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

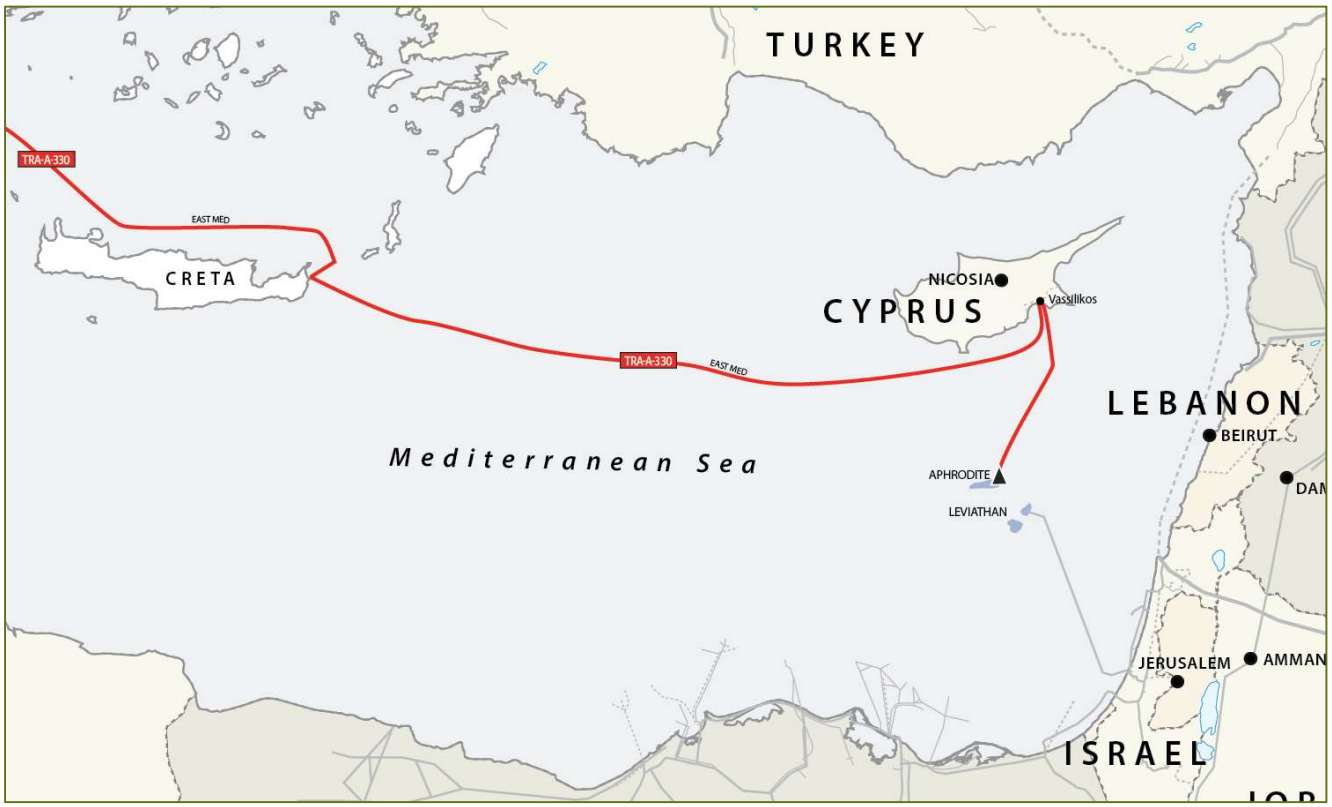
Project Group SGC_05B - Gas supply chain Mediterranean (including off-shore section of Poseidon pipeline)

Reasons for grouping [ENTSOG]

The project group represents a gas supply chain which aims at connecting the East Mediterranean gas resources to the European gas system. The corridor starting point is the offshore gas field production in Levantine Basin (Cyprus and Israel) while the destination point is Greece and southern Italy (via off-Shore section of Poseidon Pipeline) and further north towards Europe via Matagiola - Massafra pipeline (TRA-N-1195) and Adriatica Line (TRA-N-7).

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

The primary objective of the project group is to provide a multi-source option for the completion of the Southern Gas Corridor by providing a permanent connection to the recently discovered gas reserves in the Levantine Basin. Specific objectives:
(i) strengthening security of supply though diversification of routes and sources for the EU market, (ii) enhancing market integration and competition, (iii) enabling gasification of Cyprus and Crete, and (iv) providing a permanent connection of the gas reserves in the Levantine Basin with European gas markets, thus enabling additional supplies from indigenous EU sources and contributing to EU gas import dependence reduction, (v) in particular Matagiola – Massafra and Adriatica Line are network developments having a character of generality, required to create new entry capacity in the south/centre of Italy to intake additional gas quantities from any new or existing entry points located from Sicily to the middle Adriatic Sea (for Adriatica Line) and, in particular, from Apulia region (for Matagiola –Massafra pipeline).


TURKEY
TRA-A-330
EAST MED
CRETA
NICOSIA
CYPRUS
Vassilikos
TRA-A-330
EAST MED
LEBANON
BEIRUT
Mediterranean Sea
APHRODITE
LEVIATHAN
JERUSALEM
AMMAN
ISRAEL


ALBANIA
TAP
POSEIDON
Massafra
TRA-N-1195
Brindisi
Matagiola
Taranto
Otranto
POSEIDON
TRA-A-010
Florovouni
GREECE
Gulf of Saros
Aegean Sea
EAST MED
Ionian Sea
ATHENS
TRA-A-330
TRA-N-1091
Megalopoli
TRA-A-330
EAST MED
CRETA


Bologna
TRA-N-007
ADRIATICA PIPELINE
L'Aquila
ITALY
Adriatic Sea
Tyrrhenian Sea
Ionian Sea
AND
HERZEGOVINA
SERBIA
SARAJEVO
IAP
MONTENEGRO
PODGORICA
PRISTIN
UNMI
KOSOVO
SKO
N
MAC
TIRANA
ALBANIA
Massafra
TRA-N-1195
Brindisi
Matagiola
Taranto
TAP
Otranto
POSEIDON
TRA-A-010
Florovouni
GR
EASTMED

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-0010	Poseidon Pipeline (Off-shore section only)	IGI Poseidon S.A.	GR	Advanced	7.3.3	2022	2025	On time
TRA-N-0007	Development for new import from the South (Adriatica Line)	Snam Rete Gas S.p.A.	IT	Less-Advanced	7.3.4	2026	2026	Rescheduled
TRA-A-0330	EastMed Pipeline	IGI Poseidon S.A.	GR	Less-Advanced	7.3.1	2025	2025	On time
TRA-N-1091	Metering and Regulating station at Megalopoli	DESFA S.A.	GR	Less-Advanced	7.1.3	2025	2025	Rescheduled
TRA-N-1195	Matagiola - Massafra pipeline	Snam Rete Gas	IT	Less-Advanced	7.3.4	2026	2026	Rescheduled

Technical Information

TYNDP Project Code	Diameter [mm]	Length [km]	Compressor Power [MW]
TRA-A-0010	813	210	75
TRA-A-0330	1070	236	-
TRA-A-0330	610	165	-
TRA-A-0330	660	421	120
TRA-A-0330	1070	317	-
TRA-A-0330	660	732	100
TRA-N-0007	1200	430	33
TRA-N-1091*	-	-	-
TRA-N-1195	1400	80	-

* No technical information is displayed as project is related to investment in Metering and Regulating station.

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-10	Otranto - IT / IGI Poseidon	IGI Poseidon S.A.	Transmission ITGI Poseidon Greece	380	2022	Transmission Italy (PSV) (Southern Projects)	160	2022
TRA-A-10	Otranto - IT / IGI Poseidon	IGI Poseidon S.A.	Transmission ITGI Poseidon Greece	250	2025	Transmission Italy (PSV) (Southern Projects)	-	-
TRA-A-10	East Med / Thesprotia (Poseidon)	IGI Poseidon S.A.	Transmission East Med Greece	-	-	Transmission ITGI Poseidon Greece	320	2025
TRA-A-330	East Med / Crete (GR)	IGI Poseidon S.A.	Transmission East Med Greece	20	2025	Transmission Greece (Crete)	190	2025

TRA-A-330	East Med / Cyprus (CY)	IGI Poseidon S.A.	Transmission East Med Greece	30	2025	Transmission Cyprus	-	-
TRA-A-330	East Med / Peloponnesus (GR)	IGI Poseidon S.A.	Transmission East Med Greece	90	2025	Transmission Greece	-	-
TRA-A-330	East Med / Thesprotia (Poseidon)	IGI Poseidon S.A.	Transmission ITGI Poseidon Greece	350	2025	Transmission East Med Greece	-	-
TRA-A-330	East Med / Cyprus/Israeli Production Field	IGI Poseidon S.A.	NP Send-out Cyprus	-	-	Transmission East Med Greece	330	2025
TRA-N-1091	East Med / Peloponnesus (GR)	DESFA S.A.	Transmission East Med Greece	-	-	Transmission Greece	90	2025
TRA-N-1195	Melendugno - IT / TAP	Snam Rete Gas S.p.A.	Transmission Trans-Adriatic Pipeline Albania	-	-	Transmission Italy (PSV) (Southern Projects)	310	2026
TRA-N-1195	Otranto - IT / IGI Poseidon	Snam Rete Gas S.p.A.	Transmission ITGI Poseidon Greece	-	-	Transmission Italy (PSV) (Southern Projects)	310	2026
TRA-N-7	Italy Mezzogiorno Import Fork	Snam Rete Gas S.p.A.	Transmission Italy (PSV) (Southern Projects)	-	-	Transmission Italia (PSV)	264	2026

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-10	TRA-A-330	TRA-N-1091	TRA-N-1195	TRA-N-7	Total Cost
CAPEX [min, EUR]	1103.5*	5200	7.5	240	1384	**7935**
OPEX [min, EUR/y]	52*	90	0.15	0.11	4.4	**146.7**
Range CAPEX (%)	30*	30	25	30	30	-
Range OPEX (%)	30*	30	25	30	30	-

Description of costs and range [Promoter]

Costs represent best estimations available to project promoters at the moment of TYNDP 2020 call for projects (mid-2019), and the actual results may differ from the forecasted amounts. Since submission of the project information, further detailed analysis has been carried out and costs appraisals might have changed. CAPEX ranges take into account the maturity of the projects and the cost contingencies which could reasonably be anticipated at the moment of TYNDP 2020 data collection.

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 **increases the remaining flexibility** of Italy and Greece thanks to the new interconnections between Italy, Greece and Cyprus for all infrastructure levels and climatic stress conditions. In addition, also some European countries improve their remaining flexibility in 2040 under peak day climatic stress conditions by helping less Italy, such as, France, Germany, or the Netherlands. In addition, the project group also **increases the remaining flexibility** in Cyprus in the advanced infrastructure level (as in the other infrastructure levels no gas infrastructure is considered for this country).

