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

Project Group EAST_19 - FSRU Poland

Reasons for grouping [ENTSOG]

The project group is composed by one stand-alone (FSRU) LNG project to be developed in Poland. It includes also connection from the LNG facility to the transmission grid.

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

The project is implemented to meet an increasing demand for natural gas in Poland and to guarantee additional import capacities on a regional level. The FSRU is expected to provide an efficient and cost-effective way to enhance diversification and security of gas supplies, to foster competition on regional gas markets and to contribute towards emission reduction.
The annual regasification capacity will be about 4.5 bcm/y. The project covers also the planned pipelines: Kolnik – Gustorzyn, Kolnik – Reszki and Kolnik – Gdańsk, as well as a new compressor station CS Pomorze.

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
LNG-N-0947	FSRU Polish Baltic Sea Coast	GAZ-SYSTEM	PL	Less-Advanced	5.1.1	2025	2025	On time

Technical Information

TYNDP Project Code	Yearly Volume [bcm/y]	Storage Capacity [m3 LNG]	Ship Size [m3 LNG]
LNG-N-0947	4.5	170000	170000

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
LNG-N-947	FSRU Polish Baltic Sea Coast	GAZ-SYSTEM S.A.	LNG Terminals Poland (VTP - GAZ-SYSTEM)	-	-	Transmission Poland (VTP - GAZ-SYSTEM)	138	2025

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 "*".

	LNG-N-947	Total Cost
CAPEX [min, EUR]	620*	**620**
OPEX [min, EUR/y]	64*	**64**
Range CAPEX (%)	30	-
Range OPEX (%)	30	-

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.

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:

The project group **helps to fully or partially mitigate the risk of demand curtailment** in Poland in Existing infrastructure level from 2030 onwards. Regarding Low and Advanced infrastructure level, the project group helps increasing the remaining flexibility in Poland from 2030 onwards.
The project group **helps to fully mitigate the risk of demand curtailment** in Poland in Existing infrastructure level , 2040 under peak day and 2-week Dunkelflauten demand, mainly driven by displacing higher carbon fuels in heating and power generation sector and consequently increasing the demand). Regarding Low and Advanced infrastructure level, the project group helps increasing the remaining flexibility in Poland from 2030 onwards.

Concerning the supply import routes disruptions:

- In case of **Belarus disruption**, the group of project **helps to reduce, or fully mitigate, the risk of demand curtailment** in Poland in all climatic stress situations in Existing infrastructure level from 2030 onwards. In Low infrastructure level, the project group helps to fully mitigate the risk of demand curtailment in Poland in 2040 under peak day and 2-week Dunkelflauten demand situation. In Advanced infrastructure level remaining flexibility in Poland improves with the project group.
- In case of **Ukrainian disruption**, the project group helps to **fully or partially mitigate, the risk of demand curtailment** in Poland in Existing infrastructure level from 2030 onwards. Regarding Low infrastructure level, the project groups helps to fully mitigate the risk of demand curtailment in 2040 under peak day demand situation.

Regarding disruption of the main infrastructure:

- In case of **SLID-*Poland* (Point of Interconnection (PWP) (PL)*)***, the project group helps to reduce or fully mitigate the exposure of Poland to demand curtailment in Existing infrastructure level and it fully mitigates the risk of demand curtailment in low infrastructure level.

> Competition:

The project group reduces in Existing infrastructure level the **dependency** of Poland and neighbouring countries (in 2040) **to Russian gas** thanks to the increase of LNG access in Poland that decreases the need of neighbouring countries to cooperate. Regarding Low infrastructure level, the project group helps decreasing the dependency to Russian gas in some specific cases.

> Market integration:

The project brings benefits in monetised term as a **reduction of the cost of gas supply**. In the reference supply price configuration this can be estimated around 70 Mln Eur/y (on average) in Existing infrastructure level. Such benefits can be explained by the increase of LNG supply (thanks to the increase of LNG entry capacity in Poland) decreasing Russian supply through YAMAL pipe and Belarus. In case of higher tariffs, the sensitivity analysis tables show in fact lower benefits.

Additional benefits compared to the reference situation can be observed in Existing infrastructure level in case of cheap LNG supply and expensive Russian gas (96 Mln Eur/y and 101.5 Mln Eur/y on average respectively). Such benefits can be explained by the

increase of LNG supply (thanks to the increase of LNG entry capacity in Poland) decreasing Russian supply through YAMAL pipe and Belarus.

