

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

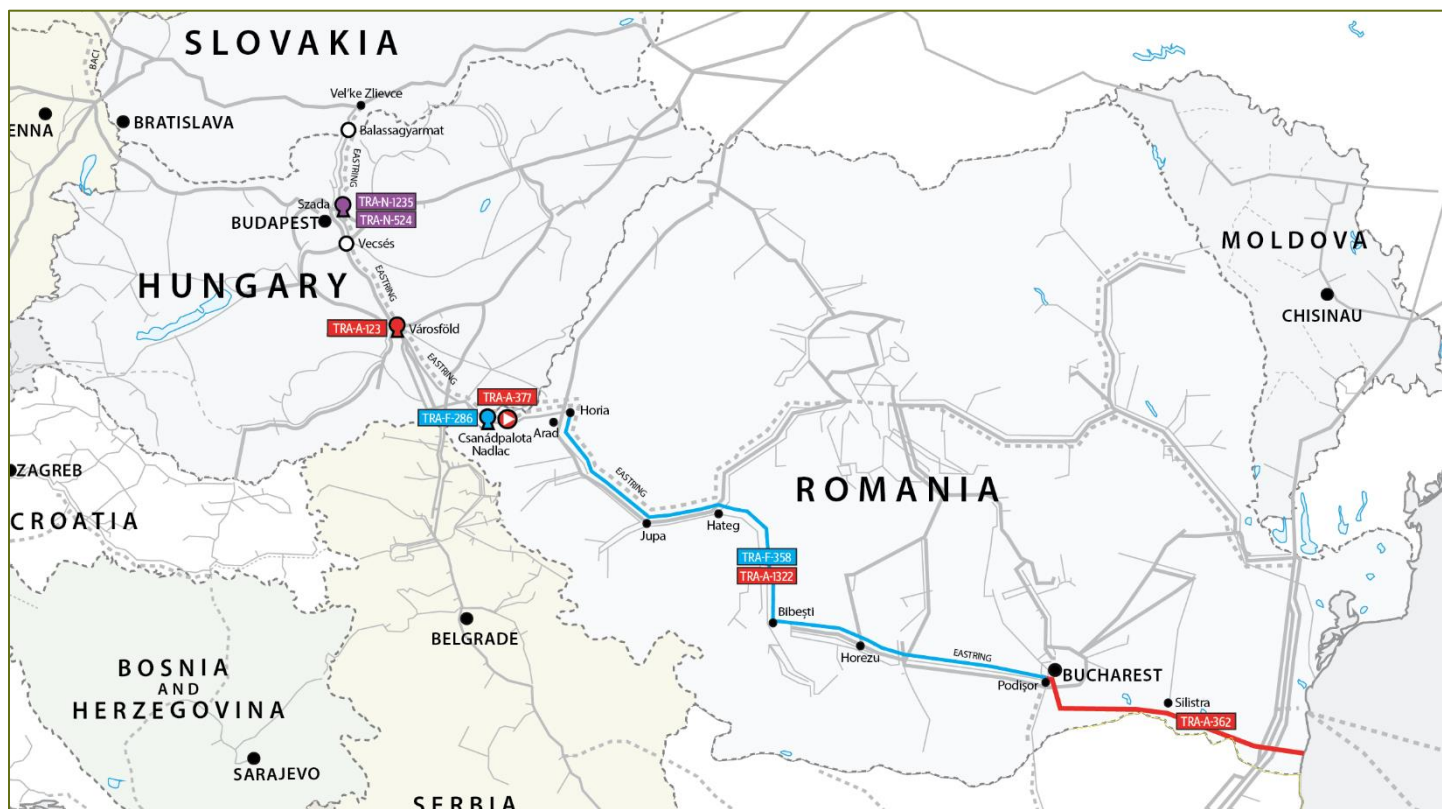
Project Group EAST_12C - BRUA (phase I + phase II) + Slovakia-Hungary interconnection

Reasons for grouping [ENTSOG]

Project group represents the development of the first and second phases of the BRUA supply chain which aims at increasing existing capacities at Romania-Hungary interconnection at Csanadpalota IP and Romania -Bulgaria interconnection at Ruse (BG)/Giurgiu (RO). This project group would allow transport of new gas supply from the Black sea up to 5,9 bcm of capacity (up to 1,5 bcm to Bulgaria and 4,4 bcm to Hungary). This project group also includes the interconnection between Slovakia and Hungary, allowing gas flows through the corridor RO-HU-SK.

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

The project group aims at improving **market integration** as a result of a decrease in the congestion of the energy infrastructure and an increase in interoperability and flexibility of the system. Implementation of the project group aims at enhancing **security of supply** and **competition** by ensuring the proper interconnections, by the diversification of supply sources, transmission routes and stakeholders thus reducing the market concentration and also **sustainability** by reducing emissions due to the replacement of pollutant fuels with natural gas issuing less carbon dioxide per delivered energy unit.



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-A-0123	Városföld CS	FGSZ	HU	Advanced	6.24.4.1	-	-	Deleted
TRA-F-358	Development on the Romanian territory of the NTS (BG–RO–HU–AT)-Phase I	SNTGN Transgaz SA	RO	FID	6.24.1.1	2019	2020	Commissioned
TRA-A-362	Development on the Romanian territory of the Southern Transmission Corridor	SNTGN Transgaz SA	RO	Advanced	6.24.4.3	2020	2022	Delayed
TRA-A-0377	Romanian-Hungarian reverse flow Hungarian section 2nd stage	FGSZ	HU	Advanced	6.24.4.4	2022	2025	Rescheduled
TRA-N-0524	Enhancement of Transmission Capacity of Slovak-Hungarian interconnector	FGSZ	HU	Less-Advanced	6.2.13	2022	2025	Rescheduled
TRA-F-0286	Romanian-Hungarian reverse flow Hungarian section 1st stage	FGSZ	HU	FID	-	2019	2019	Completed
TRA-A-1322	Development on the Romanian territory of the NTS (BG–RO–HU–AT)-Phase II	SNTGN Transgaz SA	RO	Advanced	6.24.4.2	2022	2022	Delayed
TRA-N-1235	Firm transmission capacity increase at the IP Veľké Zlieve	Eustream,a.s.	SK	Less-Advanced	6.2.13	2022	2022	On time

Technical Information

TYNDP Project Code	Diameter [mm]	Length [km]	Compressor Power [MW]
TRA-A-0123	-	-	6
TRA-A-362	1200/1000	308	-
TRA-A-0377	-	-	4
TRA-A-1322	800	50	14
TRA-F-0286	-	-	9
TRA-F-0358	800	479	28
TRA-N-0524	800	92	-
TRA-N-0524	800	18	-

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-A-1322	Csanadpalota	SNTGN Transgaz S.A.	Transmission Romania	75.88	2022	Transmission Hungary (MGP)	78.12	2022
TRA-A-377	Csanadpalota	FGSZ Ltd.	Transmission Hungary (MGP)	76.5	2022	Transmission Romania	76.5	2025

TRA-F-286	Csanadpalota	FGSZ Ltd.	Transmission Romania	0	-	Transmission Hungary (MGP)	48.9	2019
TRA-F-358	Ruse (BG) / Giurgiu (RO)	SNTGN Transgaz S.A.	Transmission Romania	20.8	2019	Transmission Bulgaria (NGTS)	0	-
TRA-F-358	Csanadpalota	SNTGN Transgaz S.A.	Transmission Romania	47.75	2020	Transmission Hungary (MGP)	0	-
TRA-F-358	Ruse (BG) / Giurgiu (RO)	SNTGN Transgaz S.A.	Transmission Romania	20.75	2020	Transmission Bulgaria (NGTS)	0	-
TRA-N-1235	Balassagyarmat (HU) / Velké Zlievce (SK)	eustream, a.s.	Transmission Slovakia	25.4	2022	Transmission Hungary (SK-HU Interconnector)	102.2	2022
TRA-N-524	Balassagyarmat (HU) / Velké Zlievce (SK)	FGSZ	Transmission Hungary (SK-HU Interconnector)	102	2022	Transmission Slovakia	26	2022

