

ONLINE APPENDIX

GAS AND THE EUROPEAN INVESTMENT BANK:

WHY NEW GAS INFRASTRUCTURE INVESTMENT IS INCOMPATIBLE WITH CLIMATE GOALS

Table A: Data, summary, and categorization of all gas projects on the 2017 Projects of Common Interest List. ^a

PCI #	Link to upstream	Project Type & Summary	Upstream fields or terminals	EU Priority Corridor	Capacity increase	CAPEX (EUR Million)	Other sources
5.1.1	Indirect	Reverse Flow — to help bring gas from Irish LNG plants and Corrib field to UK - would make uni-directional pipeline bidirectional	Shannon LNG, possible new Ireland gas finds	NSIW	38.5 GWh/d	1.9	b
5.1.2	Indirect	Reverse Flow — to help bring gas from Irish LNG plants and Corrib field to UK - would make uni-directional pipeline bidirectional	Shannon LNG, possible new Ireland gas finds	NSIW	131 GWh/d	60.0	
5.1.3	None	Storage Facility — eight storage caverns for Irish 'security of supply'	EU network, Corrib, Shannon LNG, possibly Larne basin	NSIW	420 mcm	400.0	
5.3	Direct	LNG Terminal — Will make gas export from Ireland to UK and rest of EU grid possible along with flow reversal projects. Also includes a storage component.	varied	NSIW	10.3 bcm/y	551.0	
5.4.1	Direct	Pipeline — 1st phase of the 3rd ES-PT interconnection.	Iberian Peninsula LNG terminals, supplied largely by Western and Mediterranean African fields	NSIW	2.6 bcm/y	109.5	c

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5.4.2	Direct	Pipeline — 1st phase of the 3rd ES-PT interconnection.	Iberian Peninsula LNG terminals, supplied largely by Western and Mediterranean African fields	NSIW	ES>PT 139 GWh/d, PT>ES 126 GWh/d	109.5	
5.5.1	Indirect	Pipeline — This part of STEP (with Midcat) would double capacity between France and Spain in the Eastern Pyrenees and increase import capacity from Spanish LNG plants.	Spain LNG plants - Algeria, Qatar, US	NSIW	8.5 bcm/y	442.0	d
5.5.2	Indirect	Pipeline — This part of Midcat (with STEP) would double capacity between France and Spain in the Eastern Pyrenees and increase import capacity from Spanish LNG plants.	Spain LNG plants - Algeria, Qatar, US	NSIW	7.5bcm/y	3250.0	e
5.10	Indirect	Reverse Flow — On the TENP pipeline in Germany. Makes unidirectional pipeline bidirectional. Enables increase in gas flows from Italy and France into Germany	Current North African, Russian, and Italy LNG sources; future SGC.	NSIW	8 bcm/y	17.3	f
5.11	Indirect	Reverse Flow — Between Italy and Switzerland at Passo Gries interconnection point. Makes unidirectional pipeline bidirectional to make south to north flows possible, in tangent with other new non-PCI projects.	Current North African, Russian and Italy LNG sources; future SGC.	NSIW	8.9 bcm/y	34.0	g
5.19	No	Pipeline — Connection of Malta to the European gas network. Bidirectional but primary purpose is to enable gas flows from Italy to Malta for the first time, connect it to the rest of the EU gas market.	Algeria, Caspian Region, Libya, Norway, Russia, LNG	NSIW	4 bcm/y	350.0	
5.21	No	Conversion — Will convert French and Belgian L-gas network to H-gas due to Groeningen field shut down.	EU grid	NSIW	115 GWh/d	550.0	

