CBA Methodology, promoters could provide additional benefits related to Sustainability or Gasification. In the tables below these benefits are displayed separately from the ones computed directly by ENTSOG and are labelled as "(Promoter)".
More information on how to read the data in this section is provided in the Introduction Document.

		EXISTING			LOW			ADVANCED		
Benefits (Meur/year)		NATIONAL TRENDS	DISTRIBUTED ENERGY	GLOBAL AMBITION	NATIONAL TRENDS	DISTRIBUTED ENERGY	GLOBAL AMBITION	NATIONAL TRENDS	DISTRIBUTED ENERGY	GLOBAL AMBITION
EU Bill benefits With Tariffs	Reference Supply	4.0	16.4	8.3	3.3	11.1	7.2	0.0	0.0	0.0
	Supply Maximization	4.0	17.4	14.8	3.6	14.4	9.0	0.0	0.0	0.0
Security of Supply	Design Case	9.5	9.8	9.8	6.3	8.4	8.4	0.0	6.3	6.3
	2-weeks Cold Spell	36.1	62.0	60.8	22.8	58.6	58.6	0.0	0.0	0.0
	2-weeks Cold Spell DF	60.9	63.2	62.4	30.8	58.6	58.6	0.0	0.0	0.0
Sustainability	CO2 and Other externalities savings	1.9 / 2.2	18.2 / 20.6	3.5 / 4.5	0.1 / 0.1	10.9 / 12.5	3.4 / 4.4	0 / 0	0 / 0	0 / 0
	Additional benefit (Promoter)	0	0	0	0	0	0	0	0	0

Comparison between the assessed SCENARIOS

ENTSOG runs the assessment for 5-year-rounded years (2020, 2025, 2030 and 2040) and interpolates these results to compute the benefits for the 25-years economic lifetime of projects. The following tables show the benefits as computed in the specific assessment years.

Year of assessment		2020									2025								
		EXISTING			LOW			ADVANCED			EXISTING			LOW			ADVANCED		
Benefits (Meur/year)		NT	DE	GA	NT	DE	GA	NT	DE	GA	NT	DE	GA	NT	DE	GA	NT	DE	GA
EU Bill benefits With Tariffs	Reference Supply	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8	4.8	4.8	0.0	0.0	0.0	0.0	0.0	0.0
	Supply Maximization	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8	4.8	4.8	1.0	1.0	1.0	0.0	0.0	0.0
Security of Supply	Design Case	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.5	34.4	6.5	0.0	0.0	0.0	0.0	0.0	0.0
	2-weeks Cold Spell	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.9	11.9	11.9	0.0	0.0	0.0	0.0	0.0	0.0
	2-weeks Cold Spell DF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.2	16.2	16.2	0.0	0.0	0.0	0.0	0.0	0.0
Sustainability	CO2 and Other externalities savings	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
	Additional benefit (Promoter)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Year of assessment		2030									2040								
		EXISTING			LOW			ADVANCED			EXISTING			LOW			ADVANCED		
Benefits (Meur/year)		NT	DE	GA	NT	DE	GA	NT	DE	GA	NT	DE	GA	NT	DE	GA	NT	DE	GA
EU Bill benefits With Tariffs	Reference Supply	0.0	26.4	13.0	8.7	24.5	13.1	0.0	0.0	0.0	4.5	17.0	7.3	0.0	4.3	5.3	0.0	0.0	0.0
	Supply Maximization	1.8	27.0	18.2	11.2	34.9	21.6	0.0	0.0	0.0	4.5	19.3	19.2	0.0	8.8	5.3	0.0	0.0	0.0
Security of Supply	Design Case	8.0	10.5	10.5	0.0	10.5	10.5	0.0	0.0	0.0	10.5	57.6	10.5	10.5	15.7	10.5	0.0	10.5	10.5
	2-weeks Cold Spell	6.8	73.3	72.2	0.0	73.3	73.3	0.0	0.0	0.0	73.3	73.3	73.3	38.0	73.3	73.3	0.0	0.0	0.0
	2-weeks Cold Spell DF	55.2	73.3	72.2	0.2	73.3	73.3	0.0	0.0	0.0	73.3	73.3	73.3	73.3	73.3	73.3	0.0	0.0	0.0
Sustainability	CO2 and Other externalities savings	0 / 0	51 / 59	4 / 5	0 / 0	27 / 31	6 / 8	0 / 0	0 / 0	0 / 0	3 / 4	7 / 7	6 / 7	0 / 0	2 / 2	3 / 3	0 / 0	0 / 0	0 / 0
	Additional benefit (Promoter)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

C.4 Sensitivities analysis on monetised benefits [ENTSOG]

In line with ENTSOG Adapted 2nd CBA Methodology, ENTSOG has also run sensitivities on some relevant assumptions such as tariffs, commissioning year and lower supply source price differential. The results included in the tables below have to be compared with the ones included in section C.3. Further information is available in the common introduction (Pages 1-6) to all project fiches. Independently from the source of the input as described in C3 (ENTSOG or Promoter), the sensitivity analysis has been caried out by ENTSOG and according to the criteria in the approved CBA Methodology.