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-A-123	TRA-A-1322	TRA-A-362	TRA-A-377	TRA-F-286(**)	TRA-N-358	TRA-N-524	TRA-N-1235	Total Cost
CAPEX [min, EUR]	20	68.8	360.4	14.4	-	478.6	58	26.18	1026.38
OPEX [min, EUR/y]	3.1	7.85	0.83	3.7	-	11.77	0.11	1.95	29.31
Range CAPEX (%)	25	10	10	25	20	10	30	25	-
Range OPEX (%)	15	15	15	15	10	15	30	25	-

** CAPEX and OPEX figures are confidential. In TYNDP 2020 project collection the project did not indicate intention to apply to PCI and it has been introduced in the project group only for capacity reason, therefore no alternative costs have been provided.

Description of costs and range [Promoter]

TRA-N-0362: costs estimated in the FEED, based on company experience in similar projects and market evolution. OPEX doesn't include the replacement costs, so therefore these costs are mentioned in the Excel file "Economic Results".

TRA-N-1322: costs estimated in the FEED, based on company experience in similar projects and market evolution. OPEX doesn't include the replacement costs, so therefore these costs are mentioned in the Excel file "Economic Results".

TRA-F-0358: Description of CAPEX: Costs estimated in the Feasibility Study, based on company experience in similar projects and market evolution. Description of OPEX: the most significant impact on operating cost is the cost of own consumption of gas for the operation of the compressor stations.

C. Project Benefits

C.1 Summary of project benefits

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

National Trends

Benefits explained (but Sustainability) [ENTSG]

> Security of Supply:

The projects group **increases the remaining flexibility** in Romania in the existing and low infrastructure levels from 2025 for all climatic stress cases and in Hungary in 2025 in peak day thanks to the new interconnection between Hungary and Bulgaria and the increase of capacity between Romania and Bulgaria. The project group also increases remaining flexibility in Romania in the advanced infrastructure level, however, to a lesser extent since advanced projects have already improved remaining flexibility levels of the region.

In case of Ukrainian supply route disruption:

In the existing infrastructure level, the project group **fully mitigates the risk of demand curtailment** in 2-week cold spell and 2-week dunkelflaute in 2030 in Romania and reduces this risk in 2040. Additionally, for peak day climatic stress case, the project group **partially mitigates the risk of demand curtailment** in 2020 in Romania and (Croatia, Serbia) and **fully mitigates the risk of demand curtailment** in Romania and neighbouring countries (Hungary and Croatia) in 2025 and only Romania in 2030, and partially mitigates this same risk in 2040.

This situation improves in the low infrastructure level, with implementation of FID infrastructure, the project group mitigates the risk of demand curtailment in Romania in 2040 under 2-week dunkelflaute and under peak day climatic stress conditions, whereas fully mitigates this risk under peak day climatic case in 2025 and 2030.

In case of Single Largest Infrastructure Disruption in Romania (SLID-RO), the project group **fully mitigates the risk of demand curtailment** in Romania in 2030 and significantly **reduces this risk** in 2040 in the existing infrastructure level. This situation improves in the low infrastructure level, where the project group **fully mitigates the risk of demand curtailment** in Romania in 2040.

> Competition:

The project group **improves the diversification of entry capacities** (LICD indicator) in Hungary and Slovakia in the existing infrastructure level and in Bulgaria, Slovakia and Hungary in the low and advanced infrastructure levels.

By enabling the connection to the new Romanian indigenous gas production, the project group realisation also increases diversification of the area and allows to **reduce the dependence from Russian and LNG supplies**. More specifically, the project group **decreases the dependence of Russian gas** for Bulgaria and North Macedonia in 2025 and Romania from 2025 in the existing infrastructure level. In the low infrastructure level, together with FID infrastructure, the project group **decreases the Russian gas dependence** in Romania, Bulgaria, North Macedonia, Serbia and Bosnia and Herzegovina in 2025 and 2030 and in Romania in 2040. In the advanced infrastructure level, the project group decreases dependence from Russian gas only in 2025 in Romania, Bulgaria, North Macedonia, Serbia and Bosnia and Herzegovina, as advanced projects already significantly reduced Russian dependence for whole Europe from 2030.

In the existing infrastructure level, the projects group **increases the access to Romanian National Production** in Romania, Bulgaria, Greece and North Macedonia from 2025, however, as National Production is considered as a single source for Europe, this countries already had access to European indigenous production and therefore, Commercial Source Access indicator (CSA) does not show an increase in the number of supply sources for these countries. The project group increases the cooperation in the area and improves diversification of supply sources, while increasing the access to Romanian National Production.

Furthermore, by increasing the access to the new supply source in some European countries (i.e. Romania, Bulgaria), the project group is also improving the overall availability of the existing supply sources in East and South-East Europe, and therefore, increasing access to LNG and Norwegian gas supplies in Eastern Europe in the existing and low infrastructure levels.

> **Market integration:**

The projects group **increases bidirectionality** between Bulgaria and Romania, between Hungary and Romania and between Hungary and Slovakia.

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 208 MEur/y (on average) in the existing infrastructure level. Such benefit is driven by the fact that the project group allows some European countries to benefit from Romanian National Production.

Also, in case of expensive Russian gas supply price configuration, the project group brings additional benefits compared with the reference situation (265 MEur/y on average in the existing infrastructure level). Such benefits are driven by the fact that the project group allows some countries to rely on Romanian National production in case of expensive Russian gas prices.

These benefits are even higher in the low and advanced infrastructure levels, where FID and advanced projects increased cross-border and transmission capacities in Eastern Europe, allowing Romanian indigenous production to reach more European countries, this can be estimated around 237 MEur/y (on average) in the low infrastructure level. However, additional benefits are lower in the advanced infrastructure level as the overall cost of gas supply in Europe has been already reduced by advanced projects

Distributed Energy

Benefits explained (but Sustainability) [ENTSO G]

> Security of Supply:

In the existing infrastructure level, the projects group **increases the remaining flexibility** in Romania in 2025 under 2-week cold spell and in 2025, 2030 and 2040 under 2-week dunkelflaute climatic stress case, reaching its maximum value (100%). Additionally, for peak day, in the existing and low infrastructure levels, the project group **increases the remaining flexibility** in Hungary (2025) and in Romania (2025 and 2030).

Regarding Ukrainian supply route disruption:

In the existing infrastructure level, the project group **partially mitigates the risk of demand curtailment** in Romania, Croatia, Bosnia and Serbia in 2020 and **fully mitigates this risk** in Romania and neighbouring countries in 2025 for peak day and in 2040 for 2-weeks dunkelflaute. This situation improves in the low infrastructure level, where the project group fully mitigates the risk of demand curtailment in Romania only in 2025.

> Competition:

The project group **improves the diversification of entry capacities** (LICD indicator) in Hungary and Slovakia in the existing infrastructure level and in Bulgaria, Slovakia and Hungary in the low and advanced infrastructure levels.

In the existing infrastructure level, the projects group **increases the access to Romanian National Production** in Bosnia and Herzegovina, Croatia, Hungary, Serbia and Bulgaria from 2025, however, as National Production is considered as a single source for Europe, these countries already had access to European indigenous production and therefore, Commercial Source Access indicator (CSA) does not show an increase in the number of supply sources for these countries. The project group increases the cooperation in the area and improves diversification of supply sources, while increasing the access to Romanian National Production.