PCI #	Link to upstream	Project Type & Summary	Upstream fields or terminals	EU Priority Corridor	Capacity increase	CAPEX (EUR Million)	Other sources
6.2.1	Indirect	Pipeline — New Poland-Slovakia connection. Together, 6.2 cluster adds a net 12.8 bcm/y in capacity to EU grid.	Polish Baltic Coast LNG terminals, Norway via Baltic Pipe	NSIE	5.7 bcm/y PL-SK, 4.7 bcm/y SK-PL	270.0	h
6.2.2	Indirect	Pipeline — North-South Gas Corridor in Eastern Poland. Multiple pipeline segments in Eastern Poland. Together, 6.2 cluster adds a net 12.8 bcm/y in capacity to EU grid.	Polish Baltic Coast LNG terminals, Norway via Baltic Pipe	NSIE	~10 bcm/y	986.0	
6.2.10	Indirect	Pipeline — New Poland-Czech Republic connection (known as “Stork II”). Together, 6.2 cluster adds a net 12.8 bcm/y in capacity to EU grid.	Polish Baltic Coast LNG terminals, Norway via Baltic Pipe, Croatia LNG	NSIE	~5 bcm/y PL > CZ, ~7 bcm/y CZ -> PL	764.0	
6.2.11	Indirect	Pipeline — North-South Gas corridor in Western Poland. Multiple pipeline segments in Western Poland. Together, 6.2 cluster adds a net 12.8 bcm/y in capacity to EU grid.	Polish Baltic Coast LNG terminals, Norway via Baltic Pipe	NSIE	~10 bcm/y	431.0	
6.2.12	Indirect	Pipeline — Tvrdonice-Libhošť pipeline and compressor station. To increase the gas supply for the Moravian regions, will be connected to the North-South Gas Corridor, and an underground storage facility. Together, 6.2 cluster adds a net 12.8 bcm/y in capacity to EU grid.	Polish Baltic Coast LNG terminals, Norway via Baltic Pipe, Croatia LNG	NSIE	-	171.1	
6.2.13	Indirect	Pipeline — Increased capacity between Hungary to Slovakia. Together, 6.2 cluster adds a net 12.8 bcm/y in capacity to EU grid.	Norway via Baltic Pipe, Russia, Romania, Croatia and Poland LNG	NSIE	3.8 bcm/y HU>SK, 1 bcm/y SK>HU	58.6	
6.2.14	Indirect	Pipeline — Vecsés-Városföld pipeline to add capacity between Hungary and Slovakia. Together, 6.2 cluster adds a net 12.8 bcm/y in capacity to EU grid.	Norway via Baltic Pipe, Russia, Romania, Croatia and Poland LNG	NSIE	102 GWh/day	80.0	

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6.4	Indirect	Pipeline — new Bidirectional Austrian — Czech interconnection (BACI) pipeline	Poland and Croatia LNG terminals, Nord Stream, rest of EU grid	NSIE	6.57 bcm/y	81.0	
6.5.1	Direct	LNG Terminal — Phase 1 of new LNG terminal and evacuation pipelines in Krk, Croatia.	n/a	NSIE	2.6 bcm/y	181.5	
6.5.5	no	Compressor station — Sisak station to help increase capacity and flexibility of Croatian gas system.	Krk LNG Terminal, rest of EU network	NSIE	13.6 GWh/d	28.0	
6.5.6	Direct	LNG Terminal — Phase 2 of new LNG terminal and evacuation pipelines in Krk, Croatia.	varied	NSIE	1.5 bcm/y	181.5	
6.8.1	Direct	Pipeline — Interconnection Greece – Bulgaria (IGB pipeline) is a new bidirectional pipeline to be directly connected to the Southern Gas Corridor.	SGC, Greek LNG	NSIE	5.5 bcm/y,	160.0	i
6.8.2	Indirect	Pipeline — Expansion (in phase 3 only), modernization, and rehabilitation of various sections of the Bulgarian network. To be connected to Southern Gas Corridor via 6.8.1.	SGC, Greek LNG, Algeria, Caspian	NSIE	0.6 bcm/y	196.0	j
6.9.1	Direct	LNG Terminal — Alexandroupolis LNG terminal in Northern Greece	varied	NSIE	6.1 bcm/year	370.0	
6.10	Indirect	Pipeline — interconnection Bulgaria — Serbia (IBS pipeline) to connect Serbia and rest of EU grid to Bulgaria trading hub (see 6.8.2/6.24.5).	SGC, LNG	NSIE	1.8-3.2 bcm/y	48.0	k
6.23	Indirect	Pipeline — Hungary – Slovenia interconnection. Connecting Slovenia to UGS in Hungary, connecting Hungary to LNG in northern Adriatic	Algeria, Caspian Region, Russia, Italy and Croatia LRT, Libya	NSIE	1.4 bcm/y	104.0	