EXISTING Infrastructure Level

Benefits (Meur/year)		*Commissioning Year Sensitivity*			*Lower Tariff Sensitivity*			*Higher Tariff Sensitivity*			*Cost of Disruption Sensitivity*		
		NATIONAL TRENDS	DISTRIBUTED ENERGY	GLOBAL AMBITION	NATIONAL TRENDS	DISTRIBUTED ENERGY	GLOBAL AMBITION	NATIONAL TRENDS	DISTRIBUTED ENERGY	GLOBAL AMBITION	NATIONAL TRENDS	DISTRIBUTED ENERGY	GLOBAL AMBITION
EU Bill benefits With Tariffs	Reference Supply	4.1	19.4	8.8	24.6	58.2	40.5	0.0	0.0	0.0	4.0	16.4	8.3
	Supply Maximization	4.1	21.3	18.9	27.8	59.5	46.6	0.0	0.0	1.8	4.0	17.4	14.8
Security of Supply	Design Case	5.8	5.2	5.2	9.5	9.8	9.8	9.5	9.8	9.8	10.7	10.4	10.4
	2-weeks Cold Spell	56.0	73.3	73.0	36.1	62.0	60.8	36.1	62.0	60.8	74.7	128.0	125.5
	2-weeks Cold Spell DF	77.6	73.3	73.0	60.9	63.2	62.4	60.9	63.2	62.4	125.7	130.5	129.0
Sustainability	CO2 and Other externalities savings (MEUR)	3 / 3.3	18.2 / 20.3	5.3 / 6.4	2 / 3	18.6 / 21.8	5.9 / 8.2	0 / 0	0 / 0	0 / 0	1.9 / 2.2	18.2 / 20.6	3.5 / 4.5
	Additional benefit (Promoter)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

LOW Infrastructure Level

Benefits (Meur/year)		*Commissioning Year Sensitivity*			*Lower Tariff Sensitivity*			*Higher Tariff Sensitivity*			*Cost of Disruption Sensitivity*		
		NATIONAL TRENDS	DISTRIBUTED ENERGY	GLOBAL AMBITION	NATIONAL TRENDS	DISTRIBUTED ENERGY	GLOBAL AMBITION	NATIONAL TRENDS	DISTRIBUTED ENERGY	GLOBAL AMBITION	NATIONAL TRENDS	DISTRIBUTED ENERGY	GLOBAL AMBITION
EU Bill benefits With Tariffs	Reference Supply	2.3	9.5	7.4	25.5	45.0	42.3	0.0	0.0	0.0	3.3	11.1	7.2
	Supply Maximization	2.9	15.6	9.6	29.4	53.4	46.7	0.0	0.0	0.0	3.6	14.4	9.0
Security of Supply	Design Case	4.8	5.2	5.2	6.3	8.4	8.4	6.3	8.4	8.4	6.5	8.7	8.7
	2-weeks Cold Spell	35.0	73.3	73.3	22.8	58.6	58.6	22.8	58.6	58.6	47.1	121.1	121.1
	2-weeks Cold Spell DF	54.3	73.3	73.3	30.8	58.6	58.6	30.8	58.6	58.6	63.7	121.1	121.1
Sustainability	CO2 and Other externalities savings (MEUR)	0 / 0	8.1 / 9.2	3.5 / 4.4	2.1 / 3	16.7 / 17.4	7.7 / 9.2	0 / 0	0 / 0	0 / 0	0.1 / 0.1	10.9 / 12.5	3.4 / 4.4
	Additional benefit (Promoter)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ADVANCED Infrastructure Level