By enabling the connection to the new Romanian indigenous gas production, the project group realisation also increases diversification of the area and allows to **reduce the dependence from Russian and LNG supplies**. More specifically, the project group decreases the dependence of Russian gas for Bulgaria, Romania, and North Macedonia in 2025 and 2030 in the existing infrastructure level. In the low infrastructure level, together with FID projects, the project group **decreases the Russian gas dependence** in Bulgaria, North Macedonia, Bosnia and Herzegovina and Romania in 2025 and in Romania in 2030 in the low and only in 205 in the advanced level, as advanced-status projects already reduced Russian dependence for whole Europe from 2030.

> Market integration:

The projects group **increases bidirectionality** between Bulgaria and Romania and between Hungary and Romania.

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 197 MEur/y (on average) in the existing infrastructure level. Such benefits are driven by the fact that the project group allows some European countries to benefit from Romanian National Production.

Also, in case of expensive Russian gas supply price configuration, the project group brings additional benefits compared with the reference situation (248 MEur/y on average in the existing infrastructure level). Such benefits are driven by the fact that the project group allows some countries to rely on Romanian National production in case of expensive Russian gas prices.

These benefits are higher in the low and advanced infrastructure levels, where FID and advanced projects increased cross-border and transmission capacities in Eastern Europe, allowing Romanian indigenous production to reach more European countries, this can be estimated around 218 MEur/y (on average for reference supply price configuration) in the low infrastructure level. However, additional benefits are lower in the advanced infrastructure level as the overall cost of gas supply in Europe has been already reduced by advanced projects.

Global Ambition

Benefits explained (but Sustainability) [ENTSOG]

> Security of Supply:

In the existing and low infrastructure levels, the project group **significantly increases the remaining flexibility** in Romania for all climatic stress conditions and all years. Additionally, for these infrastructure levels the project group also **increases remaining flexibility** in Hungary in 2025 for peak day thanks to this new interconnection with Romania.

In case of Ukrainian supply route disruption:

In the existing and low infrastructure levels, the project group **fully mitigates the risk of demand curtailment** in 2025 (existing and Low) and 2030 (Existing) in Romania and some neighbouring countries.

> Competition:

The project group **improves the diversification of entry capacities** (LICD indicator) in Hungary in the existing infrastructure level and in Bulgaria and Hungary in the low and advanced infrastructure levels.

In the existing infrastructure level, the projects group **increases the access to Romanian National Production** in Bulgaria, Greece, Romania, and North Macedonia in 2025 and 2030, however only Bulgaria shows increases in the number of sources, as the other countries already has access to National Production. In the low and advanced infrastructure levels, FID and advanced projects allow the project group to further spread this supply source and to reach also other European countries and therefore, increase the access to Romanian National Production in other European countries, such as Bosnia and Herzegovina, Croatia, Hungary, Serbia, Bulgaria and North Macedonia in 2030 in the low infrastructure level.

Additionally, by enabling the connection to the new Romanian indigenous gas production and increasing transmission capacities between Romania and Bulgaria, the project group realisation also increases diversification of Eastern Europe and allows to **reduce the dependence from Russian** and to a lesser extent other supply sources such as **LNG**. More specifically, the project group **decreases the dependence of Russian gas** for Bulgaria, Romania and North Macedonia in 2025 and in Romania in 2025 and 2030 in the existing infrastructure level. Whereas in the low infrastructure level, the project group **decreases the Russia dependence** in Bosnia and Herzegovina, Bulgaria, Greece, Romania, Serbia and North Macedonia in 2025 thanks to the increase in Romanian national production.

> Market integration:

The projects group **increases bidirectionality** between Bulgaria and Romania and between Hungary and Romania.

The project group 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 208 MEur/y (on average) in the existing infrastructure level. Such benefits are driven by the fact that the project group allows some European countries to benefit from Romanian National Production.

Also, in case of expensive Russian gas supply price configuration, the project group brings additional benefits compared with the reference situation (266 MEur/y on average in the existing infrastructure level). Such benefits are driven by the fact that the project group allows some countries to rely on Romanian National production in case of expensive Russian gas prices.

These benefits are even higher in the low and advanced infrastructure levels, where FID and advanced projects increased cross-border and transmission capacities in Eastern Europe, allowing Romanian indigenous production to reach more European countries, this can be estimated around 239 MEur/y (on average for reference supply price configuration) in the low infrastructure level. However, additional benefits are lower in the advanced infrastructure level as the overall cost of gas supply in Europe has been already reduced by advanced projects.

Sustainability benefits explained [ENTSOG]

Project groups EAST_12C do not show significant benefits from fuel switch under flow-based allocation.

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														
		2020			2025			2030			2040					
		BE			CBG			GBC			NT			NT		
Row Labels		WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Competition																
Commercial Supply Access (CSA)																
	Bulgaria	1	2	1	2	3	1	2	3	1	2	3	1		2	3
	Germany															
	North Noth Macedonia							2	3	1						
	Romania				2	3	1	2	3	1	2	3	1			
LNG and Interconnection Capacity Diversification (LICD)																
	Hungary				4,532	3,166	-1,366	4,532	3,166	-1,366	4,532	3,166	-1,366	4,532	3,166	-1,366
	Slovakia				3,905	3,334	-571	3,938	3,338	-599	3,898	3,334	-564	3,847	3,333	-513
MASD-RU																
	Austria				43%	40%	-3%	46%	43%	-3%	43%	40%	-3%			
	Bosnia Herzegovina				44%	41%	-3%	46%	43%	-3%	43%	40%	-3%			
	Bulgaria	48%	29%	-20%	24%	11%	-14%	26%	15%	-12%						
	Croatia				44%	41%	-3%	46%	43%	-3%	43%	40%	-3%			
	Czech Republic				43%	40%	-3%				43%	40%	-3%			
	Denmark				43%	40%	-3%	45%	42%	-3%	42%	39%	-3%			
	Germany				41%	38%	-3%	43%	41%	-3%	42%	39%	-3%			
	Hungary				44%	41%	-3%	46%	43%	-3%	43%	40%	-3%			
	North Noth Macedonia	49%	29%	-20%	25%	11%	-14%	27%	14%	-13%						
	Poland							46%	43%	-3%	43%	40%	-3%			
	Romania				29%	6%	-23%	31%	8%	-23%	43%	39%	-4%	55%	45%	-10%
	Serbia				44%	41%	-3%	46%	43%	-3%	43%	40%	-3%			
	Slovakia				44%	41%	-3%	46%	43%	-3%	43%	40%	-3%			
	Slovenia							46%	43%	-3%	43%	40%	-3%			
	Sweden				43%	40%	-3%	45%	42%	-3%	42%	39%	-3%			
Security of Supply																
Remaining Flexibility 2-Week Cold Spell (%)																
	Romania	89%	92%	3%	65%	100%	35%	65%	100%	35%	62%	100%	38%	34%	52%	18%
Remaining Flexibility 2-Week Cold Spell (%) --- DF																
	Romania				65%	100%	35%	65%	100%	35%	54%	92%	38%	32%	50%	18%
Remaining Flexibility Peak day (%)																
	France							45%	52%	7%				73%	77%	4%
	Germany				35%	39%	4%	25%	29%	4%	35%	37%	2%	26%	28%	2%
	Hungary				72%	91%	18%	64%	81%	18%						
	Netherlands				60%	66%	6%	44%	50%	7%				68%	72%	4%
	Romania	55%	58%	3%	43%	89%	46%	42%	89%	46%	32%	65%	32%	14%	30%	16%
	Slovenia													39%	41%	2%
Single Largest Infrastructure Disruption (SLID)-Romania																
	Romania										5%	0%	-5%	21%	6%	-16%
Ukraine Disruption Curtailment Rate 2-Week Cold Spell (%)																
	Romania										-6%	0%	6%	-28%	-9%	18%
Ukraine Disruption Curtailment Rate 2-Week Cold Spell (%) --- DF																
	Romania										-10%	0%	10%	-29%	-10%	18%
Ukraine Disruption Curtailment Rate Peak Day (%)																
	Bosnia Herzegovina	-4%	-2%	2%												
	Croatia	-4%	-2%	2%				-4%	-1%	3%						
	Hungary							-3%	0%	3%						
	Romania	-3%	-2%	1%	-11%	0%	11%				-22%	0%	22%	-38%	-22%	16%
	Serbia	-4%	-2%	2%												
Market Integration																
Bi-directionality - Country																
	BGn <=> RO	6%	85%	79%	6%	99%	92%	6%	99%	92%	6%	99%	92%	6%	99%	92%
	HU <=> RO				5%	98%	93%	5%	98%	93%	5%	98%	93%	5%	98%	93%
	HU <=> SK				40%	100%	60%	40%	100%	60%	40%	100%	60%	40%	100%	60%
Bi-directionality - Point																
	Balassagyarmat (HU) / Velké Zlivce (SK)				40%	100%	60%	40%	100%	60%	40%	100%	60%	40%	100%	60%
	Csanadpalota				5%	100%	95%	5%	100%	95%	5%	100%	95%	5%	100%	95%
	Ruse (BG) / Giurgiu (RO)	20%	100%	80%	20%	100%	80%	20%	100%	80%	20%	100%	80%	20%	100%	80%