PCI #	Link to upstream	Project Type & Summary	Upstream fields or terminals	EU Priority Corridor	Capacity increase	CAPEX (EUR Million)	Other sources
6.24.1	Direct	Pipeline — ROHUAT/BRUA 1st phase. Would bring new gas from Black Sea fields to Hungary & Austria - this section is mostly in Romania	Black Sea fields; potential future connection to SGC	NSIE	1.75 bcm/y	159.7	l
6.24.4	Direct	Pipeline — ROHUAT/BRUA 2nd phase. Would bring new gas from Black Sea fields to Hungary & Austria - these sections are mostly in Hungary	Black Sea, potential future connection to Southern Gas Corridor (Caspian Sea)	NSIE	4.4 bcm/y	159.7	m
6.24.10	Direct	Pipeline — ROHUAT/BRUA 3rd phase Would bring new gas from ExxonMobil Black Sea fields to Hungary & Austria - this section is mostly in Romania	Black Sea, potential future connection to Southern Gas Corridor (Caspian Sea)	NSIE	4.4 bcm/y	159.7	n
6.25.1	Direct	Pipeline — Eastring is a new bidirectional pipeline through Bulgaria, Romania, Hungary, and Slovakia. To be connected to Black Sea and/or Turkey corridors.	Caspian, Eastern Mediterranean, Black Sea, and Middle East fields, LNG terminals, as well as existing EU grid.	NSIE	20 bcm/y	2100.0	o
6.25.4	Indirect	Gas hub — Physical gas trading hub and accompanying transmission infrastructure to connect the natural gas markets of the Member States in the region to variety of sources to the east.	Russia, Black Sea, Bulgaria, Romania, SGC, Greece & Turkey LNG terminals.	NSIE	61.3 bcm/y	1900.0	p
6.26.1-6	Indirect	Multiple — Cluster of new pipelines, compressor stations, and flow reversals connecting Croatia to Slovenia.	Krk LNG Terminal, Ionian-Adriatic Pipeline, Norway, Russia	NSIE	5 bcm/y	173.2	q
6.20.2	No	Storage Facility — Expanding Chiren UGS storage facility in Bulgaria	Russian, Black Sea via Bulgaria and Romania,	NSIE	-	220.0	

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			SGC, Greece and Turkey LNG.				
6.20.3	None	Storage facility — Connecting infrastructure for the South Kavala underground gas storage facility in Greece.	Greece supply mix	NSIE	-	240.0	
6.20.4	None	Storage facility — Revamping and expanding existing Depomures underground gas storage facility in Romania.	Romanian supply mix	NSIE	-	136.0	
6.20.6	None	Storage facility — Expanding Sarmasel underground gas storage facility in Romania.	Romanian supply mix	NSIE	-	88.0	
7.1.1	Direct	Pipeline — Trans-Caspian pipeline (TCP), South-Caucasus Pipeline Future Expansion (SCPFEX) and Trans Anatolian Natural Gas Pipeline (TANAP) String 1 and 2, all part of SGC to bring gas from Caspian region to EU.	Shah Deniz fields, wider Caspian region, Turkmenistan, Central Asia	SGC	30 bcm/y	10024.5	
7.1.3	Direct	Pipeline — Trans Adriatic Pipeline and accompanying infrastructure, part of SGC to bring gas from Caspian region to EU.	Shah Deniz fields, wider Caspian region, Turkmenistan, Central Asia	SGC	10 bcm/y	7549.0	
7.3.1	Direct	Pipeline — EastMed pipeline from East Mediterranean to Greece mainland via Crete. As well as accompanying infrastructure (metering and regulating station at Megalopoli).	Cyprus, Caspian, Russian, potentially Egypt and offshore Crete.	SGC	10-16 bcm/y	5207.5	r
7.3.3	Direct	Pipeline — Poseidon Pipeline is a continuation of the EastMed pipeline between Greece and Italy.	Cyprus, Caspian, Russian, potentially Egypt and offshore Crete.	SGC	10-12 bcm/y phase 1, up to 20 bcm/y phase 2	3000.0	

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7.3.4	Direct	Pipeline — Adriatica Line, a South to North pipeline in Italy	Southern Italy LNG terminals, SGC	SGC	9.8 bcm/y	1379.0	s
7.5	Direct	LNG Terminal — Cyprus Gas2EU - a Floating Storage Regasification Unit to convert LNG imports.	Cyprus, Israel, EU network.	SGC	40 GWh/d	350.0	
8.1.1	None	Pipeline — Balticconnector offshore pipeline to connect Finland to rest of the EU network via Estonia.	EU network, Paldiski LNG if built	BEMIP	2.6 bcm/y	250.0	t
8.2.1	Indirect	Pipeline — Increase capacity between Latvia and Lithuania, either through a new pipeline on Latvian side or an increase of pressure in existing pipeline. Conditional on GIPL (8.5)	Russia, Klaipeida LNG, Paldiski LNG if built	BEMIP	60 GWh/d LV-LT, 57.4 GWh/d LT-LV	37.3	
8.2.2	None	Reverse Flow — Increase capacity between Estonia and Latvia by making existing pipeline bidirectional. Conditional on Balticconnector (8.2.1)	EU network, Paldiski LNG if built	BEMIP	105 GWh/d EE-LV, 46.4 GWh/d LV-EE	173.0	u
8.2.4	None	Storage facility — Two phase project to expand the Incuklans UGS facility, connected to GIPL and Balticconnector	EU network, Polish Baltic LNG Terminals	BEMIP	50 GWh/d for both phases	190.0	
8.3.1	Direct	Pipeline — Onshore Denmark sections of the Baltic Pipe pipeline from offshore Norway to Poland via Denmark.	Norway, Swinoujscie LNG	BEMIP	10 bcm/y	499.5	
8.3.2	Direct	Pipeline — Offshore sections of Baltic Pipe pipeline from offshore Norway to Poland via Denmark.	Norway, Swinoujscie LNG	BEMIP	306.8 GWh/d DK-PL, 91.1 GWh/d PL-DK	499.5	v