Regarding disruptions of the main infrastructure:
In the case of **SLID-Greece**, the project group **fully mitigates the risk of demand curtailment** in Greece from 2025 under all infrastructure levels. Additionally, in the advanced infrastructure, the project group **fully mitigates the risk of demand curtailment** in North Macedonia and Greece from 2030. Greece and North Macedonia cooperate and share the risk of demand curtailment thanks to the realization of the interconnection between these both countries.
Additionally, also in the advanced infrastructure level, in case of disruption of the largest Infrastructure in Cyprus (SLID-CY indicator), the project group **mitigates the risk of demand curtailment** in 2030 and 2040.

> Competition:

By further reducing the LICD indicator value, the project group **contributes to the diversification of entry points** (precondition for competition and arbitrage) in Italy from 2025 thanks to the new interconnection with Greece and in Greece from 2030 thanks to the new interconnection with Cyprus.

By enabling the connection of Europe to the new supply sources mainly from East Mediterranean Basin and potentially from Caspian region (through Turkey), the project group also **allows to reduce the dependence from the two main supply sources**: **Russia and LNG.** In the case of Russian dependence, in the existing infrastructure level, the project group reduces dependence from Russian gas in Greece, Italy, Switzerland, Luxembourg, Belgium, France from 2030. Such benefits can further spread in the low and advanced infrastructure levels to different European countries thanks to the FID and advanced-status projects considered in each infrastructure level. Consequently, in the low infrastructure level, the project group together with the interconnection Greece-Bulgaria project (IGB) reduces dependence from Russian gas in Bosnia and Herzegovina, Bulgaria, Greece, North Macedonia and Serbia in 2030 and 2040.

Whereas in the case of LNG dependence, the project group reduces the dependence also for almost whole Europe in 2030 in the existing infrastructure level. In the low and advanced infrastructure levels there is reduced impact in 2040 because of the lower demand and higher National Production, and therefore any country shows dependence on LNG.

The project group has a significant impact on Cyprus, **contributing to remove the country from isolation from the rest of Europe** and connecting this country not only to a **new supply source from the East Mediterranean Basin, but also to the existing gas supply sources arriving to Europe** in all infrastructure levels from 2030. In the same way, the project group increases the access to the new supply source from the East Mediterranean Basin also in other European countries (such as Italy and Greece). The fact that the Commercial Supply Access indicator (CSA) does not show an increase in the number of supply sources for these countries is linked to the standard threshold applied by ENTSOG to all the supply sources.

Additionally, in the existing and low infrastructure levels, the project group **increases the access to Algerian gas** in Greece and North Macedonia (only existing level) from 2030, thanks to the new interconnection which allow these countries to increase their diversification through Italy.

> **Market integration:**

The project group has a **significant positive impact in terms of supply cost savings** for Europe. In the reference supply price configuration this can be estimated around 432 MEur/y (on average) in the existing infrastructure level. Such benefits are driven by the fact that the project allows some European countries such as Italy and Greece to connect to new supply source of gas from the East Mediterranean Basin. Additional benefits compared to the reference situation can be observed in the case of LNG and Russian supplies expensive (551 and 511 MEUR/y on average respectively). Such benefits are driven by the fact that the Project Group allows Greece and Italy can rely on alternative sources in case of more expensive Russian and LNG gas prices.

Distributed Energy

Benefits explained (but Sustainability) [ENTSOG]

> **Security of Supply:**

The project group **increases the remaining flexibility** of the Greek and Italian gas networks thanks to the new interconnection with Cyprus from 2030 for all infrastructure levels and climatic stress conditions. In addition, the project group also slightly improves remaining flexibility in Germany in 2030 under peak day climatic stress conditions as less cooperation with Italy is needed thanks to the project group.

Additionally, the project group also **increases the remaining flexibility** in North Macedonia from 2030 in the advanced infrastructure level thanks to the interconnection between Greece and North Macedonia considered in this infrastructure level that allows cooperation between both countries.

Regarding disruptions of the main infrastructure:
In the case of **SLID-Greece**, the project group **fully mitigates the risk of demand curtailment** in Greece in 2025 and 2030 for all infrastructure levels. Additionally, in the advanced infrastructure level, the project group fully mitigates the risk of demand curtailment in North Macedonia in 2025 and 2030. Greece and North Macedonia cooperate and share the risk of demand curtailment thanks to the realization of the interconnection between these both countries.
Additionally, also in the advanced infrastructure level, in case of disruption of the largest Infrastructure in Cyprus (SLID-CY indicator), the project group **reduces the risk of demand curtailment** in 2030 and 2040.

> **Competition:**

Further reducing the LICD indicator value, the project groups **contributes to the diversification of entry points** (precondition for competition and arbitrage) in Italy from 2025 thanks to the new interconnection with Greece and in Greece from 2030 thanks to the new interconnection with Cyprus.

By enabling the connection of Europe to the new supply sources mainly from East Mediterranean Basin and potentially from Caspian region (through Turkey), the project group also **allows to reduce the dependence from the two main supply sources: Russia and LNG.**
In the case of Russian dependence, in the existing infrastructure level, the project group reduces dependence from Russian gas in Italy and Switzerland from 2030. Such benefits can further spread among Europe with the implementation of FID and advanced projects, and consequently, in the low infrastructure level together with IGB interconnection, the project group reduces dependence from Russian gas in Bosnia and Herzegovina, Bulgaria, Greece, North Macedonia, Serbia, Belgium and France in 2030.
In the advanced infrastructure level, in 2030, most of the European countries decrease their Russian dependence with large access to their national production and less cooperation between countries thanks to this new flow from Cyprus and Azerbaijan.
In the case of LNG dependence, the project group reduces the dependence also for almost whole Europe in 2030 in all infrastructure levels. In 2040 there is not impact in any infrastructure level because of lower demand and higher National Production, any country shows dependence from LNG.
The project group has a significant impact on Cyprus, **contributing to remove the country from isolation from the rest of Europe** and connecting this country not only to a **new supply source from the East Mediterranean Basin, but also to the existing gas supply sources arriving to Europe** in all infrastructure levels from 2030. In the same way, the project group increases the access to the **new supply source from the East Mediterranean Basin** also in other European countries (such as Italy and Greece).

Additionally, in the existing and low infrastructure levels, the project group **increases the access to Algerian gas** in Greece and North Macedonia in 2030, thanks to the new interconnection which allow these countries to increase their diversification through Italy.

> **Market integration:**

The project group has a **significant positive impact in terms of supply cost savings** for Europe from 2030. The lower benefits compared to National Trend and Global Ambition scenarios is related to a lower level of demand as well as higher level of national production (the latter contributing to decrease the overall cost of European gas supply).

In the reference supply price configuration this can be estimated around 371 MEur/y (on average) in the existing infrastructure level. Such benefits are mainly driven by the fact that the project allows some European countries such as Italy and Greece to connect to new supply source of gas from the East Mediterranean Basin. Additional benefits compared to the reference situation can be observed in the case of Russian and LNG supplies expensive (441 and 421 MEUR/y on average in the existing infrastructure level respectively). Such benefits are driven by the fact that the project group allows South-European countries such as Greece and Italy can rely on alternative sources in case of more expensive Russian and LNG gas prices.

Global Ambition

Benefits explained (but Sustainability) [ENTSOG]

> **Security of Supply:**

In GA scenario Greece faces the risk of demand curtailment under no disruption and climatic stress conditions and even higher risk under infrastructure or supply route disruptions. This is explained by the higher gas demand in Greece which is linked to the lower level of electrification assumed in this demand scenario.
In the existing infrastructure level, the project **group fully mitigates risk of demand curtailment** in Greece in 2030 for 2-week dunkelflaute and for peak-day. In the advanced infrastructure level, the project group **fully mitigates the risk of demand curtailment** in Greece and North Macedonia in peak-day climatic stress conditions in 2030. The interconnection between Greece and North Macedonia considered in this infrastructure level allows for cooperation between both countries and as a result, they share the risk of demand curtailment.

The project group also **increases the remaining flexibility** in Greece and Italy thanks to the new interconnection with Cyprus from 2030 for all infrastructure levels and all climatic stress conditions. Moreover, from 2030 also some European countries slightly improve their remaining flexibility in peak day climatic stress conditions by helping less Italy, such as, France, Germany, and Netherlands.
In the advanced infrastructure level, the project group also **increases the remaining flexibility** in North Macedonia from 2030 in thanks to the interconnection between Greece and North Macedonia considered in this infrastructure level that allows cooperation between both countries.

In case of **Ukrainian route disruption**, in the existing infrastructure level, the project group **fully mitigates the risk of demand curtailment** in 2030, except for Italy, Greece and Slovenia where some disruption remains.
Regarding disruptions of the main infrastructure:
In the case of SLID-Greece, in the existing and low infrastructure levels, the project group **fully mitigates the risk of demand curtailment** in Greece and in the advanced infrastructure level, the project group **fully mitigates the risk of demand curtailment** in North Macedonia from 2030, thanks to the realization of the interconnection between these both countries included in the advanced level.

In the case of disruption of main infrastructure in Slovakia and Austria, as also described in case of Ukrainian disruption, in the existing infrastructure level, the project group fully **mitigates the risk of demand curtailment** in 2030 in Austria, Italy, Slovenia and Switzerland for SLID-Austria and **reduces the risk of demand curtailment** in 2030 in Austria, Czech Republic and Slovakia.

In the case of SLID-Italy, in the existing infrastructure level the project group fully **mitigates the risk of demand curtailment** in 2030 in Italy and Switzerland.

Also, in the advanced infrastructure level, in case of disruption of the largest Infrastructure in Cyprus (SLID-CY indicator), the project group **mitigates the risk of demand curtailment** from 2030.

> **Competition:**

Further reducing the LICD indicator value, the project groups **contributes to the diversification of entry points** (precondition for competition and arbitrage) in Italy from 2025 thanks to the new interconnection with Greece and in Greece from 2030 thanks to the new interconnection which Cyprus.

By enabling the connection of Europe to the new supply sources mainly from East Mediterranean Basin and potentially from Caspian region (through Turkey), the project group also **allows to reduce the dependence from the two main supply sources: Russia and LNG.** In the case of Russian dependence, in the existing infrastructure level, the project group reduces dependence from Russian gas in Italy and Switzerland from 2030 and in South-East Europe in 2030. Such benefits can further spread in the low and advanced infrastructure levels, and consequently, further reduce dependence to Russian gas in South East Europe in these infrastructure levels thanks to FID and advanced projects such as IGB interconnection, more specifically it reduces dependence in Bosnia and Herzegovina, Bulgaria, Greece, North Macedonia, Serbia, Italy and Switzerland from 2030.