LOW Infrastructure Level – National Trends

Sum of Value		Column Labels														
		2020			2025			2030			2040					
		BE			CBG			GBC			NT			NT		
Row Labels		WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Competition																
Commercial Supply Access (CSA)																
	Bulgaria				2	3	1	2	3	1	2	3	1	2	3	1
	Greece				2	3	1	2	3	1	2	3	1	2	3	1
	North Noth Macedonia				2	3	1	2	3	1	2	3	1			
	Romania				3	4	1	2	4	2	3	4	1	2	3	1
LNG and Interconnection Capacity Diversification (LICD)																
	Bulgaria				8,590	5,724	-2,866	8,590	5,724	-2,866	8,590	5,724	-2,866	8,590	5,724	-2,866
	Hungary				3,746	2,774	-971	3,746	2,774	-971	3,746	2,774	-971	3,746	2,774	-971
	Slovakia				2,809	2,504	-305	2,826	2,509	-318	2,805	2,503	-302	2,783	2,500	-282
MASD-RU																
	Austria				31%	28%	-3%	34%	32%	-2%	31%	28%	-3%			
	Bosnia Herzegovina				24%	17%	-7%	28%	20%	-8%						
	Bulgaria				24%	18%	-6%	28%	21%	-7%						
	Czech Republic				31%	28%	-3%	34%	31%	-3%	31%	28%	-3%			
	Germany				30%	28%	-2%	33%	31%	-2%	30%	28%	-3%			
	Hungary				31%	28%	-3%				31%	28%	-3%			
	North Noth Macedonia				24%	18%	-6%	28%	21%	-7%						
	Romania				29%	14%	-15%	31%	16%	-15%	31%	28%	-3%	55%	31%	-24%
	Serbia				24%	18%	-6%	28%	21%	-7%						
	Slovenia										31%	28%	-3%			
Security of Supply																
Remaining Flexibility 2-Week Cold Spell (%)																
	Romania				65%	100%	35%	65%	100%	35%	70%	100%	30%	41%	60%	18%
Remaining Flexibility 2-Week Cold Spell (%) --- DF																
	Romania				65%	100%	35%	65%	100%	35%	62%	99%	38%	40%	58%	18%
Remaining Flexibility Peak day (%)																
	France							45%	52%	7%				73%	79%	6%
	Germany				35%	39%	4%	26%	29%	4%	36%	38%	2%	26%	28%	2%
	Hungary							90%	100%	10%						
	Netherlands							44%	51%	7%				66%	72%	6%
	Romania				43%	89%	46%	42%	89%	46%	39%	73%	33%	21%	37%	16%
Single Largest Infrastructure Disruption (SLID)-Romania																
	Romania													14%	0%	-14%
Ukraine Disruption Curtailment Rate 2-Week Cold Spell (%)																
	Romania													-20%	-2%	18%
Ukraine Disruption Curtailment Rate 2-Week Cold Spell (%) --- DF																
	Romania										-2%	0%	2%	-21%	-3%	18%
Ukraine Disruption Curtailment Rate Peak Day (%)																
	Romania				-11%	0%	11%	-11%	0%	11%	-15%	0%	15%	-31%	-15%	16%
Market Integration																
Bi-directionality - Country																
	BGn <=> RO	6%	85%	79%	6%	61%	55%	6%	61%	55%	6%	61%	55%	6%	61%	55%
	HU <=> RO				5%	98%	93%	5%	98%	93%	5%	98%	93%	5%	98%	93%
	HU <=> SK				40%	100%	60%	40%	100%	60%	40%	100%	60%	40%	100%	60%
Bi-directionality - Point																
	Balassagyarmat (HU) / Velké Zlievce (SK)				40%	100%	60%	40%	100%	60%	40%	100%	60%	40%	100%	60%
	Csanadpalota				5%	100%	95%	5%	100%	95%	5%	100%	95%	5%	100%	95%
	Ruse (BG) / Giurgiu (RO)	20%	100%	80%	20%	100%	80%	20%	100%	80%	20%	100%	80%	20%	100%	80%

ADVANCED Infrastructure Level – National Trends

Sum of Value		Column Labels														
		2020			2025			2030			2040					
		BE			CBG			GBC			NT			NT		
Row Labels		WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Competition																
LNG and Interconnection Capacity Diversification (LICD)																
	Bulgaria				8,590	5,724	-2,866	8,590	5,724	-2,866	7,085	4,626	-2,459	7,037	4,581	-2,456
	Hungary				3,746	2,774	-971	3,746	2,774	-971	3,061	2,372	-689	2,815	2,214	-601
	Romania										3,716	3,394	-322	3,716	3,394	-322
	Slovakia				2,809	2,504	-305	2,826	2,509	-318	2,805	2,503	-302	2,783	2,500	-282
MASD-RU																
	Austria				25%	22%	-3%									
	Belgium							28%	26%	-2%						
	Bosnia Herzegovina				25%	21%	-4%	28%	25%	-3%						
	Bulgaria				24%	21%	-3%	28%	25%	-3%						
	Croatia				24%	22%	-2%	28%	25%	-3%						
	Czech Republic				25%	22%	-3%									
	France				24%	21%	-3%	28%	25%	-3%						
	Greece				24%	21%	-3%	28%	25%	-3%						
	Hungary				25%	22%	-3%	29%	26%	-3%						
	North North Macedonia				24%	21%	-3%	28%	25%	-3%						
	Poland				25%	22%	-3%									
	Romania				25%	21%	-4%	28%	25%	-3%						
	Serbia				24%	21%	-3%	28%	25%	-3%						
	Slovakia				25%	22%	-3%	29%	26%	-3%						
	Slovenia				25%	22%	-3%									
Security of Supply																
Remaining Flexibility 2-Week Cold Spell (%)																
	Croatia				81%	84%	2%	74%	76%	2%						
	Romania				78%	100%	22%	78%	100%	22%				78%	97%	18%
Remaining Flexibility 2-Week Cold Spell (%) --- DF																
	Croatia				77%	79%	2%	71%	72%	2%						
	Romania				77%	100%	23%	77%	100%	23%	99%	100%	1%	76%	94%	18%
Remaining Flexibility Peak day (%)																
	Croatia				68%	70%	2%	62%	64%	2%						
	Germany				44%	48%	4%	35%	39%	4%	47%	48%	2%			
	Hungary							96%	100%	4%						
	Romania				54%	100%	46%	53%	100%	46%	72%	100%	28%	52%	68%	15%
Market Integration																
Bi-directionality - Country																
	BGn <=> RO	6%	85%	79%	6%	61%	55%	6%	61%	55%	6%	61%	55%	6%	61%	55%
	HU <=> RO				5%	98%	93%	5%	98%	93%	5%	98%	93%	5%	98%	93%
	HU <=> SK				40%	100%	60%	40%	100%	60%	40%	100%	60%	40%	100%	60%
Bi-directionality - Point																
	Balassagyarmat (HU) / Velké Zlievce (SK)				40%	100%	60%	40%	100%	60%	40%	100%	60%	40%	100%	60%
	Csanadpalota				5%	100%	95%	5%	100%	95%	5%	100%	95%	5%	100%	95%
	Ruse (BG) / Giurgiu (RO)	20%	100%	80%	20%	100%	80%	20%	100%	80%	20%	100%	80%	20%	100%	80%