In case of Low and Advanced infrastructure level the project group brings less benefits compared to Existing infrastructure level driven by commissioning of other projects (upgrade of LNG terminal in Świnoujście in Low infrastructure level and Baltic Pipe project in Advanced infrastructure level).

Additionally, the project group helps to improve the convergence of the gas price between markets in the region.

Distributed Energy

Benefits explained (but Sustainability) [ENTSOG]

> **Security of Supply:**

The project group **helps to reduce o*r* fully mitigate the risk of demand curtailment** in Poland in Existing infrastructure level from 2030 onwards. Regarding Low and Advanced infrastructure level, the project group helps increasing the remaining flexibility in Poland from 2030 onwards and fully or partially mitigate the risk of demand curtailment in some climatic stress situations.

Concerning the supply import routes disruptions:

- In case of **Belarus disruption**, the project group **helps reducing the risk of demand curtailment** in Poland in all climatic stress situations in Existing infrastructure level from 2030 onwards. In Low infrastructure level, the project group helps to reduce, or fully mitigate, the risk of demand curtailment in all climatic cases. In Advanced infrastructure level remaining flexibility in Poland improves with the project group.
- In case of **Ukrainian disruption**, the project group helps to **reduce the risk of demand curtailment** in Poland in Existing infrastructure level for all climatic stress situations from 2030 onwards. Regarding Low infrastructure level, the project group helps to reduce, or fully mitigate, the risk of demand curtailment for all stress demand situations. Additionally, the project helps improving the remaining flexibility in Poland in case of Advanced infrastructure level.

Regarding disruption of the main infrastructure:
In case of **SLID-Poland ((Point of Interconnection (PWP) (PL))**, the project group helps reducing the exposure of Poland to demand curtailment in Existing and Low infrastructure levels and fully mitigates the risk of demand curtailment in Advanced infrastructure level.

> **Competition:**

The project group allows Poland to **have access to LNG as a new supply source** in Existing infrastructure level from 2030 onwards.

Additionally, the project group reduces in Existing infrastructure level the dependency of Poland (in 2030-2040) and neighbouring countries to Russian gas thanks to the increase of LNG access in Poland that decreases the need of neighbouring countries to cooperate. Regarding Low infrastructure level the project group helps decreasing the dependency to Russian gas in Poland and some neighbouring countries in 2030-2040.

> **Market integration:**

The project brings benefits in monetised term as a **reduction of the cost of gas supply**. In the reference supply price configuration this can be estimated around 104 Mln Eur/y (on average) in Existing infrastructure level. Such benefit can be explained by the increase of LNG supply (thanks to the increase of LNG entry capacity in Poland) decreasing Russian supply through YAMAL pipe and Ukraine. In case of higher tariffs, the sensitivity analysis tables show in fact lower benefits.

Additional benefits compared to the reference situation can be observed in the case of cheap LNG supply/expensive Russian gas (124.5 Mln Eur/y and 128 Mln Eur/y on average respectively). Such benefits can be explained by the increase of LNG supply (thanks to the increase of LNG entry capacity in Poland) decreasing Russian supply through Ukraine and through YAMAL pipe.

In case of Low and Advanced infrastructure level the project group brings less benefits compared to Existing infrastructure level driven by commissioning of other projects (upgrade of LNG terminal in Świnoujście in Low infrastructure level and Baltic Pipe project in Advanced infrastructure level).

Additionally, the project group helps to improve the convergence of the gas price between markets in the region.

Global Ambition

Benefits explained (but Sustainability) [ENTSOG]

> Security of Supply:

The project group **helps to reduce or fully mitigates the risk of demand curtailment** in Poland in Existing infrastructure level from 2030 onwards. Regarding Low infrastructure level, the project group helps to fully mitigate the risk of demand curtailment in Poland (apart from 2040 Peak day, the project group reduces the risk of demand curtailment mainly driven by displacing higher carbon fuels in the heating, power generation, and transportation sector increasing Polish demand). In Advanced infrastructure level, the project group helps increasing the remaining flexibility in Poland from 2030 onwards.