In the case of LNG dependence, the project group reduces the dependence also for almost whole Europe in 2030 in all infrastructure levels. In 2040 there is no impact in any infrastructure level because of the lower demand and higher National Production, any country shows dependence from LNG.
The project group has a significant impact on Cyprus, **contributing to remove the country from isolation from the rest of Europe** and connecting this country not only to a **new supply source from the East Mediterranean Basin, but also to the existing gas supply sources arriving to Europe** in all infrastructure levels from 2030. In the same way, the project group increases the access to the new supply source from the East Mediterranean Basin also in other European countries (i.e., Italy and Greece). The fact that the Commercial Supply Access indicator (CSA) does not show an increase in the number of supply sources for these countries is linked to the standard threshold applied by ENTSOG to all the supply sources.

Additionally, in the existing and low infrastructure level, the project group **increases the access to Algerian gas** in Greece and North Macedonia in 2030, thanks to the new interconnection which allow these countries to increase their diversification through Italy.

> **Market integration:**

The project group has a **significant positive impact in terms of supply cost savings** for Europe from 2030 In the reference supply price configuration this can be estimated around 484 MEur/y (on average) in the existing infrastructure level. Such benefits are mainly driven by the fact that the project allows some European countries such as Italy and Greece to connect to new supply source of gas from the East Mediterranean Basin. Additional benefits compared to the reference situation can be observed in the case of LNG and Russian supplies expensive (590 and 572 MEUR/y on average in the existing infrastructure level respectively). Such benefits are driven by the fact that the Project Group allows Greece and Italy can rely on alternative sources in case of more expensive Russian and LNG gas prices.

Sustainability benefits explained [ENTSOG]

The ENTSOG analysis shows that, in the yearly assessment, the projects group realisation enhance the replacement of more polluting fuels with natural gas, which enable fuel switch savings between 0.9-7.5 MEUR/y under existing infrastructure level, between 0.8-8.3 MEUR/y under low infrastructure level and between 0.7-7.3 under advanced 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	90 / 134	203 / 222	370 / 406	83 / 122	207 / 225	335 / 368	66 / 85	146 / 156	211 / 234
	Lower Tariff Sensitivity	94 / 138	145 / 232	308 / 415	83 / 125	207 / 227	335 / 370	66 / 87	145 / 157	210 / 234
	Higher Tariff Sensitivity	11 / 44	62 / 69	169 / 185	81 / 120	203 / 219	323 / 355	63 / 81	140 / 150	193 / 214

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.
Based on the resulting flows under expensive Caspian gas supply configuration, most of the benefits are in the period 2030-2040 and in Distributed Energy and Global Ambition scenarios.
There are no benefits before 2030 since. Given the maturity status of the projects (advanced) those benefits are captured by other infrastructures included in existing or low infrastructure levels. The project group contributes to fuel switch in Italy (fuel switch happening mostly in the transport sector).
TYNDP 2020 ENTSOG and ENTSO-E scenario storylines have identified for Distributed Energy and Global Ambition scenarios the need for hydrogen imports to satisfy the hydrogen demand that cannot be covered by European production of hydrogen (e.g., through power-to-gas). In the future, hydrogen demand not satisfied by locally produced hydrogen could be covered by directly imported hydrogen through hydrogen-compatible pipelines and/or by natural gas through natural gas pipelines. 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 SGC_05B, such benefits represent, on average, 40% of the benefits from fuel switch in Distributed Energy and Global Ambition scenarios in 2030 and 2040.
It must be noted that the adopted approach to measure and allocate sustainability savings underestimate the benefits stemming from the realisation of this project since do not include benefits related to the gasification of Cyprus. These benefits are included in this Project Fiche as part of the project promoters' contribution.

Sustainability benefits explained [Promoter]

In addition to ENTSOG's analysis on Sustainability, the promoter complements this analysis with the following country-specific information.
EastMed Pipeline (TRA-N-0330) will enable gasification of Cyprus, through the relevant offtake. These benefits have been included in the relevant tables in section C.3.
According to the TYNDP 2020 scenarios, gas in Cyprus will be used primarily for electricity generation (only in 2040 the Distributed Energy and Global Ambition scenarios indicate small use of gas in final demand). Since natural gas will be a new fuel for the country, all foreseen gas demand will replace other fossil fuels. Currently fuel oil is the dominant fuel used at the conventional power plants; in 2017 and 2018 70% of electricity was generated using fuel oil, and 30% using diesel (source: Eurostat). If gas is not available in Cyprus, a ratio of fuel oil to diesel of 70/30 is assumed to remain constant for the conventional power plants.
Due to the difference in efficiency between using natural gas and oil for electricity generation, the oil energy input at power plants substituted will be higher than the corresponding gas input. The existing oil-fired power plants in Cyprus have an average efficiency factor of 37% (source: Electricity Authority of Cyprus), while for the use of natural gas at the combined cycle gas-fired power plants, an efficiency factor of 58% is assumed. The resulting fuel replacement is presented in the Table below.

Table 1: Fuel switching to gas per scenario

Unit: GWd/yr	2025		2030			2040		
	CBG	GBC	NT	DE	GA	NT	DE	GA
Gas demand (ENTSOG TYNDP 2020)	10,658	10,634	12,410	5,625	4,812	5,459	3,059	2,036
Substituted fuel oil input (based on efficiency difference)	16,663	16,626	19,402	8,794	7,523	8,535	4,783	3,183

The reduction of CO2 emissions is monetized based on the lower carbon footprint for gas compared to the fuel oil substituted, and the CO2 prices forecasted for the period of analysis. The benefits of fuel switching are calculated based on the total cost of using gas input vis-à-vis using the corresponding fuel oil costs. The evolution of costs of natural gas, oil and CO2 are sourced from the fuel price assumptions included in the TYNDP 2020 scenarios.
The calculated benefits for CO2 reduction savings and fuel switching from gasification of Cyprus are presented in the Table below.

Table 2: Monetized benefits for Cyprus gasification

	2025		2030			2040		
Unit: Mil. EUR	CBG	GBC	NT	DE	GA	NT	DE	GA
CO2 Emission Saving	57.1	138.8	78.1	69.5	39.3	95.4	71.3	38.0
Fuel Switch Saving	649.0	647.5	834.7	378.3	323.7	430.9	241.5	160.7

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 Trend

	2025						2030			2040		
	CBG			GBC			NT			NT		
Row Labels	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Competition												
Commercial Supply Access (CSA)												
Croatia							2	3	1			
Greece							3	4	1	3	4	1
North Noth Macedonia							2	3	1	2	3	1
LNG and Interconnection Capacity Diversification (LICD)												
Greece							10,000	5,488	-4,512	10,000	5,287	-4,713
Italy	3,736	3,156	-580	3,736	3,156	-580	3,736	2,806	-930	3,736	2,806	-930
MASD-LNGall												
Austria										7%	4%	-3%
Bosnia Herzegovina							8%	5%	-3%			
Bulgaria							8%	5%	-3%	7%	4%	-3%
Czech Republic							8%	5%	-3%	7%	4%	-3%
Estonia							8%	5%	-3%	7%	4%	-3%
Finland							8%	5%	-3%	7%	4%	-3%
France										7%	5%	-2%
Germany							8%	5%	-3%	7%	4%	-3%
Greece							8%	5%	-3%	7%	4%	-3%
Hungary							8%	5%	-3%	7%	4%	-3%
Ireland							8%	5%	-3%			
Italy										7%	4%	-3%
Latvia							8%	5%	-3%	7%	4%	-3%
Lithuania							8%	5%	-3%	7%	4%	-3%
North Noth Macedonia							8%	5%	-3%	7%	4%	-3%
Poland							8%	5%	-3%	8%	5%	-3%
Portugal							9%	7%	-2%	8%	5%	-3%
Romania							8%	5%	-3%	7%	4%	-3%
Serbia							8%	5%	-3%			
Slovakia							8%	5%	-3%	7%	4%	-3%
Spain							9%	6%	-3%	8%	5%	-3%
United Kingdom							8%	5%	-3%			
MASD-RU												
Belgium							5%	0%	-5%			
France							6%	0%	-6%			
Greece							4%	0%	-4%			
Italy							12%	0%	-12%	11%	0%	-11%
Luxembourg							6%	0%	-6%			
Switzerland							13%	0%	-13%	11%	0%	-11%

Row Labels	2025						2030			2040		
	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 (%)												
Greece							67%	100%	33%	51%	87%	37%
Italy							75%	85%	10%	58%	66%	9%
Remaining Flexibility 2-Week Cold Spell (%) --- DF												
Greece							34%	67%	33%	28%	59%	31%
Italy							72%	82%	10%	55%	64%	9%
Remaining Flexibility Peak day (%)												
France										73%	83%	10%
Germany							35%	37%	3%	26%	28%	1%
Greece							26%	57%	31%	22%	52%	30%
Italy							44%	52%	8%	36%	44%	7%
Netherlands										68%	78%	10%
Single Largest Infrastructure Disruption (SLID)-Greece												
Greece	34%	0%	-34%	46%	0%	-46%	43%	0%	-43%	45%	0%	-45%

LOW Infrastructure Level – National Trends

Row Labels	2025						2030			2040		
	CBG			GBC			NT			NT		
	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Competition												
Commercial Supply Access (CSA)												
Greece							2	3	1	2	3	1
LNG and Interconnection Capacity Diversification (LICD)												
Greece							5,634	3,754	-1,879	5,406	3,581	-1,826
Italy	3,736	3,156	-580	3,736	3,156	-580	3,736	2,806	-930	3,736	2,806	-930
MASD-LNGall												
Austria							5%	2%	-3%			
Bosnia Herzegovina										4%	1%	-3%
Bulgaria										4%	1%	-3%
Croatia							5%	2%	-3%	5%	2%	-3%
Czech Republic							5%	2%	-3%	4%	1%	-3%
Denmark							5%	2%	-3%			
Estonia										4%	1%	-3%
Finland										4%	1%	-3%
France										5%	2%	-3%
Germany							5%	2%	-3%	4%	1%	-3%
Greece							5%	2%	-3%	4%	1%	-3%
Hungary							5%	2%	-3%	4%	1%	-3%
Ireland										5%	2%	-3%
Italy							5%	2%	-3%	4%	2%	-2%
Latvia										4%	1%	-3%
Lithuania										4%	1%	-3%
North Noth Macedonia							5%	2%	-3%	5%	1%	-4%
Poland							5%	2%	-3%	5%	2%	-3%
Portugal										5%	2%	-3%
Romania							5%	2%	-3%	4%	1%	-3%
Serbia										4%	1%	-3%
Slovakia							5%	2%	-3%	4%	1%	-3%
Slovenia							5%	2%	-3%	5%	2%	-3%
Spain										5%	2%	-3%
Sweden										5%	2%	-3%
Switzerland							5%	2%	-3%			
United Kingdom										5%	2%	-3%
MASD-RU												
Belgium							6%	1%	-5%	5%	0%	-5%
Bulgaria							12%	9%	-3%			
France							7%	0%	-7%	4%	0%	-4%
Greece							5%	0%	-5%	5%	0%	-5%
Italy							11%	0%	-12%	5%	0%	-5%
Luxembourg							7%	1%	-6%	5%	0%	-5%
Switzerland							12%	1%	-11%	5%	0%	-5%