EXISTING Infrastructure Level – Distributed Energy

Sum of Value			Column Labels 														
			2020			2025			2030			2040					
			BE			CBG			GBC			DE			DE		
Row Labels			WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Competition																	
Commercial Supply Access (CSA)																	
	Bosnia Herzegovina											2	3	1			
	Bulgaria	1	2	1	2	3	1	2	3	1		2	3	1			
	Croatia											2	3	1			
	Hungary											2	3	1			
	North North Macedonia								2	3	1						
	Romania				2	3	1	2	3	1					3	4	1
	Serbia											2	3	1			
LNG and Interconnection Capacity Diversification (LICD)																	
	Hungary					4,532	3,166	-1,366	4,532	3,166	-1,366	4,532	3,166	-1,366	4,532	3,166	-1,366
	Slovakia					3,905	3,334	-571	3,938	3,338	-599	3,792	3,333	-459	3,762	3,333	-428
MASD-RU																	
	Austria					43%	40%	-3%	46%	43%	-3%	42%	39%	-3%			
	Bosnia Herzegovina					44%	41%	-3%	46%	43%	-3%	42%	39%	-3%			
	Bulgaria	48%	29%	-20%	24%	11%	-14%	26%	15%	-12%							
	Croatia				44%	41%	-3%	46%	43%	-3%	42%	39%	-3%				
	Czech Republic				43%	40%	-3%				42%	39%	-3%				
	Denmark				43%	40%	-3%	45%	42%	-3%							
	Germany				41%	38%	-3%	43%	41%	-3%	41%	38%	-3%				
	Hungary				44%	41%	-3%	46%	43%	-3%	42%	39%	-3%				
	North North Macedonia	49%	29%	-20%	25%	11%	-14%	27%	14%	-13%							
	Poland							46%	43%	-3%	42%	40%	-2%				
	Romania				29%	6%	-23%	31%	8%	-23%	17%	12%	-6%				
	Serbia				44%	41%	-3%	46%	43%	-3%	42%	39%	-3%				
	Slovakia				44%	41%	-3%	46%	43%	-3%	42%	39%	-3%				
	Slovenia							46%	43%	-3%	42%	39%	-3%				
	Sweden							46%	43%	-3%	42%	39%	-3%				
Security of Supply																	
Remaining Flexibility 2-Week Cold Spell (%)																	
	Romania	89%	92%	3%	65%	100%	35%	65%	100%	35%							
Remaining Flexibility 2-Week Cold Spell (%) --- DF																	
	Romania				65%	100%	35%	65%	100%	35%					72%	94%	22%
Remaining Flexibility Peak day (%)																	
	France							45%	52%	7%							
	Germany				35%	39%	4%	25%	29%	4%	57%	59%	2%				
	Hungary				72%	91%	18%	64%	81%	18%							
	Italy																
	Netherlands				60%	66%	6%	44%	50%	7%	77%	78%	1%		46%	47%	1%
	Romania	55%	58%	3%	43%	89%	46%	42%	89%	46%	85%	100%	15%	68%	88%	20%	
Ukraine Disruption Curtailment Rate 2-Week Cold Spell (%) --- DF																	
	Romania														-2%	0%	2%
Ukraine Disruption Curtailment Rate Peak Day (%)																	
	Bosnia Herzegovina	-4%	-2%	2%													
	Croatia	-4%	-2%	2%				-4%	-1%	3%							
	Hungary							-3%	0%	3%							
	Romania	-3%	-2%	1%	-11%	0%	11%	-11%	0%	11%							
	Serbia	-4%	-2%	2%													
Market Integration																	
Bi-directionality - Country																	
	BGn <=> RO	6%	85%	79%	6%	99%	92%	6%	99%	92%	6%	99%	92%	6%	99%	92%	
	HU <=> RO				5%	98%	93%	5%	98%	93%	5%	98%	93%	5%	98%	93%	
	HU <=> SK				40%	100%	60%	40%	100%	60%	40%	100%	60%	40%	100%	60%	
Bi-directionality - Point																	
	Balassagyarmat (HU) / Velké Zlívce (SK)				40%	100%	60%	40%	100%	60%	40%	100%	60%	40%	100%	60%	
	Csanadpalota				5%	100%	95%	5%	100%	95%	5%	100%	95%	5%	100%	95%	
	Ruse (BG) / Giurgiu (RO)	20%	100%	80%	20%	100%	80%	20%	100%	80%	20%	100%	80%	20%	100%	80%	