Concerning the supply import routes disruptions:

- In case of **Belarus disruption**, the project group **helps reducing the risk of demand curtailment** in Poland in all climatic stress situations in Existing infrastructure level from 2030 onwards. In Low infrastructure level, the project group helps to reduce the risk of demand curtailment in all climatic cases (apart from 2030 2-Week cold spell and 2-Week Dunkelflaute, where the project group helps to fully mitigate the risk of demand curtailment).
- In case of **Ukrainian disruption**, the project group helps to **reduce the risk of demand curtailment** in Poland in Existing infrastructure level for all climatic stress situations. Regarding Low infrastructure level, the project group helps to fully mitigate the risk of demand curtailment for 2-Week cold spell and 2-Week Dunkelflaute and it also helps to reduce the risk of demand curtailment in Peak day case.

Regarding disruption of the main infrastructure:

- In case of SLID-Poland ((Point of Interconnection (PWP) (PL)), the project group helps reducing the exposure of Poland to demand curtailment in Existing and Low infrastructure level, and it fully mitigates the risk of demand curtailment in Advanced infrastructure level 2040 driven by a higher demand in 2040 compared to 2030.

> Competition:

The project group allows Poland to **have access to LNG as a new supply source** in Existing infrastructure level from 2030 onwards. Poland could in fact have more access to LNG benefiting from a decrease on the LNG price.

The project group reduces in Existing infrastructure level the dependency of Poland and neighbouring countries to Russian gas thanks to the increase of LNG access in Poland that decreases the need of neighbouring countries to cooperate. Regarding Low infrastructure level the project group helps decreasing the dependency to Russian gas in Poland and some neighbouring countries in 2030-2040. Moreover, in Advanced infrastructure level concerning the dependency to Russian gas, the project group helps Poland decreasing its dependency.

> Market integration:

The project brings benefits in monetised term as a **reduction of the cost of gas supply**. In the reference supply price configuration this can be estimated around 88 Mln Eur/y (on average) in Existing infrastructure level. Such benefit can be explained by the increase of LNG supply (thanks to the increase of LNG entry capacity in Poland) decreasing Russian supply through YAMAL pipe and Ukraine. In case of higher tariffs, the sensitivity analysis tables show in fact lower benefits.

Additional benefits compared to the reference situation can be observed in the case of cheap LNG supply/expensive Russian gas (115 Mln Eur/y and 118 Mln Eur/y on average respectively. Such benefit can be explained by the increase of LNG supply (thanks to the increase of LNG entry capacity in Poland) decreasing Russian supply through Ukraine and through YAMAL pipe.

In case of Low and Advanced infrastructure level the project group brings less benefits compared to Existing infrastructure level driven by commissioning of other projects (upgrade of LNG terminal in Świnoujście in Low infrastructure level and Baltic Pipe project in Advanced infrastructure level).

Additionally, the project group helps to improve the convergence of the gas price between markets in the region.

Sustainability benefits explained [ENTSOG]

The ENTSOG analysis shows that, in the yearly assessment, the projects group realisation enhances in Poland the replacement of more polluting fuels with natural gas, which enables fuel switch savings between 5.2-22.2 MEUR/y under existing infrastructure level and between 4-16.8 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	79 / 88	306 / 346	173 / 222	60 / 67	231 / 262	131 / 168	56 / 63	126 / 142	85 / 109
	Lower Tariff Sensitivity	79 / 88	306 / 346	173 / 222	60 / 67	231 / 262	131 / 168	56 / 63	126 / 142	85 / 109
	Higher Tariff Sensitivity	56 / 63	306 / 346	92 / 114	0 / 0	34 / 34	5 / 7	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.

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 increase in the gas demand in 2030 and 2040 for Poland (in the power sector and transport).

The project is assessed by ENTSOG from its first full year of operation, in this case year 2026.

Observing the evolution of benefits among the assessed years (section C.3), in National Trends scenarios it can be noted that most of the benefits materialise in the period between 2030 and 2040.

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. Benefits reduce significantly in case of high tariffs sensitivity due to the lower utilisation of the assessed project group under low and advanced infrastructure levels.

TYNDP 2020 ENTSOG and ENTSO-E scenario storylines have identified for DE and GA 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_19, 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 [Project Promoter]

In addition to ENTSOG analysis, the promoter has provided the following country-specific information.

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 the FSRU project is instrumental as it will bring environmental benefits and the same time accommodate the need for affordable solutions for the society:

- FSRU will deliver natural gas as a low emission energy source to the power, heating sectors and other industries and enables CO_2 reduction with the switch from carbon intensive fuels towards low emission sources.
- Natural gas supplied via FSRU will provide reliable and flexible back-up for variable renewables that will be deployed in the coming years in Poland (e.g. wind power, solar PV).
- Natural gas is an efficient energy source that may be used efficiently to mitigate air pollution resulting from burning high emission and low-quality fuels. This may be achieved in a timely and cost-efficient manner with the connection of households, heat and power plants to the gas grid and the wider use of LNG and CNG in inland and maritime transport.