Benefits (Meur/year)		*Commissioning Year Sensitivity*			*Lower Tariff Sensitivity*			*Higher Tariff Sensitivity*			*Cost of Disruption Sensitivity*		
		NATIONAL TRENDS	DISTRIBUTED ENERGY	GLOBAL AMBITION	NATIONAL TRENDS	DISTRIBUTED ENERGY	GLOBAL AMBITION	NATIONAL TRENDS	DISTRIBUTED ENERGY	GLOBAL AMBITION	NATIONAL TRENDS	DISTRIBUTED ENERGY	GLOBAL AMBITION
EU Bill benefits With Tariffs	Reference Supply	0.0	0.0	0.0	0.0	3.3	1.6	0.0	0.0	0.0	0.0	0.0	0.0
	Supply Maximization	0.0	0.0	0.0	0.8	3.4	2.0	0.0	0.0	0.0	0.0	0.0	0.0
Security of Supply	Design Case	0.0	6.3	6.3	0.0	6.3	6.3	0.0	6.3	6.3	0.0	6.5	6.5
	2-weeks Cold Spell	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	47.1	0.0	0.0
	2-weeks Cold Spell DF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	63.7	0.0	0.0
Sustainability	CO2 and Other externalities savings (MEUR)	0 / 0	0 / 0	0 / 0	0 / 0	0 / 6.2	0 / 0.8	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
	Additional benefit (Promoter)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

D. Environmental Impact [ENTSOG] [ENTSOG]

Any gas infrastructure has an impact on its surroundings. This impact is of particular relevance when crossing some environmentally sensitive areas. Mitigation measures are taken by the promoters to reduce this impact and comply with the EU and National regulations. The Tables have been filled in by the promoter.

TYNDP Code	Type of infrastructure	Surface of impact	Environmentally sensitive area
TRA-F-275	Transmission infrastructure	372 km, DN 1000	Project crosses: > Natura 2000 sites (Beskid Niski, Bieszczady, Dorzecze Górnego Sanu), > Nature Parks (Beskidu Niskiego, Wschodniobeskidzki), > Landscape Park (Ciśniańsko-Wetliński), > groundwater bodies, > surface water bodies.
TRA-N-245	Transmission infrastructure	725 km, DN 700/1000	Project crosses: > Natura 2000 sites (Wisłok Środkowy z Dopływami, Wisłoka z dopływami, Jaroszowiec, Pustynia Błędowska, Pogórze Przemyskie, Góry Słonne, Ostoja Przemyska, Góry Słonne, Rzeka San), > Landscape parks (Dłubniański, Orlich Gniazd, Pogórza Przemyskiego, Gór Słonnych); > Nature Parks (Czarnorzecki, Pogórza Ciężkowickiego, Jastrząbsko-Żdżarski, Doliny Wisły, Koszycko – Opatowiecki, Jastrzębsko – Żdżarski, Przemysko – Dynowski, Wschodniobeskidzki); > Ecological sites (Posada Rybotycka, Trójca), > groundwater bodies, > surface water bodies.

Potential impact	Mitigation measures	Related costs included in project CAPEX and OPEX	Additional expected costs
PL: Due to type of infrastructure all impacts will occur at the construction stage as a result of: cutting down shrubs and trees, dewatering of trenches, emission of noise, air pollutions, sewages and wastes. Range of impacts will be limited to the	**PL:** To ensure appropriate protection of environmentally sensitive areas during the construction GAZ-SYSTEM S.A. implements following mitigation measures: > narrowed width of construction site in particularly valuable areas;		

construction site. At the stage of use / exploitation impact on the environment could occur only while breakdown of pipeline.	> transplantation of habitats and re-transplantation on the surface after the construction; > preparing a site for construction, e.g. cutting down shrubs and trees, removing swards, beyond breeding season to protect birds; > protecting the construction site with a temporary sheet piles in places, where increased amphibians' migration may occur; > construction beyond 15/03 – 15/10 in breeding and wintering areas of amphibians; > construction beyond breeding season of birds in a selected area; > technical facilities' and storages' location i.a. out of rivers' valleys, flood areas, natural habitats, habitats of protected species, breeding and wintering areas of amphibians etc.; > crossing selected habitats (i.a. rivers' valleys, forests) with a trenchless technology (e.g. HDD); > construction in a wet trenches, in trenches with a sheet piles or during winter to avoid dewatering; > works that cause high level of noise emission (apart from trenchless technology HDD) nearby areas requiring protection against noise will be carried out during 6am – 22 pm; > supervision of hydrologist during dewatering, crossing rivers, construction nearby water intakes, reservoirs, marshy areas; > environmental supervision during pipeline's construction.		

