

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

Project Group EAST_09 - Depomures

Reasons for grouping [ENTSOE]

Project group is composed by the stand-alone UGS Depomures project.

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

The project group aims at increasing operational independence by building its own compression units as currently compression services are rented from a third party; expand the storage capacity up to 600 mcm; increase flexibility of the storage by increasing injection and withdrawal capacity up to 5 mcm / day.



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
UGS-A-233	Depomures	Engie Romania SA	RO	Advanced	6.20.4	2021	2024	Delayed

Technical Information

TYNDP Project Code	Injection Capacity Increment [mcm/d]	Withdrawal Capacity Increment [mcm/d]	WGV Increment [mcm]
UGS-A-233	1.8	1.8	200
UGS-A-233	1.5	1.5	100

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
UGS-A-233	UGS Targu Mures	Depomures	Storage Romania	18.92	2021	Transmission Romania	18.92	2021
UGS-A-233	UGS Targu Mures	Depomures	Storage Romania	15.78	2024	Transmission Romania	15.78	2024

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 “*”.

	UGS-A-233	Total Cost
CAPEX [min, EUR]	87	87
OPEX [min, EUR/y]	1.5	1.5
Range CAPEX (%)	10	-
Range OPEX (%)	20	-

Description of costs and range [Promoter]

The CAPEX has been estimated following the FEED study and includes also the costs incurred in the previous years linked to the project. The actual CAPEX is to be confirmed after procurement phase for the remaining investments to be implemented. Regarding the incremental OPEX, the electricity cost is the most significant element. Hence, the OPEX range will mostly depend on the evolution of electricity price in the future.

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 project group **increases the remaining flexibility in Romania** in all infrastructure levels for all climatic stress conditions. The project group allows for partially mitigates risk of demand curtailment in Romania, year 2030 and 2040, in case of **disruption of the single largest infrastructures in Romania** (VIP Mediesu Aurit - Isaccea (RO-UA)). The storage project helps mitigating the risk of demand curtailment in Romania under **UA route disruption** in all climatic cases.

Distributed Energy

Benefits explained (but Sustainability) [ENTSG]

> Security of Supply:

The realisation of the project increases remaining flexibility in Romania in Existing and Low infrastructure levels. The storage project helps mitigating the risk of demand curtailment in Romania under **UA route disruption** in Existing infrastructure level, Peak Day, year 2025.

Global Ambition

Benefits explained (but Sustainability) [ENTSG]

> Security of Supply:

The project group **increases the remaining flexibility in Romania** in Existing and LOW infrastructure levels for all climatic stress conditions. The storage project helps mitigating the risk of demand curtailment in Romania under **UA route disruption** in Existing infrastructure level, Peak Day, year 2025. and completely mitigates it in 2 week cold spell DF, year 2040.

Sustainability benefits explained [ENTSG]

Project groups EAST_09 does not show benefits from fuel switch under flow-based allocation.

Sustainability benefits explained [Project Promoter]

No additional benefits were provided by promoters.

C.2 Quantitative benefits [ENTSOG]

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

EXISTING Infrastructure Level – National Trends

Sum of Value		Column Labels											
		2025			2030			2040					
		CBG			GBC			NT			NT		
Row Labels		WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Security of Supply													
Remaining Flexibility 2-Week Cold Spell (%)													
Romania		65%	70%	5%	65%	70%	5%	62%	66%	4%	34%	38%	4%
Remaining Flexibility 2-Week Cold Spell (%) --- DF													
Romania		65%	70%	5%	65%	70%	5%	54%	58%	4%	32%	36%	4%
Remaining Flexibility Peak day (%)													
France					45%	46%	1%				73%	74%	1%
Netherlands		60%	61%	1%	44%	44%	1%				68%	69%	1%
Romania		43%	47%	4%	42%	47%	4%	32%	36%	4%	14%	18%	4%
Single Largest Infrastructure Disruption (SLID)-Romania													
Romania								5%	1%	-4%	21%	18%	-4%
Ukraine Disruption Curtailment Rate 2-Week Cold Spell (%)													
Romania								-6%	-1%	4%	-28%	-24%	4%
Ukraine Disruption Curtailment Rate 2-Week Cold Spell (%) --- DF													
Romania								-10%	-6%	4%	-29%	-25%	4%
Ukraine Disruption Curtailment Rate Peak Day (%)													
Romania		-11%	-7%	4%	-11%	-7%	4%	-22%	-18%	4%	-38%	-34%	4%