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					
	2030			2040		
	NT			NT		
Row Labels	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Competition						
MASD-RU						
Austria				45%	42%	-3%
Bosnia Herzegovina				45%	42%	-3%
Croatia				45%	42%	-3%
Czech Republic				45%	42%	-3%
Germany				44%	42%	-2%
Hungary				45%	42%	-3%
Poland	43%	27%	-16%	45%	39%	-6%
Serbia				45%	42%	-3%
Slovakia				45%	42%	-3%
Slovenia				45%	42%	-3%
Security of Supply						
Belarus Disruption Curtailment Rate 2-Week Cold Spell (%)						
Poland	-1%	0%	1%	-18%	0%	18%
Belarus Disruption Curtailment Rate 2-Week Cold Spell (%) --- DF						
Poland	-11%	0%	11%	-26%	-9%	17%
Belarus Disruption Curtailment Rate Peak Day (%)						
Poland	-10%	0%	10%	-31%	-16%	15%
Curtailment Rate 2-Week Cold Spell (%) --- DF						
Poland				-8%	0%	8%
Curtailment Rate Peak Day (%)						
Poland				-15%	0%	15%
Remaining Flexibility 2-Week Cold Spell (%)						
Poland	24%	47%	23%	2%	21%	18%
Remaining Flexibility 2-Week Cold Spell (%) --- DF						
Poland	11%	31%	20%	0%	9%	9%
Remaining Flexibility Peak day (%)						
Poland	11%	31%	20%			
Single Largest Infrastructure Disruption (SLID)-Poland						
Poland	11%	0%	-11%	32%	17%	-15%
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%	-1%	16%
Ukraine Disruption Curtailment Rate Peak Day (%)						
Poland				-23%	-8%	15%

LOW Infrastructure Level – National Trends

Sum of Value	Column Labels					
	2030			2040		
	NT			NT		
Row Labels	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Competition						
MASD-RU						
Austria	30%	27%	-3%	30%	27%	-3%
Croatia				29%	26%	-3%
Czech Republic	30%	27%	-3%	30%	27%	-3%
Denmark				30%	27%	-3%
Germany	30%	27%	-3%	29%	27%	-3%
Hungary				30%	27%	-3%
Netherlands				29%	26%	-3%
Poland	30%	27%	-3%	30%	27%	-3%
Slovakia				30%	27%	-3%
Sweden				30%	27%	-3%
Security of Supply						
Belarus Disruption Curtailment Rate 2-Week Cold Spell (%) --- DF						
Poland				-4%	0%	4%
Belarus Disruption Curtailment Rate Peak Day (%)						
Poland				-12%	0%	12%
Remaining Flexibility 2-Week Cold Spell (%)						
Poland	54%	76%	23%	26%	45%	18%
Remaining Flexibility 2-Week Cold Spell (%) --- DF						
Poland	37%	57%	20%	14%	30%	17%
Remaining Flexibility Peak day (%)						
Poland	37%	57%	20%	5%	20%	15%
Single Largest Infrastructure Disruption (SLID)-Poland						
Poland				12%	0%	-12%
Ukraine Disruption Curtailment Rate Peak Day (%)						
Poland				-4%	0%	4%

ADVANCED Infrastructure Level – National Trends

Sum of Value	Column Labels					
	2030			2040		
	NT			NT		
Row Labels	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Security of Supply						
Remaining Flexibility 2-Week Cold Spell (%)						
Poland				77%	96%	18%
Remaining Flexibility 2-Week Cold Spell (%) --- DF						
Poland	93%	100%	7%	60%	76%	17%
Remaining Flexibility Peak day (%)						
Poland	92%	100%	8%	47%	62%	15%