Row Labels	2025 GBC WITHOUT	2025 GBC WITH	2025 GBC DELTA	2030 NT WITHOUT	2030 NT WITH	2030 NT DELTA	2040 NT WITHOUT	2040 NT WITH	2040 NT DELTA
Security of Supply									
Remaining Flexibility 2-Week Cold Spell (%)									
Greece							86%	100%	14%
Italy				87%	97%	10%	68%	77%	9%
Remaining Flexibility 2-Week Cold Spell (%) --- DF									
Greece				66%	98%	33%	58%	89%	31%
Italy				85%	94%	10%	65%	74%	9%
Remaining Flexibility Peak day (%)									
France							73%	84%	11%
Germany				37%	38%	1%	26%	30%	4%
Greece				56%	87%	31%	51%	81%	30%
Italy				54%	62%	8%	46%	53%	7%
Netherlands							67%	78%	11%
Single Largest Infrastructure Disruption (SLID)-Greece									
Greece	18%	0%	-18%	14%	0%	-14%	16%	0%	-16%

ADVANCED Infrastructure Level – National Trend

Row Labels	2025 CBG WITHOUT	2025 CBG WITH	2025 CBG DELTA	2025 GBC WITHOUT	2025 GBC WITH	2025 GBC DELTA	2030 NT WITHOUT	2030 NT WITH	2030 NT DELTA	2040 NT WITHOUT	2040 NT WITH	2040 NT DELTA
Competition												
Commercial Supply Access (CSA)												
Cyprus							1	3	2	1	3	2
Greece							4	5	1	2	3	1
North Noth Macedonia							4	5	1	2	3	1
LNG and Interconnection Capacity Diversification (LICD)												
Greece							5,634	3,754	-1,879	5,406	3,581	-1,826
Italy	3,565	3,025	-540	3,565	3,025	-540	3,565	2,702	-863	3,565	2,702	-863
MASD-LNGall												
Austria							3%	0%	-3%			
Bosnia Herzegovina							3%	0%	-3%	3%	0%	-3%
Bulgaria										3%	0%	-3%
Croatia							3%	0%	-3%	3%	0%	-3%
Cyprus							100%	12%	-88%	100%	0%	-100%
Czech Republic							3%	0%	-3%	3%	0%	-3%
Denmark							3%	0%	-3%	3%	0%	-3%
Estonia										3%	0%	-3%
Finland										3%	0%	-3%
France										4%	1%	-3%
Germany							3%	1%	-2%	3%	0%	-3%
Greece							3%	0%	-3%	3%	0%	-3%
Hungary							3%	0%	-3%	3%	0%	-3%
Ireland										4%	1%	-3%
Italy							3%	0%	-3%			
Latvia										3%	0%	-3%
Lithuania										3%	0%	-3%
Malta							3%	0%	-3%			
North Noth Macedonia							3%	0%	-3%	3%	0%	-3%
Poland							3%	0%	-3%	3%	0%	-3%
Romania							3%	0%	-3%	3%	0%	-3%
Serbia							3%	0%	-3%	3%	0%	-3%
Slovakia							3%	0%	-3%	3%	0%	-3%
Slovenia										4%	1%	-3%
Spain										4%	1%	-3%
Sweden							3%	0%	-3%			
MASD-RU												
Austria							20%	17%	-3%	21%	17%	-4%
Belgium							19%	16%	-3%	20%	17%	-3%
Bosnia Herzegovina							19%	16%	-3%	21%	17%	-4%
Bulgaria							19%	16%	-3%	21%	17%	-4%
Croatia							19%	16%	-3%	21%	17%	-4%
Czech Republic							20%	17%	-3%	21%	17%	-4%
Denmark							20%	16%	-4%	21%	17%	-4%
Estonia							19%	16%	-3%	20%	16%	-4%
Finland							19%	16%	-3%	20%	17%	-3%
France							19%	16%	-3%	20%	17%	-3%
Germany							20%	17%	-3%	21%	17%	-4%
Greece							19%	16%	-3%	20%	17%	-3%
Hungary							19%	16%	-3%	21%	17%	-4%
Italy							20%	16%	-4%	20%	17%	-3%
Latvia							19%	16%	-3%	20%	16%	-4%
Lithuania							19%	16%	-3%	20%	16%	-4%
Luxembourg							19%	16%	-3%	20%	17%	-3%
Netherlands							20%	16%	-4%	20%	17%	-3%
North Noth Macedonia							19%	16%	-3%	20%	17%	-3%
Poland							20%	17%	-3%	21%	17%	-4%
Romania							19%	16%	-3%	21%	17%	-4%
Serbia							19%	16%	-3%	21%	17%	-4%
Slovakia							20%	17%	-3%	21%	17%	-4%
Slovenia							20%	17%	-3%	21%	17%	-4%
Sweden							20%	16%	-4%	21%	17%	-4%
Switzerland							20%	16%	-4%	20%	17%	-3%

Row Labels	2025 GBC WITHOUT	2025 GBC WITH	2025 GBC DELTA	2030 NT WITHOUT	2030 NT WITH	2030 NT DELTA	2040 NT WITHOUT	2040 NT WITH	2040 NT DELTA
Security of Supply									
Remaining Flexibility 2-Week Cold Spell (%)									
Cyprus				52%	100%	48%			
Greece							69%	100%	31%
Italy				86%	95%	9%	65%	75%	10%
Remaining Flexibility 2-Week Cold Spell (%) --- DF									
Cyprus				43%	100%	57%			
Greece				62%	95%	33%	37%	69%	31%
Italy				83%	93%	9%	62%	72%	9%
Remaining Flexibility Peak day (%)									
Cyprus				36%	89%	54%	34%	87%	53%
Germany							35%	39%	4%
Greece				51%	82%	31%	30%	60%	30%
Italy				53%	61%	8%	43%	51%	8%
Single Largest Infrastructure Disruption (SLID)-CY									
Cyprus				100%	46%	-54%	100%	47%	-53%
Single Largest Infrastructure Disruption (SLID)-Greece									
Greece	18%	0%	-18%	16%	0%	-16%	29%	0%	-29%
North Noth Macedonia				18%	0%	-18%	30%	0%	-30%

EXISTING Infrastructure Level – Distributed Energy

Row Labels	2025 CBG WITHOUT	2025 CBG WITH	2025 CBG DELTA	2025 GBC WITHOUT	2025 GBC WITH	2025 GBC DELTA	2030 DE WITHOUT	2030 DE WITH	2030 DE DELTA	2040 DE WITHOUT	2040 DE WITH	2040 DE DELTA
Competition												
Commercial Supply Access (CSA)												
Greece							3	4	1	3	4	1
North Noth Macedonia							3	4	1	3	4	1
LNG and Interconnection Capacity Diversification (LICD)												
Greece							10,000	5,508	-4,492	10,000	5,051	-4,949
Italy	3,736	3,156	-580	3,736	3,156	-580	3,736	2,806	-930	3,736	2,806	-930
MASD-LNGall												
Belgium							8%	5%	-3%			
Bosnia Herzegovina							8%	5%	-3%			
Czech Republic							8%	5%	-3%			
Denmark							8%	5%	-3%			
Germany							8%	5%	-3%			
Serbia							7%	5%	-2%			
Slovakia							8%	5%	-3%			
United Kingdom							8%	5%	-3%			
MASD-RU												
Italy							25%	10%	-15%			
Switzerland							25%	10%	-15%			
Security of Supply												
Remaining Flexibility 2-Week Cold Spell (%)												
Greece							16%	42%	25%			
Italy							43%	51%	8%	78%	86%	9%
Remaining Flexibility 2-Week Cold Spell (%) --- DF												
Greece							6%	30%	24%	26%	53%	27%
Italy							42%	50%	8%	71%	80%	8%
Remaining Flexibility Peak day (%)												
Croatia										89%	89%	1%
Germany							57%	60%	3%			
Greece							5%	29%	23%	47%	73%	26%
Italy							24%	31%	7%	47%	54%	7%
Netherlands							77%	78%	1%			
Single Largest Infrastructure Disruption (SLID)-Greece												
Greece	34%	0%	-34%	46%	0%	-46%	47%	0%	-47%	13%	0%	-13%

LOW Infrastructure Level – Distributed Energy

Row Labels	2025						2030			2040		
	CBG			GBC			DE			DE		
	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Competition												
Commercial Supply Access (CSA)												
Greece							3	4	1	3	4	1
North Noth Macedonia							2	3	1	2	3	1
LNG and Interconnection Capacity Diversification (LICD)												
Greece							5,655	3,772	-1,883	5,111	3,388	-1,723
Italy	3,736	3,156	-580	3,736	3,156	-580	3,736	2,806	-930	3,736	2,806	-930
MASD-LNGall												
Bosnia Herzegovina							5%	2%	-3%			
Bulgaria							5%	2%	-3%			
Croatia							5%	2%	-3%			
Czech Republic							5%	2%	-3%			
Estonia							5%	2%	-3%			
Finland							5%	2%	-3%			
Germany							5%	2%	-3%			
Greece							5%	2%	-3%			
Hungary							5%	2%	-3%			
Latvia							5%	2%	-3%			
Lithuania							5%	2%	-3%			
North Noth Macedonia							5%	2%	-3%			
Portugal							6%	3%	-3%			
Romania							5%	2%	-3%			
Serbia							5%	2%	-3%			
Slovakia							5%	2%	-3%			
Spain							5%	3%	-3%			
MASD-RU												
Belgium							8%	3%	-5%			
Bosnia Herzegovina							16%	7%	-9%			
Bulgaria							15%	7%	-8%			
France							10%	4%	-6%			
Greece							7%	2%	-4%			
Italy							16%	6%	-10%			
Luxembourg							9%	3%	-6%			
North Noth Macedonia							16%	7%	-9%			
Serbia							15%	7%	-8%			
Switzerland							16%	7%	-9%			
Security of Supply												
Remaining Flexibility 2-Week Cold Spell (%)												
Greece							41%	66%	25%			
Italy							52%	60%	8%	89%	96%	7%
Remaining Flexibility 2-Week Cold Spell (%) --- DF												
Greece							29%	53%	24%	52%	79%	27%
Italy							51%	59%	8%	82%	89%	7%
Remaining Flexibility Peak day (%)												
Germany							52%	58%	5%			
Greece							28%	51%	23%	72%	98%	26%
Italy							32%	39%	7%	56%	61%	5%
Single Largest Infrastructure Disruption (SLID)-Greece												
Greece				18%	0%	-18%	25%	0%	-25%			