LOW Infrastructure Level – National Trends

Sum of Value		Column Labels												
		2025			2030			2040						
Row Labels		CBG	GBC			NT			NT					
		WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	
Security of Supply														
Remaining Flexibility 2-Week Cold Spell (%)														
Romania		79%	84%	5%	79%	84%	5%	80%	84%	4%	44%	48%	4%	
Remaining Flexibility 2-Week Cold Spell (%) --- DF														
Romania		79%	84%	5%	79%	84%	5%	71%	75%	4%	42%	46%	4%	
Remaining Flexibility Peak day (%)														
Romania		54%	59%	4%	54%	58%	4%	47%	51%	4%	24%	27%	3%	
Single Largest Infrastructure Disruption (SLID)-Romania														
Romania												12%	8%	-3%
Ukraine Disruption Curtailment Rate 2-Week Cold Spell (%)														
Romania												-17%	-13%	4%
Ukraine Disruption Curtailment Rate 2-Week Cold Spell (%) --- DF														
Romania												-18%	-14%	4%
Ukraine Disruption Curtailment Rate Peak Day (%)														
Romania									-7%	-3%	4%	-28%	-25%	3%

ADVANCED Infrastructure Level – National Trends

Sum of Value		Column Labels									
		2025			2040						
Row Labels		CBG			GBC			NT			
		WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	
Security of Supply											
Remaining Flexibility 2-Week Cold Spell (%)											
Romania									92%	97%	4%
Remaining Flexibility 2-Week Cold Spell (%) --- DF											
Romania									90%	94%	4%
Remaining Flexibility Peak day (%)											
Romania		96%	100%	4%	95%	100%	4%	64%	68%	4%	

EXISTING Infrastructure Level – Distributed Energy

Sum of Value		Column Labels												
		2025			2030			2040						
Row Labels		CBG			GBC			DE			DE			
		WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	
Security of Supply														
Remaining Flexibility 2-Week Cold Spell (%)														
Romania		65%	70%	5%	65%	70%	5%							
Remaining Flexibility 2-Week Cold Spell (%) --- DF														
Romania		65%	70%	5%	65%	70%	5%				72%	78%	5%	
Remaining Flexibility Peak day (%)														
Romania		43%	47%	4%	42%	47%	4%	85%	91%	6%	68%	73%	5%	
Ukraine Disruption Curtailment Rate 2-Week Cold Spell (%) --- DF														
Romania												-2%	0%	2%
Ukraine Disruption Curtailment Rate Peak Day (%)														
Romania		-11%	-7%	4%	-11%	-7%	4%							

LOW Infrastructure Level – Distributed Energy

Sum of Value		Column Labels								
		2025			2040					
		CBG			GBC			DE		
Row Labels		WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Security of Supply										
Remaining Flexibility 2-Week Cold Spell (%)										
Romania		79%	84%	5%	79%	84%	5%			
Remaining Flexibility 2-Week Cold Spell (%) --- DF										
Romania		79%	84%	5%	79%	84%	5%	85%	90%	5%
Remaining Flexibility Peak day (%)										
Romania		54%	59%	4%	54%	58%	4%	80%	85%	5%

ADVANCED Infrastructure Level – Distributed Energy

Sum of Value		Column Labels					
		2025					
		CBG			GBC		
Row Labels		WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Security of Supply							
Remaining Flexibility Peak day (%)							
Romania		96%	100%	4%	95%	100%	4%

EXISTING Infrastructure Level – Global Ambition

Sum of Value		Column Labels											
		2025			2030			2040					
Row Labels		CBG			GBC			GA			GA		
		WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Security of Supply													
Remaining Flexibility 2-Week Cold Spell (%)													
Romania		65%	70%	5%	65%	70%	5%	90%	96%	6%	90%	95%	5%
Remaining Flexibility 2-Week Cold Spell (%) --- DF													
Romania		65%	70%	5%	65%	70%	5%	88%	94%	6%	76%	81%	5%
Remaining Flexibility Peak day (%)													
Romania		43%	47%	4%	42%	47%	4%	72%	77%	6%	65%	70%	5%
Ukraine Disruption Curtailment Rate Peak Day (%)													
Romania		-11%	-7%	4%	-11%	-7%	4%				-4%	0%	4%