EXISTING Infrastructure Level – Distributed Energy

Sum of Value	Column Labels					
	2030			2040		
	DE			DE		
Row Labels	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Competition						
MASD-RU						
Austria	42%	39%	-3%	23%	20%	-3%
Bosnia Herzegovina	42%	39%	-3%			
Croatia	42%	39%	-3%	23%	20%	-3%
Czech Republic	42%	39%	-3%	23%	20%	-3%
Denmark	41%	38%	-3%			
Germany	41%	38%	-3%	22%	20%	-2%
Hungary	42%	39%	-3%			
Poland	42%	39%	-3%	27%	21%	-7%
Serbia	42%	39%	-3%			
Slovakia	42%	39%	-3%	23%	21%	-2%
Slovenia	42%	39%	-3%	23%	20%	-3%
Security of Supply						
Belarus Disruption Curtailment Rate 2-Week Cold Spell (%)						
Poland	-29%	-13%	15%	-30%	-17%	14%
Belarus Disruption Curtailment Rate 2-Week Cold Spell (%) --- DF						
Poland	-30%	-14%	15%	-33%	-20%	14%
Belarus Disruption Curtailment Rate Peak Day (%)						
Poland	-39%	-26%	13%	-44%	-33%	11%
Curtailment Rate 2-Week Cold Spell (%)						
Poland	-12%	0%	12%	-15%	-2%	14%
Curtailment Rate 2-Week Cold Spell (%) --- DF						
Poland	-13%	0%	13%	-19%	-5%	14%
Curtailment Rate Peak Day (%)						
Poland	-25%	-12%	13%	-32%	-22%	11%
Remaining Flexibility 2-Week Cold Spell (%)						
Poland	0%	3%	3%			
Remaining Flexibility 2-Week Cold Spell (%) --- DF						
Poland	0%	2%	2%			
Single Largest Infrastructure Disruption (SLID)-Poland						
Poland	39%	27%	-13%	45%	34%	-11%
Ukraine Disruption Curtailment Rate 2-Week Cold Spell (%)						
Poland	-21%	-5%	15%	-23%	-9%	14%
Ukraine Disruption Curtailment Rate 2-Week Cold Spell (%) --- DF						
Poland	-21%	-6%	15%	-26%	-12%	14%
Ukraine Disruption Curtailment Rate Peak Day (%)						
Poland	-32%	-19%	13%	-38%	-28%	11%

LOW Infrastructure Level – Distributed Energy

Sum of Value	Column Labels					
	2030			2040		
	DE			DE		
Row Labels	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Competition						
MASD-RU						
Austria				7%	4%	-3%
Czech Republic	29%	26%	-3%	7%	4%	-3%
Estonia	28%	26%	-2%			
Finland	29%	26%	-3%			
Germany	28%	25%	-2%	7%	4%	-3%
Hungary	28%	25%	-3%	7%	4%	-3%
Lithuania	28%	25%	-3%			
Netherlands	28%	25%	-3%			
Poland	29%	26%	-3%	7%	4%	-3%
Romania				6%	4%	-2%
Slovakia	29%	26%	-3%	7%	4%	-3%
Security of Supply						
Belarus Disruption Curtailment Rate 2-Week Cold Spell (%) --- DF						
Poland	-10%	0%	10%	-16%	-2%	14%
Belarus Disruption Curtailment Rate Peak Day (%)						
Poland	-22%	-9%	13%	-30%	-19%	11%
Curtailment Rate 2-Week Cold Spell (%) --- DF						
Poland				-2%	0%	2%
Curtailment Rate Peak Day (%)						
Poland	-8%	0%	8%	-18%	-7%	11%
Remaining Flexibility 2-Week Cold Spell (%)						
Poland	8%	23%	15%	3%	16%	14%
Remaining Flexibility 2-Week Cold Spell (%) --- DF						
Poland	7%	22%	15%	0%	13%	13%
Remaining Flexibility Peak day (%)						
Poland	0%	5%	5%			
Single Largest Infrastructure Disruption (SLID)-Poland						
Poland	23%	10%	-13%	30%	20%	-11%
Ukraine Disruption Curtailment Rate 2-Week Cold Spell (%)						
Poland	-2%	0%	2%	-5%	0%	5%
Ukraine Disruption Curtailment Rate 2-Week Cold Spell (%) --- DF						
Poland	-2%	0%	2%	-8%	0%	8%
Ukraine Disruption Curtailment Rate Peak Day (%)						
Poland	-15%	-3%	13%	-24%	-13%	11%

ADVANCED Infrastructure Level – Distributed Energy

Sum of Value	Column Labels					
	2030			2040		
	DE			DE		
Row Labels	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Security of Supply						
Remaining Flexibility 2-Week Cold Spell (%)						
Poland	50%	65%	15%	40%	54%	14%
Remaining Flexibility 2-Week Cold Spell (%) --- DF						
Poland	49%	64%	15%	37%	51%	14%
Remaining Flexibility Peak day (%)						
Poland	26%	39%	13%	12%	23%	11%
Single Largest Infrastructure Disruption (SLID)-Poland						
Poland				2%	0%	-2%
Ukraine Disruption Curtailment Rate Peak Day (%)						
Poland				-1%	0%	1%

EXISTING Infrastructure Level – Global Ambition

Sum of Value	Column Labels					
	2030			2040		
	GA			GA		
Row Labels	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Competition						
MASD-RU						
Austria	47%	45%	-2%	42%	39%	-3%
Bosnia Herzegovina	48%	45%	-3%			
Czech Republic				42%	40%	-2%
Denmark	47%	44%	-3%	42%	39%	-3%
Germany	46%	43%	-3%	42%	39%	-3%
Poland	48%	45%	-3%	42%	39%	-3%
Serbia	48%	45%	-3%			
Security of Supply						
Belarus Disruption Curtailment Rate 2-Week Cold Spell (%)						
Poland	-27%	-11%	16%	-34%	-20%	14%
Belarus Disruption Curtailment Rate 2-Week Cold Spell (%) --- DF						
Poland	-27%	-12%	16%	-35%	-21%	14%
Belarus Disruption Curtailment Rate Peak Day (%)						
Poland	-38%	-25%	13%	-46%	-35%	11%
Curtailment Rate 2-Week Cold Spell (%)						
Poland	-9%	0%	9%	-19%	-5%	14%
Curtailment Rate 2-Week Cold Spell (%) --- DF						
Poland	-11%	0%	11%	-20%	-6%	14%
Curtailment Rate Peak Day (%)						
Poland	-24%	-11%	13%	-34%	-24%	11%
Remaining Flexibility 2-Week Cold Spell (%)						
Poland	0%	6%	6%			
Remaining Flexibility 2-Week Cold Spell (%) --- DF						
Poland	0%	5%	5%			
Single Largest Infrastructure Disruption (SLID)-Poland						
Poland	38%	25%	-13%	47%	36%	-11%
Ukraine Disruption Curtailment Rate 2-Week Cold Spell (%)						
Poland	-18%	-2%	16%	-26%	-13%	14%
Ukraine Disruption Curtailment Rate 2-Week Cold Spell (%) --- DF						
Poland	-19%	-4%	16%	-27%	-14%	14%
Ukraine Disruption Curtailment Rate Peak Day (%)						
Poland	-31%	-18%	13%	-40%	-30%	11%

LOW Infrastructure Level – Global Ambition

Sum of Value	Column Labels					
	2030			2040		
	GA			GA		
Row Labels	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Competition						
MASD-RU						
Austria	33%	30%	-3%			
Czech Republic				27%	24%	-3%
Denmark	33%	30%	-3%			
Germany	33%	30%	-3%	26%	24%	-2%
Netherlands	33%	30%	-3%	26%	23%	-3%
Poland				27%	24%	-3%
Slovakia				27%	24%	-3%
Security of Supply						
Belarus Disruption Curtailment Rate 2-Week Cold Spell (%)						
Poland	-6%	0%	6%	-16%	-2%	14%
Belarus Disruption Curtailment Rate 2-Week Cold Spell (%) --- DF						
Poland	-7%	0%	7%	-17%	-3%	14%
Belarus Disruption Curtailment Rate Peak Day (%)						
Poland	-21%	-8%	13%	-32%	-21%	11%
Curtailment Rate 2-Week Cold Spell (%)						
Poland				-1%	0%	1%
Curtailment Rate 2-Week Cold Spell (%) --- DF						
Poland				-2%	0%	2%
Curtailment Rate Peak Day (%)						
Poland	-7%	0%	7%	-20%	-9%	11%
Remaining Flexibility 2-Week Cold Spell (%)						
Poland	11%	27%	16%	0%	13%	13%
Remaining Flexibility 2-Week Cold Spell (%) --- DF						
Poland	10%	25%	16%	0%	11%	11%
Remaining Flexibility Peak day (%)						
Poland	0%	7%	7%			
Single Largest Infrastructure Disruption (SLID)-Poland						
Poland	21%	8%	-13%	32%	22%	-11%
Ukraine Disruption Curtailment Rate 2-Week Cold Spell (%)						
Poland				-9%	0%	9%
Ukraine Disruption Curtailment Rate 2-Week Cold Spell (%) --- DF						
Poland				-10%	0%	10%
Ukraine Disruption Curtailment Rate Peak Day (%)						
Poland	-14%	-1%	13%	-26%	-15%	11%