LOW Infrastructure Level – Distributed Energy

Sum of Value		Column Labels 														
		2020			2025			2030			2040					
		BE			CBG			GBC			DE			DE		
Row Labels		WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Competition																
Commercial Supply Access (CSA)																
	Bosnia Herzegovina										3	4	1			
	Bulgaria				2	3	1	2	3	1	2	4	2			
	Croatia										3	4	1			
	Greece				2	3	1	2	3	1	2	4	2			
	Hungary										3	4	1			
	North Noth Macedonia				2	3	1	2	3	1	2	4	2			
	Romania				3	4	1	2	4	2						
	Serbia										3	4	1			
LNG and Interconnection Capacity Diversification (LICD)																
	Bulgaria				8,590	5,724	-2,866	8,590	5,724	-2,866	8,590	5,724	-2,866	8,590	5,724	-2,866
	Hungary				3,746	2,774	-971	3,746	2,774	-971	3,746	2,774	-971	3,746	2,774	-971
	Slovakia				2,809	2,504	-305	2,826	2,509	-318	2,756	2,500	-256	2,740	2,500	-240
MASD-RU																
	Austria				31%	28%	-3%	34%	32%	-2%						
	Bosnia Herzegovina				24%	17%	-7%	28%	20%	-8%						
	Bulgaria				24%	18%	-6%	28%	21%	-7%						
	Czech Republic				31%	28%	-3%	34%	31%	-3%						
	Estonia										30%	27%	-3%			
	Finland										30%	27%	-3%			
	Germany				30%	28%	-2%	33%	31%	-2%						
	Hungary				31%	28%	-3%				29%	26%	-3%			
	Latvia										30%	27%	-3%			
	Netherlands										29%	26%	-3%			
	North Noth Macedonia				24%	18%	-6%	28%	21%	-7%						
	Poland										29%	27%	-3%			
	Romania				29%	14%	-15%	31%	16%	-15%	17%	15%	-2%			
	Serbia				24%	18%	-6%	28%	21%	-7%						
Security of Supply																
Remaining Flexibility 2-Week Cold Spell (%)																
	Romania				65%	100%	35%	65%	100%	35%						
Remaining Flexibility 2-Week Cold Spell (%) --- DF																
	Romania				65%	100%	35%	65%	100%	35%				81%	100%	19%
Remaining Flexibility Peak day (%)																
	France							45%	52%	7%						
	Germany				35%	39%	4%	26%	29%	4%	52%	54%	2%			
	Hungary							90%	100%	10%						
	Netherlands							44%	51%	7%						
	Romania				43%	89%	46%	42%	89%	46%	95%	100%	5%	77%	97%	20%
Ukraine Disruption Curtailment Rate Peak Day (%)																
	Romania				-11%	0%	11%	-11%	0%	11%						
Market Integration																
Bi-directionality - Country																
	BGn <=> RO	6%	85%	79%	6%	61%	55%	6%	61%	55%	6%	61%	55%	6%	61%	55%
	HU <=> RO				5%	98%	93%	5%	98%	93%	5%	98%	93%	5%	98%	93%
	HU <=> SK				40%	100%	60%	40%	100%	60%	40%	100%	60%	40%	100%	60%
Bi-directionality - Point																
	Balassagyarmat (HU) / Velké Zlívce (SK)				40%	100%	60%	40%	100%	60%	40%	100%	60%	40%	100%	60%
	Csanadpalota				5%	100%	95%	5%	100%	95%	5%	100%	95%	5%	100%	95%
	Ruse (BG) / Giurgiu (RO)	20%	100%	80%	20%	100%	80%	20%	100%	80%	20%	100%	80%	20%	100%	80%

ADVANCED Infrastructure Level – Distributed Energy

Sum of Value		Column Labels														
		2020			2025						2030			2040		
Row Labels		BE	CBG		GBC		DE			DE						
		WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA			
Competition																
Commercial Supply Access (CSA)																
North Noth Macedonia											3	4	1			
LNG and Interconnection Capacity Diversification (LICD)																
Bulgaria					8,590	5,724	-2,866	8,590	5,724	-2,866	6,791	4,365	-2,426	6,928	4,482	-2,447
Hungary					3,746	2,774	-971	3,746	2,774	-971	2,879	2,253	-626	2,803	2,207	-596
Romania											3,716	3,394	-322	3,716	3,394	-322
Slovakia					2,809	2,504	-305	2,826	2,509	-318	2,756	2,500	-256	2,740	2,500	-240
MASD-RU																
Austria					25%	22%	-3%									
Belgium								28%	26%	-2%						
Bosnia Herzegovina					25%	21%	-4%	28%	25%	-3%						
Bulgaria					24%	21%	-3%	28%	25%	-3%						
Croatia					24%	22%	-2%	28%	25%	-3%						
Czech Republic					25%	22%	-3%									
France					24%	21%	-3%	28%	25%	-3%						
Greece					24%	21%	-3%	28%	25%	-3%						
Hungary					25%	22%	-3%	29%	26%	-3%						
North Noth Macedonia					24%	21%	-3%	28%	25%	-3%						
Poland					25%	22%	-3%									
Romania					25%	21%	-4%	28%	25%	-3%						
Serbia					24%	21%	-3%	28%	25%	-3%						
Slovakia					25%	22%	-3%	29%	26%	-3%						
Slovenia					25%	22%	-3%									
Security of Supply																
Remaining Flexibility 2-Week Cold Spell (%)																
Croatia					81%	84%	2%	74%	76%	2%						
Romania					78%	100%	22%	78%	100%	22%						
Remaining Flexibility 2-Week Cold Spell (%) --- DF																
Croatia					77%	79%	2%	71%	72%	2%						
Romania					77%	100%	23%	77%	100%	23%						
Remaining Flexibility Peak day (%)																
Croatia					68%	70%	2%	62%	64%	2%						
Germany					44%	48%	4%	35%	39%	4%	63%	65%	2%			
Hungary								96%	100%	4%						
Italy											35%	36%	1%			
Romania					54%	100%	46%	53%	100%	46%						
Market Integration																
Bi-directionality - Country																
BGn <=> RO		6%	85%	79%	6%	61%	55%	6%	61%	55%	6%	61%	55%	6%	61%	55%
HU <=> RO					5%	98%	93%	5%	98%	93%	5%	98%	93%	5%	98%	93%
HU <=> SK					40%	100%	60%	40%	100%	60%	40%	100%	60%	40%	100%	60%
Bi-directionality - Point																
Balassagyarmat (HU) / Velké Zlievce (SK)					40%	100%	60%	40%	100%	60%	40%	100%	60%	40%	100%	60%
Csanadpalota					5%	100%	95%	5%	100%	95%	5%	100%	95%	5%	100%	95%
Ruse (BG) / Giurgiu (RO)		20%	100%	80%	20%	100%	80%	20%	100%	80%	20%	100%	80%	20%	100%	80%

EXISTING Infrastructure Level – Global Ambition

Sum of Value			Column Labels														
			2020			2025			2030			2040					
			BE			CBG			GBC			GA			GA		
Row Labels			WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Competition																	
Commercial Supply Access (CSA)																	
	Austria														2	3	1
	Bulgaria	1	2	1	2	3	1	2	3	1							
	Germany														2	3	1
	North Noth Macedonia								2	3	1						
	Romania					2	3	1	2	3	1	2	3	1			
LNG and Interconnection Capacity Diversification (LICD)																	
	Hungary					4,532	3,166	-1,366	4,532	3,166	-1,366	4,532	3,166	-1,366	4,532	3,166	-1,366
	Slovakia					3,905	3,334	-571	3,938	3,338	-599	3,825	3,333	-492	3,806	3,333	-473
MASD-RU																	
	Austria					43%	40%	-3%	46%	43%	-3%	47%	44%	-3%			
	Bosnia Herzegovina					44%	41%	-3%	46%	43%	-3%	48%	45%	-3%			
	Bulgaria	48%	29%	-20%	24%	11%	-14%	26%	15%	-12%							
	Croatia				44%	41%	-3%	46%	43%	-3%							
	Czech Republic				43%	40%	-3%										
	Denmark				43%	40%	-3%	45%	42%	-3%	47%	44%	-3%				
	Germany				41%	38%	-3%	43%	41%	-3%	46%	44%	-2%				
	Hungary				44%	41%	-3%	46%	43%	-3%							
	North Noth Macedonia	49%	29%	-20%	25%	11%	-14%	27%	14%	-13%							
	Poland							46%	43%	-3%	48%	45%	-3%				
	Romania				29%	6%	-23%	31%	8%	-23%	28%	24%	-4%				
	Serbia				44%	41%	-3%	46%	43%	-3%	48%	45%	-3%				
	Slovakia				44%	41%	-3%	46%	43%	-3%							
	Slovenia							46%	43%	-3%	47%	44%	-3%				
	Sweden					43%	40%	-3%	45%	42%	-3%						
Security of Supply																	
Remaining Flexibility 2-Week Cold Spell (%)																	
	Romania	89%	92%	3%	65%	100%	35%	65%	100%	35%	90%	100%	10%	90%	100%	10%	
Remaining Flexibility 2-Week Cold Spell (%) --- DF																	
	Romania				65%	100%	35%	65%	100%	35%	88%	100%	12%	76%	99%	22%	
Remaining Flexibility Peak day (%)																	
	Belgium										75%	84%	9%				
	France							45%	52%	7%	28%	32%	4%	50%	52%	2%	
	Germany				35%	39%	4%	25%	29%	4%	16%	18%	2%	25%	26%	1%	
	Hungary				72%	91%	18%	64%	81%	18%							
	Netherlands				60%	66%	6%	44%	50%	7%	34%	38%	4%	61%	63%	2%	
	Romania	55%	58%	3%	43%	89%	46%	42%	89%	46%	72%	100%	28%	65%	86%	21%	
	United Kingdom										26%	29%	3%				
Single Largest Infrastructure Disruption (SLID)-Slovakia																	
	Austria										24%	19%	-5%				
	Czechia										24%	18%	-6%				
	Slovakia										24%	18%	-6%				
Ukraine Disruption Curtailment Rate Peak Day (%)																	
	Bosnia Herzegovina	-4%	-2%	2%													
	Croatia	-4%	-2%	2%				-4%	-1%	3%							
	Hungary							-3%	0%	3%							
	Italy										-4%	-2%	2%				
	Romania	-3%	-2%	1%	-11%	0%	11%	-11%	0%	11%				-4%	0%	4%	
	Serbia	-4%	-2%	2%													
	Switzerland										-3%	-2%	1%				
Market Integration																	
Bi-directionality - Country																	
	BGn <=> RO	6%	85%	79%	6%	99%	92%	6%	99%	92%	6%	99%	92%	6%	99%	92%	
	HU <=> RO				5%	98%	93%	5%	98%	93%	5%	98%	93%	5%	98%	93%	
	HU <=> SK				40%	100%	60%	40%	100%	60%	40%	100%	60%	40%	100%	60%	
Bi-directionality - Point																	
	Balassagyarmat (HU) / Velké Zlievce (SK)				40%	100%	60%	40%	100%	60%	40%	100%	60%	40%	100%	60%	
	Csanadpalota				5%	100%	95%	5%	100%	95%	5%	100%	95%	5%	100%	95%	
	Ruse (BG) / Giurgiu (RO)	20%	100%	80%	20%	100%	80%	20%	100%	80%	20%	100%	80%	20%	100%	80%	