LOW Infrastructure Level – Global Ambition

Sum of Value		Column Labels											
		2025						2030			2040		
Row Labels		CBG			GBC			GA			GA		
		WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Security of Supply													
Remaining Flexibility 2-Week Cold Spell (%)													
Romania		79%	84%	5%	79%	84%	5%						
Remaining Flexibility 2-Week Cold Spell (%) --- DF													
Romania		79%	84%	5%	79%	84%	5%				90%	96%	6%
Remaining Flexibility Peak day (%)													
Romania		54%	59%	4%	54%	58%	4%	91%	96%	6%	79%	84%	5%

ADVANCED Infrastructure Level – Global Ambition

Sum of Value		Column Labels					
		2025					
Row Labels		CBG			GBC		
		WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Security of Supply							
Remaining Flexibility Peak day (%)							
Romania					96%	100%	4%
					95%	100%	4%

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	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
Security of Supply	Design Case	1.4	0.3	0.6	1.1	0.0	0.0	0.0	0.0	0.0
	2-weeks Cold Spell	8.0	0.0	0.0	6.1	0.0	0.0	0.0	0.0	0.0
	2-weeks Cold Spell DF	8.3	2.4	0.5	6.1	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
	Additional benefit (Promoter)	0	0	0	0	0	0	0	0	0

Comparison between the assessed SCENARIOS

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

Year of assessment		2020									2025								
		EXISTING			LOW			ADVANCED			EXISTING			LOW			ADVANCED		
Benefits (Meur/year)		NT	DE	GA	NT	DE	GA	NT	DE	GA	NT	DE	GA	NT	DE	GA	NT	DE	GA
EU Bill benefits With Tariffs	Reference Supply	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.9	9.1	0.9	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	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	0.1	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	1.5	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.6	1.5	0.0	0.0	0.0	0.0	0.0
	2-weeks Cold Spell	9.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.4	0.0	0.0	10.1	0.0	0.0	0.0	0.0	0.0
	2-weeks Cold Spell DF	10.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.4	4.1	0.8	10.1	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

C.4 Sensitivities analysis on monetised benefits [ENTSOG]

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

Potential impact	Mitigation measures	Related costs included in project CAPEX and OPEX	Additional expected costs

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

Market integration

Depomures project through its withdrawal incremental capacity will contribute to the enhancement of the pressure levels within the national transmission system. One of the key objectives of the project is to increase deliverability pressure regime at the interface with the TSO network. Subsequently, taking into consideration that one of the constraints in developing the interconnectivity levels with neighbouring countries (especially with Hungary) is due to the low transmission levels, the project will have a positive impact on Romania's interconnections, which will further facilitate the country's energy market integration within the European one.

Furthermore, the increased national transmission pressures and, subsequently, the development of Depomures project will facilitate the fulfilment of consumption demands of the national economy, especially in case of peak demands or / and in case of gas supply deficits.

System flexibility

Currently, Romania's storage capacity is mainly used to cover for increased consumption during the winter months, and functions only on a seasonal single cycle (winter-summer). The project development will facilitate the transition from a seasonal cycle to a multicycle operation for Depomures. This fact will improve the activities for all market players, especially for gas producers who can further develop their commercial activities (e.g. Black Sea region). Subsequently, the new natural gas resources within the Black Sea region could facilitate a diversification of supply sources and mitigate Europe's energy dependency on Russian sources, while also ensuring the region's security of supply.

Competition

Currently, according to 2018 National Report issued by the National Energy Regulatory Authority, Romania is highly dependent on the natural gas of Russian sources (approximately 15% of total natural gas sources). Moreover, the 2018 national natural gas production industry (amounting approximately 111.2 TWh in 2018) is mainly dominated by two local producers which cumulated produced about 95% of total production in 2018.

In conclusion, Depomures project could facilitate a diversification of gas supply sources, which will subsequently generate a more competitive environment for the regional natural gas market.

F. Useful Links

The project website: <http://www.depomures.ro/pci.php>

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

PCI Fiche: