

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

Project Group EAST_27 - Grubisno Polje UGS

Reasons for grouping [ENTSO G]

The project group is composed by a stand-alone UGS project in Croatia.

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

Further development of gas storage system in Croatia.



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-N-0347	Gas storage facility Grubisno Polje	PSP d.o.o.	HR	Less-Advanced	-	2025	2025	-

Technical Information

TYNDP Project Code	Injection Capacity Increment [mcm/d]	Withdrawal Capacity Increment [mcm/d]	WGV Increment [mcm]
UGS-N-0347	1.68	2.4	60

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-N-347	UGS Croatia	Podzemno skladište plina d.o.o.	Storage Croatia	16	2025	Transmission Croatia	23	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 “*”.

	UGS-N-347	Total Cost
CAPEX [min, EUR]	45	45
OPEX [min, EUR/y]	0.45	0.45
Range CAPEX (%)	20	-
Range OPEX (%)	20	-

Description of costs and range [Promoter]

Exploration – 7 mil. EUR

1. phase (gas production from original reservoir) – 16 mil. EUR

2. phase (facility upgrade and new wells for underground gas storage) – 25 mil. EUR

Cushion gas – 6 mil. EUR

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 increases the **remaining flexibility** in Croatia and Slovenia, all climatic cases, in Existing infrastructure level and in Croatia in Low and Advanced infrastructure levels, in 2030 and 2040.

This project partially mitigates the risk of demand curtailment in Existing infrastructure level in Croatia in case of disruption of the **single largest infrastructure in Croatia** (Dravaszerdahely – interconnection with Hungary) and in case of disruption of the single largest infrastructures in Slovenia (Murfeld (AT) / Ceršak (SI)).

Distributed Energy

Benefits explained (but Sustainability) [ENTSG]

> Security of Supply:

The project increases the **remaining flexibility** in Croatia, all climatic cases, in Existing infrastructure level.

This project fully mitigates the risk of demand curtailment in Existing infrastructure level in Croatia in case of disruption of the **single largest infrastructures** in Croatia (Dravaszerdahely – interconnection with Hungary) in 2030.

Global Ambition

Benefits explained (but Sustainability) [ENTSG]

> Security of Supply:

The project increases the **remaining flexibility** in Croatia and Slovenia in Existing infrastructure level, all climatic cases and in Croatia in Low infrastructure level, Peak Day.

This project mitigates risk of demand curtailment in Existing infrastructure level in Croatia in case of disruption of the **single largest infrastructures in Croatia** (Dravaszerdahely – interconnection with Hungary) in 2030 partially and fully in 2040. In case of disruption of the **single largest infrastructures in Slovenia** (Murfeld (AT) / Ceršak (SI)) project fully mitigates risk of demand curtailment in Croatia, Existing infrastructure level, 2030.

Sustainability benefits explained [ENTSG]

Project groups EAST_27 does not show significant benefits from fuel switch under flow-based allocation.

Sustainability benefits explained [Promoter]

No additional benefits were provided by the 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					
		2030			2040		
		NT			NT		
Row Labels		WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Security of Supply							
Remaining Flexibility 2-Week Cold Spell (%)							
	Croatia	21%	30%	8%	21%	28%	7%
	Slovenia	71%	89%	18%	67%	82%	15%
Remaining Flexibility 2-Week Cold Spell (%) --- DF							
	Croatia	14%	22%	8%	17%	25%	7%
	Slovenia	57%	75%	18%	61%	76%	15%
Remaining Flexibility Peak day (%)							
	Croatia	10%	17%	8%	14%	21%	7%
	Slovenia	33%	50%	18%	39%	54%	15%
Single Largest Infrastructure Disruption (SLID)-Croatia							
	Croatia	35%	27%	-8%	35%	27%	-7%
Single Largest Infrastructure Disruption (SLID)-Slovenia							
	Croatia	25%	17%	-8%	24%	17%	-7%

LOW 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 (%)							
	Croatia	73%	82%	9%	72%	80%	8%
Remaining Flexibility 2-Week Cold Spell (%) --- DF							
	Croatia	63%	71%	8%	68%	75%	7%
Remaining Flexibility Peak day (%)							
	Croatia	55%	64%	8%	62%	69%	8%

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 (%) --- DF							
	Croatia	96%	100%	4%			
Remaining Flexibility Peak day (%)							
	Croatia	87%	95%	8%	98%	100%	2%

EXISTING 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 (%)							
	Croatia	66%	78%	11%			
Remaining Flexibility 2-Week Cold Spell (%) --- DF							
	Croatia	55%	66%	11%	81%	92%	11%
Remaining Flexibility Peak day (%)							
	Croatia	51%	62%	11%	89%	100%	11%
Single Largest Infrastructure Disruption (SLID)-Croatia							
	Croatia	8%	0%	-8%			

LOW Infrastructure Level – Distributed Energy

No benefits.

ADVANCED Infrastructure Level – Distributed Energy

No benefits.

EXISTING Infrastructure Level – Global Ambition

Sum of Value		Column Labels					
		2030			2040		
		GA			GA		
Row Labels		WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Security of Supply							
Remaining Flexibility 2-Week Cold Spell (%)							
	Croatia	60%	71%	11%	70%	81%	11%
Remaining Flexibility 2-Week Cold Spell (%) --- DF							
	Croatia	45%	55%	10%	64%	75%	11%
Remaining Flexibility Peak day (%)							
	Croatia	39%	49%	10%	55%	66%	11%
	Slovenia	73%	81%	7%			
Single Largest Infrastructure Disruption (SLID)-Croatia							
	Croatia	16%	7%	-10%	7%	0%	-7%
Single Largest Infrastructure Disruption (SLID)-Slovenia							
	Croatia	4%	0%	-4%			
Ukraine Disruption Curtailment Rate Peak Day (%)							
	Croatia	-2%	0%	2%			

LOW Infrastructure Level – Global Ambition

Sum of Value		Column Labels		
		2030		
		GA		
Row Labels		WITHOUT	WITH	DELTA
Security of Supply				
Remaining Flexibility Peak day (%)				
	Croatia	97%	100%	3%

ADVANCED Infrastructure Level – Global Ambition

No benefits.

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.

Benefits (Meur/year)		EXISTING			LOW			ADVANCED		
		NATIONAL TRENDS	DISTRIBUTED ENERGY	GLOBAL AMBITION	NATIONAL TRENDS	DISTRIBUTED ENERGY	GLOBAL AMBITION	NATIONAL TRENDS	DISTRIBUTED ENERGY	GLOBAL AMBITION
EU Bill benefits	Reference Supply	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
With Tariffs	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	0.4	0.1	0.4	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
	2-weeks Cold Spell DF	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
	Additional benefit (Promoter)	0	0	0	0	0	0	0	0	0

Comparison between the assessed SCENARIOS

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	0.0	0.0	0.0	0.0	0.0	0.0	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	0.4	0.3	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.3	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

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 ENTSG and this condition needs to be proved and justified.

Other benefits explained

No other benefits were provided by the promoters.

F. Useful Links

No links were provided by the promoters.