LOW Infrastructure Level – Global Ambition

Sum of Value		Column Labels														
		2020			2025			2030			2040					
		BE			CBG			GBC			GA			GA		
Row Labels		WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Competition																
Commercial Supply Access (CSA)																
	Bosnia Herzegovina										3	4	1			
	Bulgaria				2	3	1	2	3	1	2	4	2			
	Croatia										3	4	1	3	4	1
	Greece				2	3	1	2	3	1	2	4	2	3	4	1
	Hungary										3	4	1	3	4	1
	North Noth Macedonia				2	3	1	2	3	1	2	4	2			
	Romania				3	4	1	2	4	2	3	4	1			
	Serbia										3	4	1			
LNG and Interconnection Capacity Diversification (LICD)																
	Bulgaria				8,590	5,724	-2,866	8,590	5,724	-2,866	8,590	5,724	-2,866	8,590	5,724	-2,866
	Hungary				3,746	2,774	-971	3,746	2,774	-971	3,746	2,774	-971	3,746	2,774	-971
	Slovakia				2,809	2,504	-305	2,826	2,509	-318	2,773	2,500	-273	2,763	2,500	-263
MASD-RU																
	Austria				31%	28%	-3%	34%	32%	-2%						
	Bosnia Herzegovina				24%	17%	-7%	28%	20%	-8%						
	Bulgaria				24%	18%	-6%	28%	21%	-7%						
	Czech Republic				31%	28%	-3%	34%	31%	-3%						
	Germany				30%	28%	-2%	33%	31%	-2%	33%	31%	-2%			
	Hungary				31%	28%	-3%				34%	31%	-3%			
	Lithuania										34%	31%	-3%			
	Netherlands										33%	31%	-2%			
	North Noth Macedonia				24%	18%	-6%	28%	21%	-7%						
	Romania				29%	14%	-15%	31%	16%	-15%						
	Serbia				24%	18%	-6%	28%	21%	-7%						
Security of Supply																
Remaining Flexibility 2-Week Cold Spell (%)																
	Romania				65%	100%	35%	65%	100%	35%	99%	100%	1%	99%	100%	1%
Remaining Flexibility 2-Week Cold Spell (%) --- DF																
	Romania				65%	100%	35%	65%	100%	35%	98%	100%	2%	86%	100%	14%
Remaining Flexibility Peak day (%)																
	Belgium										51%	60%	10%			
	France							45%	52%	7%	19%	23%	4%	43%	47%	4%
	Germany				35%	39%	4%	26%	29%	4%	11%	13%	2%	22%	23%	2%
	Hungary							90%	100%	10%						
	Italy										14%	17%	3%	34%	37%	3%
	Netherlands							44%	51%	7%	23%	27%	4%	52%	57%	5%
	Romania				43%	89%	46%	42%	89%	46%	81%	100%	19%	75%	98%	23%
	United Kingdom										17%	21%	3%			
Single Largest Infrastructure Disruption (SLID)-United Kingdoom																
	Belgium										2%	0%	-2%			
	Ireland										4%	2%	-2%			
	Netherlands										2%	0%	-2%			
Ukraine Disruption Curtailment Rate Peak Day (%)																
	Romania				-11%	0%	11%	-11%	0%	11%						
Market Integration																
Bi-directionality - Country																
	BGn <=> RO	6%	85%	79%	6%	61%	55%	6%	61%	55%	6%	61%	55%	6%	61%	55%
	HU <=> RO				5%	98%	93%	5%	98%	93%	5%	98%	93%	5%	98%	93%
	HU <=> SK				40%	100%	60%	40%	100%	60%	40%	100%	60%	40%	100%	60%
Bi-directionality - Point																
	Balassagyarmat (HU) / Velké Zlievce (SK)				40%	100%	60%	40%	100%	60%	40%	100%	60%	40%	100%	60%
	Csanadpalota				5%	100%	95%	5%	100%	95%	5%	100%	95%	5%	100%	95%
	Ruse (BG) / Giurgiu (RO)	20%	100%	80%	20%	100%	80%	20%	100%	80%	20%	100%	80%	20%	100%	80%