ADVANCED Infrastructure Level – Global Ambition

Sum of Value	Column Labels					
	2030			2040		
	GA			GA		
Row Labels	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Security of Supply						
Belarus Disruption Curtailment Rate Peak Day (%)						
Poland				-2%	0%	2%
Remaining Flexibility 2-Week Cold Spell (%)						
Poland	54%	69%	16%	37%	50%	14%
Poland	52%	67%	16%	35%	49%	14%
Remaining Flexibility Peak day (%)						
Poland	28%	41%	13%	10%	21%	11%
Single Largest Infrastructure Disruption (SLID)-Poland						
Poland				4%	0%	-4%
Ukraine Disruption Curtailment Rate Peak Day (%)						
Poland				-3%	0%	3%

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	70.1	104.3	88.1	50.7	71.9	63.3	8.5	20.9	16.6
	Supply Maximization	101.5	127.8	117.9	73.2	89.5	86.2	23.9	31.5	35.0
Security of Supply	Design Case	12.9	14.2	14.2	8.8	14.2	14.2	0.0	1.5	3.6
	2-weeks Cold Spell	59.5	99.2	99.2	0.0	76.7	76.6	0.0	0.0	0.0
	2-weeks Cold Spell DF	89.9	99.2	99.2	20.7	87.3	81.2	0.0	0.0	0.0
Sustainability	CO2 and Other externalities savings	5.2 / 5.9	19.7 / 22.2	9.6 / 12.1	4 / 4.4	14.9 / 16.8	7.2 / 9.2	3.3 / 3.7	8.2 / 9.2	4.7 / 6
	Additional benefit (Promoter)	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	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	0.0	0.0	0.0	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	0.0	0.0	0.0	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	60.0	104.5	76.9	43.9	71.2	73.0	0.0	18.5	11.9	81.5	111.3	101.5	64.6	87.1	71.4	14.7	26.4	22.5
	Supply Maximization	94.7	129.5	108.4	67.7	95.5	92.4	8.8	28.0	23.6	112.9	135.5	132.2	91.3	107.2	100.9	36.6	39.9	44.9
Security of Supply	Design Case	8.0	14.8	14.8	0.0	14.8	14.8	0.0	0.0	0.0	14.8	81.2	14.8	11.6	22.1	14.8	0.0	2.0	4.7
	2-weeks Cold Spell	6.8	103.3	103.3	0.0	59.4	39.9	0.0	0.0	0.0	98.2	103.3	103.3	0.0	93.4	103.3	0.0	0.0	0.0
	2-weeks Cold Spell DF	55.2	103.3	103.3	0.0	66.1	48.2	0.0	0.0	0.0	103.3	103.3	103.3	27.3	103.3	103.3	0.0	0.0	0.0
Sustainability	CO2 and Other externalities savings	0 / 0	42 / 49	13 / 18	0 / 0	32 / 37	10 / 14	0 / 0	17 / 19	7 / 9	9 / 10	6 / 6	8 / 9	7 / 7	5 / 5	6 / 7	4 / 5	3 / 3	4 / 4
	Additional benefit (Promoter)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	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	70.1	104.3	88.1	109.0	143.2	127.0	7.0	26.4	15.1	70.1	104.3	88.1
	Supply Maximization	101.5	127.8	117.9	140.4	166.7	156.8	31.5	50.0	43.0	101.5	127.8	117.9
Security of Supply	Design Case	7.1	7.1	7.1	12.9	14.2	14.2	12.9	14.2	14.2	14.6	14.6	14.6
	2-weeks Cold Spell	59.5	99.2	99.2	59.5	99.2	99.2	59.5	99.2	99.2	123.0	204.9	204.9
	2-weeks Cold Spell DF	89.9	99.2	99.2	89.9	99.2	99.2	89.9	99.2	99.2	185.7	204.9	204.9
Sustainability	CO2 and Other externalities savings (MEUR)	5.2 / 5.9	19.7 / 22.2	9.6 / 12.1	5.2 / 5.9	19.7 / 22.2	9.6 / 12.1	3.3 / 3.7	19.7 / 22.2	5.9 / 7.2	5.2 / 5.9	19.7 / 22.2	9.6 / 12.1
	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	50.7	71.9	63.3	93.1	116.5	108.1	0.0	4.8	0.0	50.7	71.9	63.3
	Supply Maximization	73.2	89.5	86.2	117.6	135.8	132.6	15.0	21.4	21.0	73.2	89.5	86.2
Security of Supply	Design Case	4.5	7.1	7.1	8.8	14.2	14.2	8.8	14.2	14.2	8.9	14.6	14.6
	2-weeks Cold Spell	0.0	76.7	76.6	0.0	76.7	76.6	0.0	76.7	76.6	0.0	158.5	158.3
	2-weeks Cold Spell DF	20.7	87.3	81.2	20.7	87.3	81.2	20.7	87.3	81.2	42.8	180.3	167.7
Sustainability	CO2 and Other externalities savings (MEUR)	4 / 4.4	14.9 / 16.8	7.2 / 9.2	4 / 4.4	14.9 / 16.8	7.2 / 9.2	0 / 0	2.9 / 2.9	0.2 / 0.3	4 / 4.4	14.9 / 16.8	7.2 / 9.2
	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	8.5	20.9	16.6	47.4	38.0	56.5	0.0	0.0	0.0	8.5	20.9	16.6
	Supply Maximization	23.9	31.5	35.0	62.8	58.7	73.9	0.0	0.0	0.4	23.9	31.5	35.0
Security of Supply	Design Case	0.0	1.5	3.6	0.0	1.5	3.6	0.0	1.5	3.6	0.0	1.2	3.3
	2-weeks Cold Spell	0.0	0.0	0.0	0.0	0.0	0.0	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	42.8	0.0	0.0
Sustainability	CO2 and Other externalities savings (MEUR)	3.7 / 3.3	9.2 / 8.2	6 / 4.7	3.3 / 3.7	8.2 / 9.2	4.7 / 6	0 / 0	0 / 0	0 / 0	3.3 / 3.7	8.2 / 9.2	4.7 / 6
	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 [Promoter]