Environmental Impact explained [Promoter]

There are no pending issues for compliance with EU and national legislation; the preparation of related documents has been carried out in accordance with the applicable Environmental Laws of Poland and Slovakia, i.e. adopted in accordance with EU legislation. Construction of the pipelines will have limited environmental impact on natural habitats and wild flora and fauna. Minimizing this impact is of utmost priority for both promoters. Mitigation measures were outlined in the EIA Final Statement. Most of such measures were then assigned to contractors that are implementing the project. The remaining mitigation measures were assigned to the Environmental Supervisor. Compliance with environmental regulations is ensured by presence of technical managers of contractors, technical supervisors of the project promoter and of an independent external environmental supervisor.

E. Other Benefits [Promoter]

Missing benefits are all benefits of a project which may be not captured by the current application in TYNDP 2020 of the 2nd CBA Methodology.
As a necessary condition a missing benefit cannot have discrepancies with the benefits already covered by the assessment run by ENTSOG and this condition needs to be proved and justified.

Other benefits explained

The Polish energy market is largely based on solid fuels (i.e. coal and lignite). 47% of the primary energy in Poland comes from solid fuels, while the share of low emission natural gas and renewables is limited (15% and 13%, respectively). The magnitude of solid fuels is especially visible in the electricity and heating generation sectors considering that 74% of electricity in Poland is produced from coal and lignite while the share of coal in heating totals 72%. On top of that, 80% of district heating systems in Poland are inefficient and thus require modernisation and fuel switch. Households in Poland consume 87% of coal used across the whole EU for heating purposes. Air pollution resulting from burning high emission and low-quality fuels, especially in the winter period, constitutes a serious socio-economic problem in Poland with an adverse effect on public health and life expectancy. The same also applied to other EU member states located in Central-Eastern Europe.
Against this background Poland - Slovakia Interconnection and North-South Gas Corridor in Eastern Poland are key as they will bring environmental benefits and the same time accommodate the need for affordable solutions for the society:

- Reduction of CO2 emissions. Poland - Slovakia Interconnection and North-South Gas Corridor in Eastern Poland will provide incremental volumes of natural gas as a low emission source of energy to the power, heating sectors and other industries and consequently enable the switch from carbon intensive fuels towards low emission sources in coal regions in Poland and other CEE countries.
- Support towards the increasing uptake of renewables. Natural gas provides reliable and flexible back-up for intermittent renewables that will be deployed in the coming years in Poland and other CEE countries (e.g. wind power, solar PV).
- Competitiveness. Maintaining competitiveness of coal regions in Poland is one of the most important challenges. Due to a sharp increase of costs resulting from ETS price hikes, the relative competitiveness of solid fuels decreased significantly compared to natural gas in combination with renewables. The development of coal regions in Poland largely relied on major deposits of solid fuels present in respective areas which were the basic stimulus for the economic development. Therefore, the key factor is to secure competitive and reliable deliveries of energy carriers. The employment in these regions is affected by the economic conditions of the energy market. Therefore, increasing efficiency of energy management and increasing the share of natural gas in power & heating generation sector will allow to keep the employment at a sufficient level and to develop the economy on the basis of the existing human capital.
- Mitigation of air pollution. Natural gas is an efficient source of energy that can be used efficiently to mitigate specific problems faced by citizens. Air pollution resulting from burning high emission and low-quality fuels, especially in the winter period, constitutes a serious problem in many communities and affects adversely health. Therefore, natural gas may help achieve this in a timely and cost-efficient manner in coal regions with the connection of new customers like households, heat and power plants to the gas grid and the promotion of alternative fuels (e.g. LNG and CNG) in the transport sector.
- Gas grids contribute towards the deployment of renewable and decarbonised gases (biogas, green and blue hydrogen, synthetic methane) through adapting the existing infrastructure or by considering relevant requirements for new investments.

In the light of the EC targets to reach carbon neutrality until 2050 and to decrease air pollution dramatically, projects would enhance these targets in the countries of the region by creating the possibility to replace coal/oil/wood/waste utilization with gas and to mitigate their negative impacts on the air pollution.

F. Useful Links

The project website: https://en.gaz-system.pl/nasze-inwestycje/integracja-z-europejski-systemem/polska-slowacja/
https://www.eustream.sk/en_transmission-system/en_pl-sk-interconnector
Network Development Plan: https://www.gaz-system.pl/strefa-klienta/do-pobrania/plan-rozwoju/
https://www.eustream.sk/files/docs/sk/Plan_rozvoja_prepravnej_siete_na_obdobie_2020_2029.pdf