ADVANCED Infrastructure Level – Global Ambition

Sum of Value		Column Labels														
		2020			2025			2030			2040					
		BE			CBG			GBC			GA			GA		
Row Labels		WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Competition																
LNG and Interconnection Capacity Diversification (LICD)																
	Bulgaria				8,590	5,724	-2,866	8,590	5,724	-2,866	6,826	4,394	-2,432	6,912	4,467	-2,445
	Hungary				3,746	2,774	-971	3,746	2,774	-971	2,881	2,254	-627	2,822	2,218	-604
	Romania										3,716	3,394	-322	3,716	3,394	-322
	Slovakia				2,809	2,504	-305	2,826	2,509	-318	2,773	2,500	-273	2,763	2,500	-263
MASD-RU																
	Austria				25%	22%	-3%									
	Belgium							28%	26%	-2%						
	Bosnia Herzegovina				25%	21%	-4%	28%	25%	-3%						
	Bulgaria				24%	21%	-3%	28%	25%	-3%						
	Croatia				24%	22%	-2%	28%	25%	-3%						
	Czech Republic				25%	22%	-3%									
	France				24%	21%	-3%	28%	25%	-3%						
	Greece				24%	21%	-3%	28%	25%	-3%						
	Hungary				25%	22%	-3%	29%	26%	-3%						
	North Noth Macedonia				24%	21%	-3%	28%	25%	-3%						
	Poland				25%	22%	-3%									
	Romania				25%	21%	-4%	28%	25%	-3%						
	Serbia				24%	21%	-3%	28%	25%	-3%						
	Slovakia				25%	22%	-3%	29%	26%	-3%						
	Slovenia				25%	22%	-3%									
Security of Supply																
Remaining Flexibility 2-Week Cold Spell (%)																
	Romania				78%	100%	22%	78%	100%	22%						
Remaining Flexibility 2-Week Cold Spell (%) --- DF																
	Romania				77%	100%	23%	77%	100%	23%						
Remaining Flexibility Peak day (%)																
	Croatia				68%	70%	2%	62%	64%	2%						
	France										46%	47%	2%	53%	56%	3%
	Germany				44%	48%	4%	35%	39%	4%	25%	27%	1%	27%	28%	1%
	Hungary							96%	100%	4%						
	Netherlands										55%	58%	3%	64%	66%	2%
	Romania				54%	100%	46%	53%	100%	46%						
Market Integration																
Bi-directionality - Country																
	BGn <=> RO	6%	85%	79%	6%	61%	55%	6%	61%	55%	6%	61%	55%	6%	61%	55%
	HU <=> RO				5%	98%	93%	5%	98%	93%	5%	98%	93%	5%	98%	93%
	HU <=> SK				40%	100%	60%	40%	100%	60%	40%	100%	60%	40%	100%	60%
Bi-directionality - Point																
	Balassagyarmat (HU) / Velké Zlievce (SK)				40%	100%	60%	40%	100%	60%	40%	100%	60%	40%	100%	60%
	Csanadpalota				5%	100%	95%	5%	100%	95%	5%	100%	95%	5%	100%	95%
	Ruse (BG) / Giurgiu (RO)	20%	100%	80%	20%	100%	80%	20%	100%	80%	20%	100%	80%	20%	100%	80%

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	Reference Supply	208.2	195.6	208.3	236.9	217.9	239.3	232.2	217.5	233.1
With Tariffs	Supply Maximization	265.2	248.2	266.1	296.7	269.0	298.1	281.2	258.9	284.1
Security of Supply	Design Case	4.7	0.7	3.0	4.3	0.7	2.3	0.0	0.0	0.0
	2-weeks Cold Spell	20.8	0.0	0.0	24.0	0.0	0.0	0.0	0.0	0.0
	2-weeks Cold Spell DF	25.1	2.1	0.4	18.2	0.0	0.0	0.0	0.0	0.0
Sustainability	CO2 and Other externalities savings	0 / 0.1	0.4 / 0.7	0.1 / 0.4	0 / 0.1	0.2 / 0.4	0.1 / 0.3	0 / 0	0.1 / 0.2	0 / 0.1
	Additional benefit (Promoter)	0	0	0	0	0	0	0	0	0

Comparison between the assessed SCENARIOS

ENTSOE 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	36.1	36.1	36.1	0.0	0.0	0.0	0.0	0.0	0.0	488.3	488.3	488.3	473.4	473.4	473.4	480.5	480.5	480.5
	Supply Maximization	38.4	38.4	38.4	0.0	0.0	0.0	0.0	0.0	0.0	621.6	621.6	621.6	591.5	591.5	591.5	591.2	591.2	591.2
Security of Supply	Design Case	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	3.2	32.3	3.2	2.3	2.3	2.3	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	273.5	257.4	276.2	268.1	235.3	277.7	248.3	220.4	255.5	71.2	48.2	69.1	70.5	43.5	69.0	68.0	49.5	64.3
	Supply Maximization	352.2	326.1	357.3	337.1	286.7	343.4	289.7	251.7	308.7	90.0	63.2	88.3	88.2	51.0	86.7	84.5	52.5	76.3
Security of Supply	Design Case	5.5	0.0	6.1	3.1	0.0	5.2	0.0	0.0	0.0	6.7	0.0	0.6	6.4	0.0	0.0	0.0	0.0	0.0
	2-weeks Cold Spell	12.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	46.9	0.0	0.0	46.2	0.0	0.0	0.0	0.0	0.0
	2-weeks Cold Spell DF	24.1	0.0	0.0	5.9	0.0	0.0	0.0	0.0	0.0	46.9	4.1	0.8	46.9	0.0	0.0	0.0	0.0	0.0
Sustainability	CO2 and Other externalities savings	0/0	1/1	0/1	0/0	1/1	0/1	0/0	0/1	0/0	0/0	0/1	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

In line with ENTSG Adapted 2nd CBA Methodology, ENTSG 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 (ENTSG or Promoter), the sensitivity analysis has been carried out by ENTSG and according to the criteria in the approved CBA Methodology.

[illegible]

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
TRA-F-0358 and TRA-N-1322	Pipeline and compressor stations	The total area of land which will be occupied by the works for the construction of the investment objective is of approximately 1085 ha, out of which the temporary occupied area is of approximately 1073 ha, and the permanently occupied area is of approximately 12 ha.	Total surface: 147.8 ha.
TRA-N-0362	308 km pipeline length	The total area of land which will be occupied by the works for the construction of the investment objective is of approximately 690,7 ha, out of which the temporary occupied area is of approximately 689,4 ha, and the permanently occupied area is of approximately 1,3 ha.	Total surface: 25. ha.

Potential impact	Mitigation measures	Related costs included in project CAPEX and OPEX	Additional expected costs
Air	Compressor units equipped with SOLONOX system	included the project CAPEX, OPEX	No
Noise	Units will be installed indoor, and each compressor unit will be cased. Also Transgaz requested that at the Compressor Station fence the noise limit must not exceed the legal requirements.	included the project CAPEX, OPEX	No
The impact on environmental factors shall have various intensities, which are however short and express themselves only in the areas of the execution works; through the measures proposed in the report on the evaluation of the impact and the adequate evaluation study, the impact shall be significantly reduced, both during the execution periods, as well as during the exploitation period.	Water protection / Measures regarding the management of dangerous measures/ Air protection measures / Soil and underoil protection measures / Protection measures against noise / Measures regarding waste management substances and chemicals / Measures related to framing in the landscape / Measures for the protection of the biodiversity.	Included in CAPEX and OPEX	NO

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.

See the table above.

For TRA-F-358, TRA-N-1322 and TRA-N-362 there were obtained all the Environmental Agreements.

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 objective of the project group is the utilization maximization of the existing infrastructure in the north-south direction and east-west direction (for the HU-SK corridor). And therefore investment into the existing transmission corridor avoids stranded investments into new transmission corridor and optimize overall cost of capacity utilization.

F. Useful Links

The project website:

TRA-F-358 : <https://www.transgaz.ro/ro/dezvoltarea-pe-teritoriul-romaniei-sistemului-national-de-transport-gaze-pe-coridorul-conductei-de>
<http://www.transgaz.ro/en/project-brha-management-documents>

TRA-A-1322 : <https://www.transgaz.ro/ro/extinderea-capacitatii-de-transport-gazelor-naturale-din-romania-catre-ungaria-pana-la-44-mldmcan>
<http://www.transgaz.ro/en/expansion-transmission-capacity-romania-towards-hungary-44-bcmyear-2nd-phase>

TRA-A-362 : <https://www.transgaz.ro/ro/conducta-tarmul-marii-negre-podisor-ro-pentru-preluarea-gazului-din-marea-neagra>

HU: <https://fgsz.hu/en/about-fgsz/activities-business-policy/international-projects/brua>

Network Development Plan:

SK: https://www.eustream.sk/files/docs/sk/Plan_rozvoja_prepravnej_siete_na_obdobie_2020_2029.pdf

HU: https://fgsz.hu/file/documents/1/1743/2020_07_09_ten_year_network_development_plan.pdf

RO: <https://www.transgaz.ro/sites/default/files/uploads/users/admin/Plan%20dezvoltare%202019%20-%202028.pdf>