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
LNG-N-947	LNG infrastructure	FSRU unit in the area of Gdansk Transmission network: 329 km (offshore and onshore sections)	Appropriate administrative decisions (including environmental) are yet to be obtained. The list of environmentally sensitive areas crossed by the project will be indicated in the decisions on environmental conditions.

Potential impact	Mitigation measures	Related costs included in project CAPEX and OPEX	Additional expected costs
The area of Gdansk; extended part of breakwater	Concrete mitigation measures for both onshore and offshore part of the project will be determined in the decisions on environmental conditions. The project promoter will comply with environmental requirements during the construction phase.	N/A	N/A

Environmental Impact explained [Promoter]

Environmental impact assessments for the projects have not indicated any substantial and irreversible impacts on the environment. In order to ensure that environmental assessments are correct, environmental monitoring is carried out before, during and after the construction of the infrastructure.

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

GAZ-SYSTEM is currently developing the FSRU project and a number of other projects belonging to BEMIP region (Baltic Pipe, extension of LNG terminal in Świnoujście, Poland-Lithuania Interconnection) and NSI EAST region (Poland-Slovakia Interconnection with North - South Gas Corridor in Eastern Poland, Poland-Czech Republic Interconnection).
Due to the strategic location of the Polish gas grid between the Baltic and CEE regions, the future implementation of these projects will create the synergy effect by interlinking both BEMIP and NSI East gas regions. Implementation of a direct gas connection with deposits on Norwegian Continental Shelf and significant LNG supply options (Świnoujście and FSRU in PL, Klaipeda in LT) and the implementation of currently developed cross-border pipeline projects connecting the Polish gas grid with Slovakia, Lithuania (PCI projects) and possibly Czechia and Ukraine, will lay the foundations for the Polish market to become a regional gas distribution centre in the medium term providing the access to reliable sources of gas (NCS, LNG, Western Europe), traded according to price formulas based on the hub rules, for the Baltic and CEE countries, as it is on the mature Western gas markets.
The creation of a regional gas hub with a high level of liquidity and security will allow to materialize the EU concept of creating a single European gas market, ensuring maximum security of supply and fostering price convergence between domestic markets, as well as will contribute to the implementation of the ACER-backed vision of the European gas market, composed of strong and liquid regional hubs.

F. Useful Links

The project website: https://www.gaz-system.pl/
Network Development Plan: https://www.gaz-system.pl/strefa-klienta/do-pobrania/plan-rozwoju/