ADVANCED Infrastructure Level – Distributed Energy

Row Labels	2025						2030			2040		
	CBG			GBC			DE			DE		
	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Competition												
Commercial Supply Access (CSA)												
Cyprus							1	3	2	1	4	3
Greece							4	5	1	4	5	1
North Noth Macedonia							3	4	1	4	5	1
LNG and Interconnection Capacity Diversification (LICD)												
Greece							5,655	3,772	-1,883	5,111	3,388	-1,723
Italy	3,565	3,025	-540	3,565	3,025	-540	3,565	2,702	-863	3,565	2,702	-863
MASD-LNGall												
Cyprus							100%	12%	-88%	100%	0%	-100%
France							4%	1%	-3%			
Italy							3%	1%	-2%			
Slovenia							4%	1%	-3%			
MASD-RU												
Austria							20%	16%	-4%			
Belgium							19%	16%	-3%			
Bosnia Herzegovina							19%	16%	-3%			
Bulgaria							19%	16%	-3%			
Croatia							19%	16%	-3%			
Czech Republic							20%	16%	-4%			
Denmark							19%	16%	-3%			
Estonia							19%	16%	-3%			
Finland							19%	16%	-3%			
France							19%	16%	-3%			
Germany							19%	16%	-3%			
Greece							19%	16%	-3%			
Hungary							19%	16%	-3%			
Italy							19%	16%	-3%			
Latvia							19%	16%	-3%			
Lithuania							19%	16%	-3%			
Luxembourg							19%	16%	-3%			
Netherlands							19%	16%	-3%			
North Noth Macedonia							19%	16%	-3%			
Poland							20%	17%	-3%			
Romania							19%	16%	-3%			
Serbia							19%	16%	-3%			
Slovakia							20%	16%	-4%			
Slovenia							19%	16%	-3%			
Sweden							12%	9%	-2%			
Switzerland							19%	16%	-3%			
Security of Supply												
Remaining Flexibility 2-Week Cold Spell (%)												
Cyprus							52%	100%	48%			
Greece							39%	64%	25%			
Italy							51%	59%	8%	86%	94%	8%
Remaining Flexibility 2-Week Cold Spell (%) --- DF												
Cyprus							43%	100%	57%			
Greece							26%	50%	24%	34%	61%	27%
Italy							50%	57%	8%	80%	87%	8%
Remaining Flexibility Peak day (%)												
Cyprus							36%	89%	54%	34%	87%	53%
Germany							59%	65%	5%			
Greece							24%	47%	23%	54%	80%	26%
Italy							31%	38%	7%	53%	59%	6%
Single Largest Infrastructure Disruption (SLID)-CY												
Cyprus							100%	46%	-54%	100%	47%	-53%
Single Largest Infrastructure Disruption (SLID)-Greece												
Greece				18%	0%	-18%	26%	0%	-26%	4%	0%	-4%
North Noth Macedonia							28%	0%	-28%	6%	0%	-6%

EXISTING Infrastructure Level – Global Ambition

Row Labels	2025						2030			2040		
	CBG			GBC			GA			GA		
	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Competition												
Commercial Supply Access (CSA)												
Greece							3	4	1	3	4	1
North Noth Macedonia							2	3	1	2	3	1
LNG and Interconnection Capacity Diversification (LICD)												
Greece							10,000	5,187	-4,813	10,000	5,151	-4,849
Italy	3,736	3,156	-580	3,736	3,156	-580	3,736	2,806	-930	3,736	2,806	-930
MASD-LNGall												
Austria							15%	12%	-3%			
Belgium										5%	2%	-3%
Bosnia Herzegovina							15%	12%	-3%			
Croatia							15%	12%	-3%			
Czech Republic							15%	12%	-3%			
Denmark										5%	2%	-3%
France										5%	2%	-3%
Germany							15%	12%	-3%	5%	2%	-3%
Hungary							14%	12%	-2%			
Ireland										5%	2%	-3%
Italy							15%	13%	-2%			
Luxembourg										5%	2%	-3%
Netherlands										5%	2%	-3%
Serbia							15%	12%	-3%			
Slovakia							15%	12%	-3%			
Slovenia										5%	2%	-3%
Sweden										4%	1%	-2%
Switzerland										5%	2%	-3%
United Kingdom										5%	2%	-3%
MASD-RU												
Belgium							13%	10%	-4%			
Bulgaria							16%	13%	-4%			
France							15%	11%	-4%			
Greece							10%	7%	-3%			
Italy							27%	18%	-9%	13%	0%	-13%
Lithuania							15%	12%	-3%			
Luxembourg							15%	10%	-5%			
Netherlands							25%	19%	-6%			
North Noth Macedonia							15%	12%	-3%			
Switzerland							27%	18%	-9%	13%	0%	-13%

Row Labels	2025						2030			2040		
	CBG			GBC			GA			GA		
	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Security of Supply												
Algeria Pipe Disruption Curtailment Rate Peak Day (%)												
Greece							-19%	0%	19%			
Italy							-1%	0%	1%			
Curtailment Rate 2-Week Cold Spell (%) --- DF												
Greece							-10%	0%	10%			
Curtailment Rate Peak Day (%)												
Greece							-19%	0%	19%			
Remaining Flexibility 2-Week Cold Spell (%)												
Greece							2%	26%	24%	30%	56%	26%
Italy							38%	46%	8%	61%	69%	9%
Remaining Flexibility 2-Week Cold Spell (%) --- DF												
Greece							0%	11%	11%	3%	26%	23%
Italy							33%	40%	7%	48%	56%	8%
Remaining Flexibility Peak day (%)												
Belgium							75%	90%	15%			
France							28%	34%	6%	50%	52%	2%
Germany							16%	19%	3%	25%	26%	1%
Greece										1%	21%	20%
Italy							13%	17%	4%	31%	38%	7%
Netherlands							34%	41%	7%	61%	63%	2%
United Kingdom							26%	31%	5%			
Single Largest Infrastructure Disruption (SLID)-Austria												
Austria							2%	0%	-2%			
Greece							19%	0%	-19%			
Italy							2%	0%	-2%			
Slovenia							4%	0%	-4%			
Switzerland							2%	0%	-2%			
Single Largest Infrastructure Disruption (SLID)-Greece												
Greece	34%	0%	-34%	46%	0%	-46%	61%	11%	-51%	46%	0%	-46%
Single Largest Infrastructure Disruption (SLID)-Slovakia												
Austria							24%	12%	-12%			
Czechia							24%	10%	-14%			
Greece							19%	0%	-19%			
Slovakia							24%	11%	-13%			
Ukraine Disruption Curtailment Rate Peak Day (%)												
Czechia							-2%	0%	2%			
Germany							-2%	0%	2%			
Greece							-19%	-2%	17%			
Italy							-4%	-2%	2%			
Luxembourg							-2%	0%	2%			
Slovenia							-4%	-2%	2%			
Switzerland							-3%	-2%	1%			

LOW Infrastructure Level – Global Ambition

Row Labels	2025 CBG WITHOUT	2025 CBG WITH	2025 CBG DELTA	2025 GBC WITHOUT	2025 GBC WITH	2025 GBC DELTA	2030 GA WITHOUT	2030 GA WITH	2030 GA DELTA	2040 GA WITHOUT	2040 GA WITH	2040 GA DELTA
Competition												
Commercial Supply Access (CSA)												
Austria										3	4	1
Belgium										3	4	1
Bosnia Herzegovina							4	5	1	3	5	2
Bulgaria							3	4	1	2	4	2
Czechia										3	4	1
France										3	4	1
Germany										3	4	1
Greece	2	3	1	2	3	1	3	5	2	3	5	2
Italy										4	5	1
Luxembourg										3	4	1
Netherlands										3	4	1
North Noth Macedonia							2	5	3	2	5	3
Poland										3	4	1
Portugal										3	4	1
Romania	2	3	1				2	3	1			
Serbia							4	5	1	3	5	2
Slovakia										3	4	1
Slovenia										3	4	1
Spain										3	4	1
Switzerland										3	4	1
United Kingdom										3	4	1
LNG and Interconnection Capacity Diversification (LICD)												
Greece							5,289	3,498	-1,790	5,244	3,469	-1,775
Italy	3,736	3,156	-580	3,736	3,156	-580	3,736	2,806	-930	3,736	2,806	-930
MASD-LNGall												
Austria							12%	9%	-3%			
Belgium							12%	9%	-3%			
Bosnia Herzegovina							12%	8%	-4%			
Bulgaria							12%	8%	-4%			
Croatia							12%	8%	-4%			
Czech Republic							12%	8%	-4%			
Denmark							12%	9%	-3%			
Estonia							12%	8%	-4%			
Finland							12%	8%	-4%			
France							13%	9%	-4%			
Germany							12%	8%	-4%			
Greece							12%	8%	-4%			
Hungary							12%	8%	-4%			
Ireland							13%	9%	-4%	3%	0%	-3%
Italy							12%	9%	-3%			
Latvia							12%	8%	-4%			
Lithuania							12%	8%	-4%			
Luxembourg							12%	9%	-3%			
Netherlands							12%	9%	-3%			
North Noth Macedonia							12%	8%	-4%	3%	0%	-3%
Poland							13%	9%	-4%	3%	0%	-3%
Portugal										3%	0%	-3%
Romania							12%	8%	-4%			
Serbia							12%	8%	-4%			
Slovakia							12%	8%	-4%			
Slovenia							12%	9%	-3%			
Spain										3%	0%	-3%
Sweden							13%	9%	-4%			
Switzerland							12%	9%	-3%			
United Kingdom							12%	9%	-3%	3%	0%	-3%
MASD-RU												
Belgium							20%	14%	-7%	4%	0%	-4%
Bosnia Herzegovina							27%	14%	-13%	7%	0%	-7%
Bulgaria							26%	14%	-12%	7%	0%	-7%
Estonia										6%	2%	-4%
Finland										6%	2%	-4%
France							21%	14%	-7%	4%	0%	-4%
Greece				16%	11%	-5%	17%	12%	-4%	2%	0%	-3%
Italy							27%	15%	-11%	7%	0%	-7%
Latvia										6%	2%	-4%
Lithuania										6%	1%	-5%
Luxembourg							21%	14%	-7%	5%	0%	-5%
North Noth Macedonia							27%	14%	-13%	7%	0%	-7%
Serbia							26%	13%	-13%	7%	0%	-7%
Switzerland							27%	16%	-11%	7%	0%	-7%

Row Labels	2025						2030			2040		
	CBG			GBC			GA			GA		
	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Security of Supply												
Curtailment Rate Peak Day (%)												
Greece							-1%	0%	1%			
Remaining Flexibility 2-Week Cold Spell (%)												
Greece							25%	48%	24%	56%	82%	26%
Italy							47%	55%	8%	71%	80%	9%
Remaining Flexibility 2-Week Cold Spell (%) --- DF												
Germany							91%	94%	3%			
Greece							11%	32%	21%	25%	48%	23%
Italy							42%	49%	8%	58%	66%	8%
Remaining Flexibility Peak day (%)												
Belgium							53%	85%	32%			
France				48%	49%	2%	20%	32%	12%	44%	56%	13%
Germany	36%	37%	1%	27%	28%	1%	11%	18%	7%	22%	28%	6%
Greece							0%	18%	18%	21%	41%	20%
Italy							15%	24%	9%	35%	45%	10%
Netherlands				46%	48%	2%	24%	39%	14%	53%	67%	14%
United Kingdom							18%	29%	11%			
Single Largest Infrastructure Disruption (SLID)-Greece												
Greece				18%	0%	-18%	43%	0%	-43%	26%	0%	-26%
Single Largest Infrastructure Disruption (SLID)-United Kingdoom												
Belgium							2%	0%	-2%			
Ireland							2%	0%	-2%			
Netherlands							2%	0%	-2%			
United Kingdom							2%	0%	-2%			