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8.5	None	Pipeline — GIPL pipeline to connect Poland and Lithuania gas markets, allowing Baltic countries connection to the EU gas system.	Russia, Klaipėda LNG, Paldiski LNG if built	BEMIP	73.9 GWh/d PL-LT, 58.3 GWh/d LT-PL	558.0	w
8.6	Direct	LNG Terminal — New LNG terminal in Gothenburg, Sweden	varied	BEMIP	0.1-0.5 bcm/y	100.0	
8.7	Direct	LNG Terminal — Expanding Swinoujscie LNG terminal capacity in Poland	varied	BEMIP	2.5 bcm/y	150.0	

Table B: Notes on the methodology for Figure 2 in the main report and Table A above

Categorization	Criteria
Direct	Project is an LNG terminal OR would facilitate increased takeaway from upstream or LNG terminal site(s) by directly connecting them to the existing EU network OR is part of a continuous chain/cluster of projects that would do so.
Indirect	Project would facilitate increased takeaway from upstream or LNG terminal site(s) by increasing capacity on the EU network and is justified as a PCI on this basis. Is not a physical connection between a source or chain of new projects linking to a source and the rest of the EU network.
None	Project is none of the above. Does not definitively include an increase in network transmission capacity connected to increased upstream capacity OR refers to underground storage.

a. Data from the following databases unless additional sources noted in Table 1: European Commission, “Technical information on Projects of Common Interest: accompanying the Commission Delegated Regulation (EU) 2016/89 of 18 November 2015 amending Regulation (EU) 347/2013 of the European Parliament and of the Council on guidelines for trans-European energy infrastructure as regards the Union list of projects of common interest,” Updated April 2018, https://ec.europa.eu/energy/sites/ener/files/technical_document_3rd_list_with_subheadings.pdf; European Network of Transmission System Operators for Gas, “Ten Year Development Plan 2018: Project-Specific Cost-Benefit Analysis,” April 2019, <https://www.entsog.eu/sites/default/files/2019-04/TYNDP%202018%20Project-Specific%20CBA%20Results.pdf>; European Network of Transmission System Operators for Gas, “Ten Year Development Plan 2018: Annex A — Project Sheets,” 31 December 2018, <https://www.entsog.eu/sites/default/files/2018-12/TYNDP%202018%20-%20Annex%20A%20-%20Projects%20Sheets.PDF>.

b. European Commission, “Physical reverse flow at Moffat interconnection point (IE/UK),” Innovation and Networks Executive Agency, June 2017, https://ec.europa.eu/inea/sites/inea/files/5.1.1-0005-ukie-s-m-16_action_fiche_gas.pdf.

c. REN, “3rd Interconnection between Portugal and Spain: Project Description,” August, 2018, [https://www.ren.pt/files/2018-08/2018-08-09095141_4c65f7f1-2e56-4968-a1af-585420fa64e0\\$1a023d9d-e762-427c-8e7c-d5c21194812c\\$801cd83-c051-4001-8c35-99dde04eadb7\\$\\$file\\$\\$pt\\$\\$1.pdf](https://www.ren.pt/files/2018-08/2018-08-09095141_4c65f7f1-2e56-4968-a1af-585420fa64e0$1a023d9d-e762-427c-8e7c-d5c21194812c$801cd83-c051-4001-8c35-99dde04eadb7$$file$$pt$$1.pdf).

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- e. De Clercq, "Viability of French-Spain pipeline."
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- n. Theisen and Szabo, "BRUA Pipeline."
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v. Hydrocarbons Technology, "Gas Interconnector Poland Lithuania," accessed 29 May 2019, <https://www.hydrocarbons-technology.com/projects/gas-interconnection-polandlithuania/>

w. Source Watch, "Gas Interconnection Poland-Lithuania (GIPL)," Centre for Media and Democracy, 29 January 2019, [https://www.sourcewatch.org/index.php/Gas_Interconnection_Poland-Lithuania_\(GIPL\)](https://www.sourcewatch.org/index.php/Gas_Interconnection_Poland-Lithuania_(GIPL)).