ADVANCED Infrastructure Level – Global Ambition

Row Labels	2025						2030			2040		
	CBG			GBC			GA			GA		
	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Competition												
Commercial Supply Access (CSA)												
Austria										3	4	1
Belgium										3	4	1
Cyprus							1	3	2	1	4	3
Czechia										3	4	1
Denmark										3	4	1
France										3	4	1
Germany										3	4	1
Greece							4	5	1	3	4	1
Italy										4	5	1
Luxembourg										3	4	1
Malta										3	4	1
Netherlands										3	4	1
North Noth Macedonia							3	4	1	3	4	1
Poland										3	4	1
Portugal										3	4	1
Slovakia										3	4	1
Slovenia										3	4	1
Spain										3	4	1
Switzerland										3	4	1
United Kingdom										3	4	1
LNG and Interconnection Capacity Diversification (LICD)												
Greece							5,289	3,498	-1,790	5,244	3,469	-1,775
Italy	3,565	3,025	-540	3,565	3,025	-540	3,565	2,702	-863	3,565	2,702	-863
MASD-LNGall												
Belgium							11%	8%	-3%			
Cyprus							100%	12%	-88%	100%	0%	-100%
Italy							10%	8%	-2%			
Luxembourg							11%	8%	-3%			
Netherlands							11%	8%	-3%			
Slovenia							11%	8%	-3%			
Switzerland							11%	8%	-3%			
MASD-RU												
Austria										17%	14%	-3%
Belgium							28%	25%	-3%	16%	12%	-4%
Bosnia Herzegovina							28%	25%	-3%	16%	12%	-4%
Bulgaria							28%	25%	-3%	16%	12%	-4%
Croatia							28%	25%	-3%	16%	12%	-4%
Czech Republic							29%	26%	-3%	17%	14%	-3%
Denmark							28%	25%	-3%			
Estonia							28%	25%	-3%	16%	12%	-4%
Finland							29%	25%	-4%	16%	12%	-4%
France							28%	25%	-3%	16%	12%	-4%
Germany							28%	25%	-3%	17%	14%	-3%
Greece							28%	25%	-3%	16%	12%	-4%
Hungary							28%	25%	-3%	16%	12%	-4%
Italy							28%	25%	-3%	16%	12%	-4%
Latvia							28%	25%	-3%	16%	12%	-4%
Lithuania							28%	25%	-3%	16%	12%	-4%
Luxembourg							28%	25%	-3%	16%	13%	-3%
Netherlands							28%	25%	-3%			
North Noth Macedonia							28%	25%	-3%	16%	12%	-4%
Poland							29%	25%	-4%	17%	15%	-2%
Romania							28%	25%	-3%	16%	12%	-4%
Serbia							28%	25%	-3%	16%	12%	-4%
Slovakia							29%	26%	-3%	17%	14%	-3%
Slovenia							28%	25%	-3%	17%	13%	-4%
Sweden							28%	25%	-3%			
Switzerland							28%	25%	-3%	16%	12%	-4%

Row Labels	2025						2030			2040		
	CBG			GBC			GA			GA		
	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA	WITHOUT	WITH	DELTA
Security of Supply												
Curtailment Rate Peak Day (%)												
Greece							-4%	0%	4%			
North Noth Macedonia							-4%	0%	4%			
Remaining Flexibility 2-Week Cold Spell (%)												
Cyprus							52%	100%	48%			
Greece							23%	47%	24%	43%	69%	26%
Italy							46%	54%	8%	69%	78%	9%
Remaining Flexibility 2-Week Cold Spell (%) --- DF												
Cyprus							43%	100%	57%			
Greece							8%	29%	21%	10%	33%	23%
Italy							41%	48%	7%	56%	64%	8%
Remaining Flexibility Peak day (%)												
Cyprus							36%	89%	54%	34%	87%	53%
France							39%	47%	8%	47%	55%	9%
Germany	47%	48%	1%	38%	39%	1%	22%	26%	4%	23%	28%	4%
Greece							0%	15%	15%	6%	27%	20%
Italy							21%	26%	6%	37%	44%	7%
Netherlands							47%	56%	9%	56%	66%	10%
North Noth Macedonia							0%	100%	100%			
United Kingdom							36%	42%	6%			
Single Largest Infrastructure Disruption (SLID)-CY												
Cyprus							100%	46%	-54%	100%	47%	-53%
Greece							4%	0%	-4%			
North Noth Macedonia							4%	0%	-4%			
Single Largest Infrastructure Disruption (SLID)-Greece												
Greece				18%	0%	-18%	43%	0%	-43%	34%	0%	-34%
North Noth Macedonia							42%	0%	-42%	34%	0%	-34%
Single Largest Infrastructure Disruption (SLID)-Serbia												
North Noth Macedonia							42%	0%	-42%			

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	432.0	370.5	484.2	374.8	317.1	409.1	376.2	316.1	406.5
	Supply Maximization	551.1	441.2	589.5	457.8	365.8	526.1	454.2	362.4	522.6
Security of Supply	Design Case	4.1	3.3	9.5	1.4	1.3	3.9	2.5	1.7	5.1
	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	6.5	0.0	0.0	0.0	0.0	0.0	0.0
Sustainability	CO2 and Other externalities savings	4.3 / 6	11.6 / 12.7	20.2 / 22.2	4 / 5.6	12.9 / 13.9	18.5 / 20.4	3.1 / 3.9	9.2 / 9.8	11.5 / 13
	Additional benefit (Promoter)	95.1	95.1	95.1	95.1	95.1	95.1	47.5	47.5	47.5
Gasification Benefits	Fuel Switch (Promoter)	612	612	612	612	612	612	306	306	306

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	4.3	4.3	4.3	1.7	1.7	1.7	1.7	1.7	1.7
	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	19 / 21	19 / 21	19 / 21	17 / 18	17 / 18	17 / 18	12 / 13	12 / 13	12 / 13
	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
Gasification Benefits	Fuel Switch (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	501.7	537.4	641.0	425.7	460.2	528.7	420.3	443.8	511.1	524.6	361.6	523.2	463.1	309.1	452.6	470.6	320.6	461.6
	Supply Maximization	631.6	660.4	759.9	502.5	545.7	668.2	489.4	526.9	654.6	676.3	413.6	666.1	596.5	344.4	591.8	603.2	352.6	595.2
Security of Supply	Design Case	3.8	5.5	18.4	1.2	3.0	6.4	1.6	3.3	7.3	4.1	1.3	6.0	1.5	0.0	3.4	3.4	0.9	5.3
	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	0.0	0.0	0.0	0.0	0.0	0.0
	2-weeks Cold Spell DF	0.0	0.0	17.2	0.0	0.0	0.0	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 / 1	17 / 20	21 / 22	0 / 1	15 / 17	18 / 19	0 / 0	9 / 10	10 / 11	2 / 2	4 / 4	20 / 23	2 / 2	9 / 10	20 / 22	1 / 1	8 / 8	12 / 14
	Additional benefit (Promoter)	77.0	77.0	77.0	77.0	77.0	77.0	38.5	38.5	38.5	95.00	95.00	95.00	95.0	95.0	95.0	47.5	47.5	47.5
Gasification Benefits	Fuel Switch (Promoter)	882.0	882.0	882.0	882.0	882.0	882.0	441.0	441.0	441.0	449.0	449.0	449.0	449.0	449.0	449.0	224.5	224.5	224.5

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

		Commissioning Year Sensitivity			*Lower Tariff Sensitivity*			*Higher Tariff Sensitivity*			*Cost of Disruption Sensitivity*		
Benefits (Meur/year)		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	515.9	428.4	567.9	495.7	434.3	548.0	304.5	243.1	356.7	432.0	370.5	484.2
	Supply Maximization	659.3	507.4	696.1	614.9	504.9	653.3	423.6	313.7	462.0	551.1	441.2	589.5
Security of Supply	Design Case	4.0	2.9	6.6	4.1	3.3	9.5	4.1	3.3	9.5	0.0	0.0	10.4
	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	6.5	0.0	0.0	6.5	0.0	0.0	6.5	0.0	0.0	14.5
Sustainability	CO2 and Other externalities savings (MEUR)	0.4 / 1.4	9.8 / 10	21.2 / 22.7	4.6 / 6.3	9.3 / 13.6	17.6 / 22.9	0.8 / 2	3.4 / 3.8	8.9 / 9.8	4.3 / 6	11.6 / 12.7	20.2 / 22.2
	Additional benefit (Promoter)	95.1	95.1	95.1	95.1	95.1	95.1	95.1	95.1	95.1	95.1	95.1	95.1
Gasification Benefits	Fuel Switch (Promoter)	611.9	611.9	611.9	611.9	611.9	611.9	611.9	611.9	611.9	611.9	611.9	611.9

LOW Infrastructure Level

		Commissioning Year Sensitivity			*Lower Tariff Sensitivity*			*Higher Tariff Sensitivity*			*Cost of Disruption Sensitivity*		
Benefits (Meur/year)		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	448.9	366.5	481.5	435.6	380.8	472.8	255.3	195.1	284.4	374.8	317.1	409.1
	Supply Maximization	553.2	420.9	620.8	519.8	429.5	589.9	336.1	243.7	400.3	457.8	365.8	526.1
Security of Supply	Design Case	1.4	1.1	4.5	1.4	1.3	3.9	1.4	1.3	3.9	0.0	0.1	0.1
	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	0.0	0.0	0.0
Sustainability	CO2 and Other externalities savings (MEUR)	0.7 / 1.5	12.2 / 12.4	19.6 / 21.1	4.1 / 5.7	13 / 14.1	18.5 / 20.5	3.9 / 5.5	12.6 / 13.5	17.7 / 19.6	4 / 5.6	12.9 / 13.9	18.5 / 20.4
	Additional benefit (Promoter)	95.1	95.1	95.1	95.1	95.1	95.1	95.1	95.1	95.1	95.1	95.1	95.1
Gasification Benefits	Fuel Switch (Promoter)	611.9	611.9	611.9	611.9	611.9	611.9	611.9	611.9	611.9	611.9	611.9	611.9

ADVANCED Infrastructure Level

		Commissioning Year Sensitivity			*Lower Tariff Sensitivity*			*Higher Tariff Sensitivity*			*Cost of Disruption Sensitivity*		
Benefits (Meur/year)		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	376.2	316.1	406.5	440.0	316.1	470.3	260.4	191.8	281.9	376.2	316.1	406.5
	Supply Maximization	454.2	362.4	522.6	518.0	362.4	586.3	338.3	238.6	397.2	454.2	362.4	522.6
Security of Supply	Design Case	2.5	1.7	5.1	2.5	1.7	5.1	2.5	1.7	5.1	0.0	0.0	0.5
	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	0.0	0.0	0.0
Sustainability	CO2 and Other externalities savings (MEUR)	3.9 / 3.1	9.8 / 9.2	13 / 11.5	3.1 / 4	9.2 / 9.9	11.5 / 13	2.9 / 3.7	8.8 / 9.3	10.3 / 11.6	3.1 / 3.9	9.2 / 9.8	11.5 / 13
	Additional benefit (Promoter)	47.5	47.5	47.5	47.5	47.5	47.5	47.5	47.5	47.5	47.5	47.5	47.5
Gasification Benefits	Fuel Switch (Promoter)	306.0	306.0	306.0	306.0	306.0	306.0	306.0	306.0	306.0	306.0	306.0	306.0

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
TRA-A-0010[1]	Pipeline	The overall permanent land acquisition for Poseidon Project is planned to be 3.043.200 m2. However, in most of this area, there will be no environmental or other impact. The temporary land acquisition for the Pipeline Working strip including temporary facilities at crossings is planned to be 24.192.828m2, while 348.040m2 is planned for the Stations (Compressor Stations and M-01), 240.840m2 for the Stations (25 BVSs and 2 SS) and 104.740m2 for the Operation and Maintenance Buildings (O&Ms).	Natura 2000 sites: - GR1110009 - GR1130006 - GR1130009 - GR1130010 - GR1150001 - GR1150005 - GR1150010 - GR1210001 - GR1220002 - GR1220010 - GR1230001 - GR1230004 - GR2120006 - GR2120008 - GR2130006 - GR2130011 - GR2130012 - GR2130013

Potential impact	Mitigation measures	Related costs included in project CAPEX and OPEX	Additional expected costs
Construction phase: 1. General - Accidental pollution 2. Health and Safety - Injuries and Casualties, Emergencies 3. Landscape and morphological Characteristics- Landscape Modification 4. Natural environment - Vegetation / Habitat loss, Fauna Loss / Disturbance 5. Spatial Planning / Land use - Alteration of land use 6. Cultural Heritage - Direct effect, Indirect effect, Negative impacts on scenery and character 7. Socioeconomic impacts & Local Economy - Economic Impact on Rural Income 8. Technical Infrastructure & Environmental infrastructure systems - Production of waste 9. Noise & Vibrations - Noise from project construction	**Construction phase:** 1. Preparation of a Pollution Prevention and Managing Plan, a Waste Management Plan and a Hazardous Waste Management Plan. 2. Preparation of a Health and Safety and an Emergency Response Plan to be prepared by the EPC Contractor and to be reviewed by the Supervision. 3. Selection of a predefined working strip according to the area based on the area type. Typical working strip shall be 38 m wide; in forests 22 m, in shrublands 28 m. - Landscape Management and Restoration and Erosion Control Plan shall be developed with details regarding phytotechnical restoration, reforestation of forest areas (in compliance to L. 4280/2014), erosion control measures, possible hydroseeding. The pipeline protection strip (8 m wide) will be, according to the regulations, free of deep-rooted trees. 4. Establishment of a pre-construction biodiversity baseline.	The additional costs have been incorporated in the relevant cost estimations (CAPEX) and concern the following main items: > Route modifications in order to maximize the distance from sensitive receptors as well as settlements, monuments, etc. > Cost of environmental mitigation measures in environmentally sensitive areas. > Cost of reforestation areas in working zone and (possibly) other areas expected to be defined by the Forest Authorities. > Cost of follow up during the construction and operation period. > Best Available Technology for the	N/A

[1] *The information provided in the above table summarizes the results of the final Environmental Impact Assessment (EIA) for the offshore section, which has been approved by the Greek Ministry of Environment and Energy in January 2015.*

Potential impact	Mitigation measures	Related costs included in project CAPEX and OPEX	Additional expected costs
10. Surface Water Bodies - Modification of morphology, Impacts on the quality, Impacts on quantity	Establishment of reduced working strip (22 m) through forest areas and sensitive areas for biodiversity. Avoidance, where possible, to open new access roads. Upgrade of existing roads is recommended. An ecology specialist will monitor implementation of environmental terms, per construction front, especially in areas of biodiversity interest. For the protection of riparian vegetation, trenchless techniques will be applied, where techno-economically recommended. Preparation of Appropriate Assessments for Natura 2000 areas will be included in the Environmental Impact Assessment and will be reviewed by the competent Public Authorities. Develop a Biodiversity Management Plan (including Large Mammals Management Plan). Avoidance of construction activities during the avifauna breeding period in environmentally sensitive areas. 5. Land Rights Acquisition Plan will be prepared. 6. Appropriate siting of the Project and its facilities (temporary or permanent). - Signing a Memorandum of Understanding between the Project Owner and the Ministry of Culture. In the event that antiquities are found during the work, the work will be interrupted in the section deemed necessary by the competent Authority for the protection of antiquities, followed by the updating of the Memorandum of Cooperation with the newest details of the works and an excavation survey by a specialist team, at a cost that will be borne by the Project Owner, including the maintenance of the findings. All excavation works shall be supervised by the competent Archaeological Authority. 7. Restoration framework for the means of livelihood which reliably determines the compensation to be paid to the eligible land owners. Treatment and disposal of waste products shall be implemented by following strictly the applicable regulations. Disposal of forest products to residents and users of forests, after consultation with the competent authorities. 8. Hazardous Waste and non - Hazardous Waste Management Plan. Minimization of excavated and other construction waste by re-use in cases when this is technically feasible according to specifications. 9. Compliance to the legislative provisions for mechanical equipment. Application of best noise reduction techniques to mechanical equipment. Avoidance of explosives use in populated areas. - Avoidance of explosives use in protected areas during breeding season.	equipment to be installed for the Project.	

Potential impact	Mitigation measures	Related costs included in project CAPEX and OPEX	Additional expected costs
	10. Trenchless methods will be applied, where techno-economically recommended. Water Management Plan to identify and manage any surface and/or groundwater pumping needs and to manage surface water runoff. Waste Management Plan and Hazardous Waste and Materials Management Plan. Pollution Prevention and Response Plan. Wherever possible, contact of machinery with surface water will be avoided. Appropriate scheduling of construction work during periods of low flow or preferably during dry conditions (August - November). Flood and erosion control measures will be implemented. The construction contractor will obtain all relative permits from the Competent Authorities, prior to water abstraction and hydrotest water discharge. - The Contractor shall prepare a Hydtotesting Plan, which shall be included in the Water Management Plan, for each pipeline's hydrotesting section plus any hydrotesting of above ground facilities (i.e. compressor stations). Hydrotest water will not be discharged in different river basin and will be free of biocides prior of discharge. Any additives used will be included in the PLONOR list.		
Operation phase: 1. Climatic and Bioclimatic Characteristics - Greenhouse gas emissions increase 2. Landscape and Morphological Characteristics - Landscape Modification, Viewer nuisance 3. Socio-economic Environment – Local Economy 4. Air Quality/ Emissions 5. Noise & Vibrations - Noise from Stations operation	**Operation phase:** 1. In compliance with MD 36060/1155/E.103/2013, (HGG 1450/B/14.6.2013), NOx, SO2, CO emissions, during operation, should be monitored and the results forwarded to the competent Greek Authority for check and emissions monitoring Monitoring of plant restoration for at least 3 years after the completion of planting works. 2. Buildings will be designed (including the use of appropriate materials and colors) so as to match the landscape as much as possible. 3. Fair and transparent recruitment process for all new jobs. Publicize jobs so that they are accessible locally. Provision of information locally (chambers of commerce and business organizations). 4. Best Available Technologies shall be implemented. Compression Station location will be away from sensitive recipients. Regular maintenance of the equipment. Installation of NOx, SOx & CO emission monitoring systems. 5. Application of appropriate sound insulation measures to equipment inside the Compression Stations so as to comply with legislative limits within property boundaries.	The additional costs have been incorporated in the relevant cost estimations (OPEX)	N/A

TYNDP Code	Type of infrastructure	Surface of impact	Environmentally sensitive area
TRA-A-0330	Pipeline	4,480,732 m^2 (*)Note1: The area in m^2 of impact zone has been calculated concerning exclusively the environmentally sensitive areas and considering a conservative 38m width working strip. The overall area of the working strip along the pipeline route is estimated conservatively to be 20,388,154 m^2. However, in most of this area, there will be no environmental or other impact. (**)Note2: The referred areas are based on the existing studies and they are expected to be confirmed during the next design phase.	> Natura (GR2540007), > Natura (GR2310001 & GR2310015), > Natura (GR2110001 & GR2110004), > Natura (GR2310009), > National Park > (Messolongi-Aitoliko Lagoon), > Wildlife Refuge (Mountain Arakynthos-Mataragas-Gavalo), > Wildlife Refuge (Petalas), > Wildlife Refuge > (Monastery of Retha & Longos), > National Park (Amvrakikos), > Wildlife Refuge (Lekatsa), > Wildlife Refuge (Pratagos - Aetofolia)

Potential impact	Mitigation measures ***	Related costs included in project CAPEX and OPEX	Additional expected costs
Construction phase: 1. General - Accidental pollution 2. Health and Safety - Injuries and Casualties, Emergencies 3. Landscape and morphological Characteristics-Landscape Modification 4. Natural Environment - Vegetation / Habitat loss, Fauna Loss / Disturbance 5. Cultural Heritage - Direct effect, Indirect effect, Negative impacts on scenery and character 6. Socio-economic Environment – Local Economy 7. Economic Impact on Rural Income 8. Technical Infrastructure & Environmental infrastructure systems -- Production of waste 9. Nois & Vibrations - Noise from project construction 10. Surface Water Bodies - Modification of morphology, Impacts on the quality, Impacts on quantity	**Construction phase:** 1. Preparation of a Pollution Prevention and Managing Plan, a Waste Management Plan and a Hazardous Waste Management Plan. 2. Preparation of a Health and Safety and an Emergency Response Plan to be prepared by the EPC Contractor and to be reviewed by the Supervision. 3. Selection of a predefined working strip according to the area based on the area type. Typical working strip shall be 38 m wide; in forests 22 m, in shrublands 28 m. Preparation of a phytotechnical restoration study of the forest area, while erosion control measures will be implemented. The pipeline access and protection strip (8 m wide) will be maintained, according to the regulations, free of deep-rooted trees. 4. Establishment of a pre-construction biodiversity baseline. Establishment of reduced working strip (22 m) through forest areas and sensitive areas for biodiversity. - Avoidance, where possible, to open new access roads. Upgrade of existing roads is recommended. - For the protection of riparian vegetation, trenchless techniques will be applied, where techno-economically recommended. Preparation of Appropriate Assessments for	The additional costs have been incorporated in the relevant cost estimations (CAPEX) and concern the following main items: > Route modifications in order to maximize the distance from sensitive receptors as well as settlements, monuments, etc. > Cost of environmental mitigation measures in environmentally sensitive areas. > Cost of reforestation areas in working zone and (possibly) other areas expected to be defined by the Forest Authorities. > Cost of follow up during the construction and operation period. > Best Available Technology for the equipment to be installed for the	N/A

Potential impact	Mitigation measures ***	Related costs included in project CAPEX and OPEX	Additional expected costs
	Natura 2000 areas will be included in the Environmental Impact Assessment and will be reviewed by the competent Public Authorities. - Develop a Biodiversity Management Plan (including Large Mammals Management Plan). - Avoidance of construction activities during the avifauna breeding period in environmentally sensitive areas. 5. Appropriate siting of the Project and its facilities (temporary or permanent). - Signing a Memorandum of Understanding between the Project Owner and the Ministry of Culture. - All excavation work shall be supervised by the competent Archaeological Authority. 6. Land Rights Acquisition Plan will be prepared. - Restoration framework for the means of livelihood which reliably determines the compensation to be paid to the eligible land owners. 7. Hazardous Waste and non - Hazardous Waste Management Plan. - Minimization of excavated and other construction waste by re-use in cases when this is technically feasible according to specifications. - Treatment and disposal of waste products shall be implemented by following strictly the applicable regulations. 8. Compliance to the legislative provisions for mechanical equipment. - Avoidance of explosives use in populated areas. 9. - Trenchless methods will be applied, where techno-economically recommended. - Preparation of a Water Management Plan and a Pollution Prevention and Response Plan. - Appropriate scheduling of construction work during periods of low flow or preferably during dry conditions (August - November). - Flood and erosion control measures will be implemented. - The construction contractor will obtain all relative permits from the Competent Authorities, prior to water abstraction and hydrotest water discharge.	Project.	
Operation phase: 1. Landscape and morphological characteristics - Landscape Modification, Viewer nuisance 2. Air Quality/ Emissions 3. Noise and Vibrations - Noise from Stations operation	**Operation phase:** 1. Monitoring of plant restoration for at least 3 years after the completion of planting works. - Buildings will be designed (including the use of appropriate materials and colors) so as to match the landscape as much as possible. 2. Studies of air emissions dispersion will be included in the EIA. Moreover, in compliance with the legislative requirements, NOx, SO2, CO emissions, during operation, shall be monitored and the results forwarded to the competent Authority for check and	The additional costs have been incorporated in the relevant cost estimations (OPEX)	N/A

Potential impact	Mitigation measures ***	Related costs included in project CAPEX and OPEX	Additional expected costs
	emissions monitoring. - Compression Station location will be away from sensitive recipients. - Regular maintenance of the equipment. - Installation of NOx, SOx & CO emission monitoring systems. 3. Application of appropriate sound isolation measures to equipment inside the Compression Stations so as to comply with legislative limits within property boundaries.		

TYNDP Code	Type of infrastructure	Surface of impact	Environmentally sensitive area
TRA-N-007	Sulmona-Foligno pipeline	DN 1200 (48") length 170,22 km	SIC IT7110097 “Fiumi Giardino – Sagittario – Aterno – Sorgenti del Pescara”; ZPS IT7110128 “Parco Nazionale Gran Sasso Monti della Laga”; SIC IT5210067 “Monti Pizzuto – Alvagnano”; SIC IT5210059 “Marcite di Norcia”; SIC IT5210046 “Valnerina”.
	Foligno-Sestino Pipeline	DN 1200 (48") length 113,65 (km)	SIC IT5210024 “Fiume Topino”; SIC IT5210013 “Boschi del Bacino di Gubbio”; SIC IT5210004 “Boschi di Pietralunga”.
	Sestino-Minerbio pipeline	DN 1200 (48") length 140,70 (km)	SIC-ZPS IT4050022 “Biotopi e ripristini ambientali di Medicina e Molinella”; ZPS IT4050023 “Biotopi e ripristini ambientali di Budrio e Minerbio”; SIC IT4050006 “Valle Benni”; SIC IT4080014 “Rio Mattero e Rio Cuneo”.
	Sulmona Compressor station	119.176 sqm	There is not direct interference between the site and the surrounding protected area both Natura 2000 Network and National or regional protected areas
TRA-N-1195	Matagiola-Massafra pipeline	DN 1400 (56”) lenght: 79 km	SIC IT9130007 "Aree delle Gravine"
TRA-N-1091	Above Ground Installation (Border Metering Station)	Approximately 10,000 m2	No environmentally sensitive area to be impacted

Potential impact	Mitigation measures ***	Related costs included in project CAPEX and OPEX	Additional expected costs
TRA-N-007 - Sulmona-Foligno pipeline Presence of priority habitats and priority fauna	Mitigation project for each area SIC agreed with the Region; Optimization of the routing of the pipeline to preserve the	The additional costs have been incorporated in the relevant cost	N/A

Potential impact	Mitigation measures ***	Related costs included in project CAPEX and OPEX	Additional expected costs
species (invertebrates, reptiles, amphibious, mammals, birds and fish). (Att 1-2 Dir.92/43/CEE)	Habitats, use of a reduced right of way, care in the execution of the works to preserve wet areas Reintroduction of species of flora and fauna through conservation and naturalization methods; Construction works performed outside of the nesting period of the animal species; Building site areas set up as much as possible outside the Natura 2000 site boundaries. Conservation measures for at least three years following the construction works.	estimations (CAPEX & OPEX)	
TRA-N-007 - Foligno-Sestino pipeline Presence of priority habitats and priority fauna species (invertebrates, birds and fish). (Att. 1-2 Dir.92/43/CEE)	Mitigation project for each area SIC agreed with the Region; Optimization of the routing of the pipeline to preserve the Habitats, use of a reduced right of way, care in the execution of the works to preserve wet areas Reintroduction of species of flora and fauna through conservation and naturalization methods; Construction works performed outside of the nesting period of the animal species; Building site areas set up as much as possible outside the Natura 2000 site boundaries. Conservation measures for at least three years following the construction works.	The additional costs have been incorporated in the relevant cost estimations (CAPEX & OPEX)	N/A
TRA-N-007 - Sestino-Minerbio pipeline Presence of primary habitats and priority fauna species (invertebrates, reptiles, amphibious, birds and fish). (Att.1-2 Dir.92/43/CEE)	Reintroduction of species of flora and fauna through conservation and naturalization methods; Construction works performed outside of the nesting period of the animal species; Building site areas set up as much as possible outside the Natura 2000 site boundaries.	The additional costs have been incorporated in the relevant cost estimations (CAPEX & OPEX)	N/A
TRA-N-007 - Sulmona Compressor station The EIA and the asssessment under the habitat directive conducted for the site highlighted that the impact on the surrounding protected areas is negligible	A General mitigations measure not related to sensitive areas is the revegetation of the area of the compressor station	The additional costs have been incorporated in the relevant cost estimations (CAPEX & OPEX)	N/A
TRA-N-1195 Matagiola- Massafra pipeline	To further analyse the possibility of a trenchless to cross the SIC "Aree delle Gravine";	The additional costs have been incorporated in the relevant cost	N/A

Potential impact	Mitigation measures ***	Related costs included in project CAPEX and OPEX	Additional expected costs
Interference with the Habitat and the species (flora and fauna) listed the EU Habitats Directive (92/43/EEC) inside the SIC	To further analyse the Olive trees transplant before works and re-planted after works.	estimations (CAPEX & OPEX)	
TRA-N-1091 Megalopolis Border Metering Station No adverse impact foreseen from the operation of the Station. An ESIA shall be submitted to the competent permitting authorities prior to the implementation of the Station	Not applicable	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.

The realization of projects in the Group will follow the best practices and all environmental laws and prescriptions. The environmental impacts have been minimized by a careful evaluation and choice of the possible routes for the projects' layouts. Additionally, mitigation measures and environmental restoration works ensure that the realization of the projects respects the crossed areas, further minimising potential impacts.

All additional costs related to measures for the mitigation of environmental impact have been incorporated in the relevant cost estimations (CAPEX & OPEX).

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 [Promoter]

- **Enhancing Security of Supply by providing a new supply source from Levantine Basin**, for completion of the SGC and the supply of Greek, Italian and European markets, also enabling supplies from indigenous EU production. Indicatively, in a scenario where the main Italian import infrastructure is disrupted for 30 days, the promoters estimate that the Group's projects could mitigate the resulting gas shortage with benefits of up to 111 M€, depending on the reference year and the availability of other sources such as North African gas.
- **Enhanced market liquidity in Italian, Greek and EU markets**, exerting downward pressure on European gas prices, through reverse flow capacity of the Group's projects and of recently commissioned reverse-flow interconnections from Italy to France and Germany, which will enhance inter-regional transactions between South East Europe and Western Europe. Levantine Basin reserves can address broader EU issues, such as L-gas replacement and Groeningen/North-Sea decreasing production. Indicatively, a 0.5 €/MWh price differential between L-gas and gas supplied by the Group's projects, applied to demand of 5 bcm/yr (considering that L-gas consumption just for France, Germany and Belgium is around 30 bcm/year) would lead to potential benefits of about 26 M€/year.
- **Improved operation logistics of European transmission system** as it will enable imports of up to 20 bcm/yr through the southern part of the system, improving the EU South-North corridor potential.
- **Gasification of Cyprus and Greek regions (Crete, Peloponnese and Western Greece)** contributing to a cleaner and more efficient energy mix and overcoming dependence on imported petrol products. With reference to Crete, the gasification of the island with impact on residential and, in particular, on power generation sectors, will allow switch from traditional fuels, such as heavy oil, to gas in the different scenarios and for the whole period. The maximum potential benefit is up to about 8.5 bn€ in the reference case (25 years undiscounted benefit). The additional benefit related to Crete gasification could lead to a maximum improvement in the B/C ratio in the range of 0,4 points.
- **Ending isolation and enhancing market integration of Cyprus to the EU gas market**, through the dual-flow EastMed Pipeline which is the only economically efficient option providing a direct physical connection of Cyprus with Greece.
- **Diversification of counterparts in Greece**, Italy, and South East Europe as it will allow potential new participants to enter the respective markets.

F. Useful Links

The project website:
TRA-A-0330, TRA-A-0010: http://www.igi-poseidon.com/

Network Development Plan:
TRA-N-0007, TRA-N-1195:
https://www.snam.it/export/sites/snam-rp/repository-srg/file/it/business-servizi/Processi_Online/Allacciamenti/informazioni/piano-decennale/pd_2020_2029/SRG-Piano-Decennale-2020-2029.pdf

PCI Fiche:
TRA-A-0330: https://ec.europa.eu/energy/maps/pci_fiches/PciFiche_7.3.1.pdf
TRA-A-0010: https://ec.europa.eu/energy/maps/pci_fiches/PciFiche_7.3.3.pdf
TRA-N-1091: https://www.desfa.gr/en/announcements/public-consultations